IBM TotalStorage® Enterprise Storage Server®

Interoperability Matrix

February 25, 2005

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INTRODUCTION

About this Document

This document lists interoperable environments and configurations for IBM TotalStorage Enterprise Storage Server (ESS).

The document is for informational and planning purposes only and may change at anytime. This version supersedes and replaces all previous versions. The latest version of this document is available at:

http://www.ibm.com/storage/hardsoft/products/ess/supserver.htm

Not all combinations created from interoperable components are supported, nor will they necessarily function properly together. The customer is responsible for confirming that a specific configuration (i.e. server model, operating system level, host adapter, and fabric product combination) is a valid and supported configuration by each of the vendors whose products are included in the configuration.

This document is not intended to be the sole resource for configuration information, requirements, and prerequisites. Refer to ESS publications, vendor documentation, or your IBM Sales Representative or IBM Business Partner for additional information.

End-of-Service / End-of-Support

Throughout this document, this symbol – @ – indicates that the product vendor has announced that they no longer provide support for the product. If problems are encountered with existing installations, you may be required to update your configuration to a supported level before problem determination can take place.

Request for Price Quotations (RPQ)

If a desired configuration is not represented in this document, a RPQ should be submitted to IBM to request approval. To submit a RPQ, contact your local IBM Storage Specialist or Business Partner.

Examples of configurations supported via RPQ are available at:

http://www.storage.ibm.com/disk/ess/ess800/additional_config.html

What's New

This version is dated February 25, 2005 and has been updated as noted below. It replaces the version dated November 17, 2004. Unless stated otherwise, the following items require ESS LIC level 2.4.0, or later.

Servers

- IBM eServer Model 326 (Intel (Linux, and Windows))
- IBM xSeries Server Models 2xx, 3xx, and 4xx (Intel (Linux, NetWare, and Windows))
- Apple Macintosh Models G4 and G5

Operating Systems, Path Management, and Clustering

- Windows 2000 Clustering Support (Intel (VMware))
- SUSE SLES 9 (IBM zSeries and S/390 Servers)

Adapters

- Netfinity / xSeries adapters: PN 19K1246 and PN 24P0960 (VMware)
- Apple Macintosh Fibre Channel PCI-X card

Fabric Support

- IBM eServer BladeCenter: PN 26K6477 (Intel (Linux, Windows))
- IBM eServer BladeCenter: PN 02R9080, PN 26K6477, PN 48P7062, PN 90P0165 (Intel (Netware))

ESS INTEROPERABILITY SUMMARY

For convenience, the following tables summarize the interoperable environments and configurations for the ESS. Refer to the individual server pages for additional information, including prerequisites and limitations.

Table 1: Open Systems

	ESS Model 750	ESS Model 800	ESS Models F10 and F20	ESS Models E10 and E20	Fibre Channel	SCSI	Clustering (Fibre Channel)	Clustering (SCSI)	Boot device support	Subsystem Device Driver (SDD)	ESS Application Program Interface (ESS API)	ESS Command Line Interface (ESS CLI)	Copy Services Command Line Interface (CS CLI)
Data General (DG/UX)			✓	✓		✓							
Fujitsu Primepower	✓	✓	✓		✓								
Hewlett-Packard (HP-UX)	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
Hewlett-Packard AlphaServer (OpenVMS)	✓	✓	✓	✓	✓	✓	✓	✓					✓
Hewlett-Packard AlphaServer (Tru64 UNIX)	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓
IBM iSeries and AS/400 (OS/400)	✓	✓	✓	✓	✓	✓							
IBM iSeries and AS/400 (Linux)	✓	✓	✓		✓								
IBM pSeries (Linux)	✓	✓	✓		✓					✓			
IBM pSeries, RS/6000, and RS/6000 SP (AIX)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IBM NUMA-Q (DYNIX/ptx)	✓	✓	✓	✓	✓		✓						✓
Intel Servers (Linux)	✓	✓	✓		✓				✓	✓	✓	✓	✓
Intel Servers (NetWare)	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
Intel Servers (VMware)	✓	✓	✓		✓								
Intel Servers (Windows)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SGI Origin Servers (IRIX)	✓	✓	✓		✓								
Sun (Solaris)	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓

Table 2: IBM zSeries and S/390

	z/OS & OS/390	z/VM & VM/ESA	VSE/ESA	Transaction Processing Facility (TPF)	Linux (S/390)
ESS Model 750	✓	✓	✓	✓	✓
ESS Model 800	✓	✓	✓	✓	✓
ESS Models F10 and F20	✓	✓	✓	✓	✓
ESS Models E10 and E20	✓	✓	✓	✓	
ESCON	✓	✓	✓	✓	✓
Fibre Channel Protocol (FCP)		✓			✓
FICON	✓	✓	✓	✓	✓

ESS Technical Support Home Page

The ESS Technical Support Home Page contains links to publications, documentation, downloads, utilities, and other resources.

http://www-1.ibm.com/servers/storage/support/disk/2105.html

ESS Licensed Internal Code (LIC)

This document contains references to minimum ESS LIC levels. In many cases, the minimum level listed does not represent the latest available LIC level.

Customers are encouraged to keep their ESS at the latest LIC level to take advantage of quality, reliability, and serviceability enhancements and to receive problem determination and fix support.

ESS LIC level 2.1.1 or later, is the currently recommended level.

Host Systems Attachment Guide

The IBM TotalStorage Enterprise Storage Server Host Systems Attachment Guide should be referenced to obtain detailed information on attaching servers to the ESS.

Host Adapters

This document contains only limited information regarding host adapter driver levels and other prerequisites. Host adapter firmware, driver, and fix level information is documented in the ESS Fibre Channel Host Bus Adapter (HBA) Support Matrix. This matrix can be found at:

http://knowledge.storage.ibm.com/HBA/HBASearchTool

Additionally, review host adapter vendor documentation and web pages to obtain information regarding host adapter configuration planning, hardware and software requirements, driver levels, and release notes.

Emulex:	http://www.emulex.com/ts/dds.html
AMCC/JNI:	http://www.jni.com/OEM/oem.cfm?ID=4
QLogic:	http://www.qlogic.com/support/oem_detail_all.asp?oemid=22

SAN Fabric Products

Fabric product vendor documentation and web pages should be reviewed to obtain information regarding configuration planning, hardware and software requirements, firmware and driver levels, and release notes.

IBM:	www.ibm.com/storage/ibmsan/products/sanfabric.html
CNT (INRANGE):	http://www.cnt.com/ibm/
McDATA:	www.mcdata.com/ibm/
Cisco:	www.cisco.com/go/ibm/storage

Channel Extension Technology Products

Channel extension technology product vendor documentation and web pages should be reviewed to obtain information regarding configuration planning, hardware and software requirements, firmware and driver levels, and release notes.

Cisco:	www.cisco.com/go/ibm/storage
CIENA:	www.ciena.com/products/transport/shorthaul/cn2000/index.asp
CNT:	www.cnt.com/ibm/
Nortel:	www.nortelnetworks.com/
ADVA:	www.advaoptical.com/

IBM TotalStorage Multiple Device Manager

The IBM TotalStorage Multiple Device Manager (MDM) provides centralized volume management, performance management, and replication management for the Enterprise Storage Server. For more information on support, please refer to the following:

http://www.ibm.com/servers/storage/support/virtual/mdm.html

IBM TotalStorage SAN Volume Controller

The IBM TotalStorage SAN Volume Controller and IBM TotalStorage SAN Volume Controller for Cisco MDS9000 solution are supported with the ESS Model F20, 750, and 800. The SAN Volume Controller is not interoperable with ESS Copy Services. Refer to the following web pages for specific interoperability information on the SAN Volume Controller and SAN Volume Controller for CISCO MDS9000:

http://www.ibm.com/storage/support/2145

http://www.ibm.com/storage/support/2062-2300

IBM TotalStorage SAN File System

The IBM TotalStorage SAN File System supports the Enterprise Storage Server. For more information on support, please refer to the following:

http://www-1.ibm.com/support/docview.wss?rs=575&uid=ssg1S1002299

IBM SAN Data Gateway (SDG)

The SAN Data Gateway (IBM 2108 Model G07) is supported with the ESS Models E10, E20, F10, and F20 for legacy installations only. These installations are encouraged to migrate to native ESS Fibre Channel support.

The ESS Model 750 and 800 are not interoperable with the SDG.

Subsystem Device Driver (SDD)

The SDD is designed to provide load balancing and enhanced data availability capability in configurations with more than one I/O path between the host server and the ESS. Load balancing can reduce or eliminate I/O bottlenecks that occur when many I/O operations are directed to common devices via the same I/O path. SDD also helps eliminate a potential single point of failure by automatically rerouting I/O operations when a path failure occurs, thereby supporting enhanced data availability capability. The SDD is provided with the ESS at no additional charge.

Refer to the individual server pages within this document for operating system level requirements and for ESS LIC prerequisites.

Refer to the *IBM TotalStorage Enterprise Storage Server, IBM TotalStorage SAN Volume Controller, IBM TotalStorage SAN Volume Controller for Cisco MDS 9000 Subsystem Device Driver's User's Guide* for additional information.

Additional SDD information is also available at:

http://ssddom02.storage.ibm.com/techsup/webnav.nsf/support/sdd

ESS Application Program Interface (ESS API)

The ESS API can help simplify ESS administration and reduce the total cost of ownership by enabling ESS LUN management activities through implementation of the Storage Management Initiative Specification (SMI-S), as defined by the Storage Networking Industry Association (SNIA). It is implemented through the IBM TotalStorage Common Information Model Agent (CIM Agent) for the ESS, a middleware application that provides a CIM-compliant interface. The ESS API supports Copy Services configuration and use for FlashCopy and Peer-to-Peer Remote Copy (PPRC). It supports these activities through the use of the interface as defined by SNIA SMI-S. The ESS API also coordinates with Microsoft Volume Shadow Copy Service and the ESS FlashCopy function to create a consistent, point-in-time shadow copy of a Windows Server 2003 volume or group of volumes. This ensures consistency for Volume Shadow Copy Services aware applications. The ESS API and CIM Agent are provided with the ESS at no additional charge.

Refer to the individual server pages within this document for operating system level requirements and for ESS LIC prerequisites. While the CIM Agent is available for only selected operating system environments, it can be used to manage all LUNs within an ESS.

Refer to *IBM TotalStorage Enterprise Storage Server Application Programming Interface Reference* for additional information.

ESS Command Line Interface (ESS CLI)

The ESS CLI provides an alternate method to perform ESS logical configuration and storage management functions. With the ESS CLI, routine configuration and management tasks can now be automated through their incorporation into scripts and applications, helping to simplify ESS administration and reduce the total cost of ownership. The ESS CLI is provided with the ESS at no additional charge.

Refer to the individual server pages within this document for operating system level requirements and for ESS LIC prerequisites. While the ESS CLI is available for only selected operating system environments, it can be used to manage all LUNs within an ESS.

Refer to IBM TotalStorage Enterprise Storage Server Command Line Interfaces User's Guide for additional information.

Copy Services Command Line Interface (CS CLI)

The CS CLI enables open systems hosts to invoke and manage FlashCopy and PPRC functions through batch processes and scripts. It provides commands to query the status of ESS volumes and to execute copy services tasks that were previously created using the IBM TotalStorage Enterprise Storage Server Specialist. The CS CLI is provided with the ESS at no additional charge.

Refer to the individual server pages within this document for operating system level requirements and for ESS LIC prerequisites.

Refer to IBM TotalStorage Enterprise Storage Server Command Line Interfaces User's Guide for additional information.

Additional CS CLI information is also available at:

http://www-1.ibm.com/servers/storage/support/software/cscli.html

Linux

The Enterprise Storage Server is supported on various Linux distributions and kernels from Asianux, Red Flag, Red Hat, SuSE, and SuSE Linux Enterprise Server (SLES), TurboLinux Enterprise Server (TLES), and Conectiva Linux Enterprise Edition. Please refer to the individual server sections of this document for more specifics on Linux support.

FlashCopy

FlashCopy provides a point-in-time copy capability for data on the ESS. FlashCopy is designed to create a physical point-in-time copy of the data, with minimal interruption to applications, and make it possible to access both the source and target copies almost immediately. FlashCopy is an optional feature on the ESS.

Extended Remote Copy (XRC)

XRC is a combined hardware and software business continuance solution for the zSeries and S/390 environments designed to provide asynchronous mirroring between two ESSs at global distances. XRC is an optional feature on the ESS.

Peer-to-Peer Remote Copy (PPRC)

PPRC is a hardware-based business continuance solution designed to provide real-time mirroring of logical volumes within an ESS or to another ESS. PPRC is an optional feature on the ESS.

IBM supports the use of PPRC in the following modes. Refer to Table 3 and Table 4 for ESS model support and LIC prerequisites.

PPRC Synchronous Mode (Metro Mirror)
PPRC synchronous mode can be used for real-time data mirroring. In this mode, updates made on the primary ESS (local site) are synchronously shadowed to a secondary ESS (remote site).

Since this is a synchronous operation, the distance between the primary and secondary ESS will affect the application response time. Therefore, when operating in this mode, PPRC has a standard maximum supported distances between the primary and secondary ESS:

- ESCON PPRC Links: up to 103 km
- Fibre Channel PPRC Links: up to 300 km

Note that no intermix of PPRC link types is allowed within the same logical subsystem (LSS).

Extending distances beyond 300 km is also possible, however, due to network configuration variability, the customer must work with the channel extender vendor to determine the appropriate configuration to meet their performance requirements. IBM support approval for these longer distances can be requested by submitting a Request for Price Quotation (RPQ). The RPQ should include information on distance between sites, the channel extension technology, the type of telecom line, the amount of network bandwidth, the ESS capacity, and a general description of the workload.

Long Distance Data Copy / Migration
PPRC can be used for long distance data copy or migration of static volumes. Static volumes are volumes that do not have write I/O activity while the PPRC copy of data from the primary to the secondary is in progress.

Since there is no write I/O activity while the PPRC data copy is in progress, the distance between the primary and secondary ESS will not affect application response time. Therefore, when operating in this mode, PPRC can be used with much greater distances between the primary and secondary ESS (as compared to PPRC synchronous mode).

PPRC Extended Distance (PPRC-XD) (Global Copy)
PPRC-XD is a non-synchronous long distance copy option suitable for data migration and periodic offsite backup.

With a non-synchronous operation, the distance between the primary and secondary ESS will have only a minimal effect on the application response time. Therefore, PPRC-XD can operate at very long distances.

Asynchronous Cascading PPRC (Metro/Global Mirror)

Asynchronous Cascading PPRC can be used to create three-site or two-site long-distance remote copy solutions. With synchronous PPRC, the PPRC secondary volume (involved in a PPRC synchronous relationship) can also simultaneously serve as a PPRC primary volume in a PPRC Extended Distance (PPRC-XD) relationship to the remote site.

Asynchronous PPRC (Global Mirror)
Asynchronous PPRC enables a high performance, asynchronous remote-mirroring copy solution. It is designed to provide a two-site disaster recover and backup solution at virtually unlimited distances.

Since the distance between the primary and secondary ESS has little impact to host applications at the primary site, the remote site can be located at distances from the local site well beyond those supported with Synchronous PPRC. The distances are typically limited only by the capabilities of the network and channel extension technologies.

PPRC Channel Extension, DWDM, and Network Connectivity Options

Distances beyond 103 km will require the use of channel extension technology, and the channel extender vendor will determine the maximum distance supported. The vendor should be contacted for its distance capability, line quality requirements, and WAN attachment capabilities.

IBM supports the use of the following products, in Table 3 and 4, with PPRC. Additionally, the product vendors should also be consulted regarding hardware and software prerequisites when using their products in an ESS PPRC configuration. IBM is not responsible for third-party products.

When using PPRC with channel extenders, IBM supports the use of PPRC over all the network technologies that are currently supported by the channel extender products, including Fibre Channel, Ethernet/IP, ATM-OC3, and T1/T3. Evaluation, qualification, approval, and support of PPRC configurations using channel extender products are the sole responsibility of the channel extender vendor. The vendor should be contacted for its distance capability, line quality requirements, as well as SAN and WAN attachment capabilities.

Table 3: Minimum ESS LIC Levels for PPRC over ESCON

	PPRC Synchronous Mode	PPRC Long Distance Data Copy / Migration	PPRC-XD	Asynchronous Cascading PPRC
ESS Model 750	2.3.1	2.3.1	2.3.1	2.3.1
ESS Model 800	2.0.0	2.0.0	2.0.0	2.2.0
ESS Models F10 and F20	1.3.0	1.5.0	1.5.2	2.2.0
ESS Models E10 and E20	1.3.0	Not supported	Not supported	Not supported
Cisco ONS 15530 / 15540	1.3.4.41	1.5.0	1.5.2	2.2.0
CNT (INRANGE) 9801 Storage Networking System	1.3.0	1.5.0	1.5.2	2.2.0
CNT UltraNet Storage Director (USD)	1.5.2	1.5.2	1.5.2	2.2.0
IBM 2029 Fiber Saver	1.3.0	1.5.0	1.5.2	2.2.0
Nortel Networks OPTera Metro 5200	1.3.0	1.5.0	1.5.2	2.2.0
Nortel Networks OPTera Metro 5300	1.3.4.41	1.5.0	1.5.2	2.2.0

Table 4: Minimum ESS LIC Levels for PPRC over Fibre (FCP)

	PPRC Synchronous Mode	PPRC Long Distance Data Copy / Migration	PPRC-XD	Asynchronous Cascading PPRC	Asynchronous PPRC
ESS Model 750	2.3.1	2.3.1	2.3.1	2.3.1	2.4.0
ESS Model 800	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
ADVA FSP 2000	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
CIENA CN 2000™ Storage Extension Platform	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
Cisco IP Storage Service Modules	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
Cisco CWDM Distance Solution	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
Cisco ONS 15530 / 15540	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
CNT Edge Storage Router	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
Nortel Networks OPTera Metro 5200	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0
Nortel Networks OPTera Metro 5300	2.3.0	2.3.0	2.3.0	2.3.0	2.4.0

XRC Channel Extension, DWDM, and Network Connectivity Options

Distances beyond 3 km for ESCON, and 10 km for FICON will require the use of channel extension technology, and the channel extender vendor will determine the maximum distance supported. The vendor should be contacted for its distance capability, line quality requirements, and WAN attachment capabilities.

IBM supports the use of the following products, in Table 5, with XRC. The product vendors should also be consulted regarding hardware and software prerequisites when using their products in an ESS XRC configuration. IBM is not responsible for third-party products.

When using XRC with channel extenders, IBM supports the use of XRC over all the network technologies that are currently supported by the channel extender products, including Fibre Channel, Ethernet/IP, ATM-OC3, and T1/T3. Evaluation, qualification, approval, and support of XRC configurations using channel extender products are the sole responsibility of the channel extender vendor. The vendor should be contacted for its distance capability, line quality requirements, as well as SAN and WAN attachment capabilities.

Table 5: Minimum ESS LIC Levels for XRC

	XRC - ESCON	XRC - FICON
ESS Model 750	Not Supported	Not Supported
ESS Model 800	2.0.0	2.2.0
ESS Models F10 and F20	1.1.0	1.4.0
ESS Models E10 and E20	1.1.0	Not Supported
ADVA FSP 2000	Not Supported	2.3.0
CIENA CN 2000™ Storage Extension Platform	Not Supported	2.2.0
Cisco ONS 15530 / 15540	1.1.0	1.4.0
Cisco CWDM	Not Supported	2.3.1
Cisco IP Storage Service Modules	Not Supported	2.3.1
CNT (INRANGE) 9811 Storage Networking System	2.1.0	Not Supported
CNT UltraNet Storage Director (USD)	1.1.0	Not Supported
CNT UltraNet Storage Director eXtended (USD-X) [1]	1.1.0	2.3.0
IBM 2029 Fiber Saver	1.1.0	Not Supported
Nortel Networks OPTera Metro 5200 / 5300	1.1.0	1.4.0

[1] Requires firmware level 3.2.1.

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SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

HP Server
• rp5400 series
• rp7400
 	
HP 9000 Enterprise Servers
• D-Class
• E-Class
• G-Class
• H-Class
• I-Class
• K-Class
• L-Class
• N-Class
• T-Class
• V-Class
• Enterprise Parallel Servers
	HP-UX
	• 10.20
	• 11.00
	  • PVLINKS
	  • MC/Serviceguard 11.05/09 [1]
	• 11i
	  • PVLINKS
	  • MC/Serviceguard 11.12 and 11.13
		Hewlett-Packard
		• A2969A
		• A4107A
		• A4800A
		• A5159A
		• 28696A
			N/A

[1] MC/Serviceguard 11.05/09 can be used with only the K-Class, L-Class, N-Class, and V-Class servers.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

HP Server
• rp2400 series
• rp3400 series
• rp4400 series
• rp5400 series
• rp7400 series
• rp8400 series [2]
• Superdome [2]
 	
Itanium II Servers [9]
• rx1600 series
• rx2600 series
• rx4600 series
• rx5600 series
• rx7600 series
• rx8600 series
 	
HP 9000 Enterprise Servers
• D-Class
• K-Class
• L-Class
• N-Class
• V-Class
	HP-UX [8]
	• 11.00
	  • PVLINKS
	  • MC/Serviceguard 11.05/09 [1]
	• 11i
	  • PVLINKS
	  • MC/Serviceguard 11.12, 11.13, and 11.14
	• 11iv2 (11.23) [10]
	  • PVLINKS
	  • MC/Serviceguard 11.14
		Hewlett-Packard
		• A3404A
		• A3591B
		• A5158A
		• A6684A
		• A6685A
		• A6795A [3]
		• A6826A [10]
		• A9782A [10]
			Cisco
			• MDS 9120 [7]
			• MDS 9140 [7]
			• MDS 9216 [3]
			• MDS 9506 [6]
			• MDS 9509 [3]
			
			CNT (Inrange)
			• FC/9000-64 [4]
			• FC/9000-128 [4]
			• FC/9000- 256 [5]
			• 2042-N16 [10]
			
			IBM
			• 2005 Model B32 [10]
			• 2005 Models H08 and H16 [9]
			• 2026 Model 224 [10]
			• 2027 Models 140 and 232 [10]
			• 2045 Model N16 [10]
			• 2109 Models F16 and F32 [3]
			• 2109 Model M12 [3]
			• 2109 Model M14 [9]
			• 2109 Models S08 and S16
			• 3534 Model F08 [3]
			
			McDATA
			• ED-5000
			• ES-3016 and ES-3032
			• Intrepid
			  • 6064
			  • 6140 [3]
			• Sphereon
			  • 3216 [3]
			  • 3232 [3]
			  • 4300 [7]
			  • 4500 [3]

[2] Requires ESS LIC level 2.0.0, or later, for the ESS Model 800 and ESS LIC level 2.1.0, or later, for the ESS Models F10 and F20.

[3] Requires ESS LIC level 1.5.2, or later.

[4] Requires ESS LIC level 1.3.2.50, or later.

[5] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[6] Requires ESS LIC level 2.1.1, or later.

[7] Requires ESS LIC level 2.2.0, or later.

[8] Only fabric connections are supported with ESS LIC level 2.3.0. Fabric and direct connections are supported with ESS LIC level 2.3.1 or later.

[9] Requires ESS LIC level 2.3.1 or later.

[10] Requires ESS LIC level 2.4.0 or later for the ESS Models 750 and 800, and ESS LIC level 2.3.1 or later for the ESS Models F10 and F20.

General notes:

- Fibre channel: Requires ESS LIC level 1.3.0, or later.
- SCSI: SCSI is not supported on the ESS Model 750.
- ESS API – CIM Agent: Not available for HP-UX.
- ESS CLI:
  - Available for HP-UX 11.0, or later.
  - Requires ESS LIC level 2.1.0, or later.
  - Not available for the ESS Models E10 and E20.
- CS CLI:
  - Available for all levels of HP-UX.
  - HP-UX 11i requires ESS LIC level 1.5.2, or later.
- SDD:
  - Not available for or interoperable with:
    - HP-UX 10.20, HP-UX 11 32-bit, HP-UX 11i SCSI configurations, and HP-UX 11iv2.
    - MC/Serviceguard
  - HP-UX 11i requires ESS LIC level 1.5.2, or later.
  - Multi-path support is natively available in HP-UX (PVLINKS).

The following items are not interoperable with the ESS Model 750 or 800:

- Servers: T-Class.
- Operating systems: HP-UX 10.20.
- Host adapters: HP A3404A and HP A3591B.

The following items are not interoperable with ESS Models E10 and E20:

- ESS CLI.
- Operating systems: HP-UX 11iv2 (11.23).
- Servers:
  - rp2400, rp3400, rp4400, rp5400, rp7400, rp8400, rx1600, rx2600, rx4600, rx5600, rx7600, rx8600, and Superdome.
- Host adapters:
  - HP A6795A, HP A6826A, HP A9782A.
- Fabric products:
  - Cisco MDS 9120, 9140, 9216 9506, and 9509.
  - IBM 2005 B32, H08 and H16.
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Models F32, M12 and M14.
  - IBM 3534 Model F08.
  - CNT FC/9000- 256, 2042-N16
  - McDATA Intrepid 6140.
  - McDATA Sphereon 3216, 3232, 4300, and 4500.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support
AlphaServer • 800 • 1200 • 2100 • 4000, 4000A • 4100 • 8200, 8400 • DS10, DS20, DS20E • ES40 • GS60, GS60E, GS140	OpenVMS • 6.2-1 H3 • 7.1-2 • 7.2-1, 7.2-2 [1] • 7.3	StorageWorks • KZPBA-CB	N/A

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support
AlphaServer • 800 • 1200 • 4000, 4000A • 4100 • 8200, 8400 • DS10, DS20, DS20E • ES40, ES45 [3], ES47 [3] • GS60, GS60E, GS140 • GS80, GS160, GS320	OpenVMS • 7.2-2 • 7.3 • 7.3-1 [2] • 7.3-2 [3]	StorageWorks • KGPSA-CA • KGPSA-DA [2] • KGPSA-EA [3]	IBM • 2109 Model F16 • 2109 Model F32 [3] • 2109 Model M12 [3] • 2109 Models S08 and S16 • 3534 Model F08

[1] Requires ESS LIC level 1.5.2, or later.

[2] Requires ESS LIC level 2.2.0, or later.

[3] Requires ESS LIC level 2.3.1, or later.

General notes:

- Fibre channel:
  - Requires ESS LIC level 2.1.0, or later.
  - Requires ESS Fibre Channel Host Adapter feature #3021, 3023, #3024, or #3025.
  - Not available for the ESS Models E10 and E20.
- SCSI:
  - SCSI is not supported on the ESS Model 750.
- Copy services:
  - Requires ESS LIC level 1.5.2, or later.
- ESS API – CIM Agent:
  - Not Available for OpenVMS.
- ESS CLI:
  - Not available for OpenVMS.
- CS CLI:
  - Available for OpenVMS 7.3, or later.
  - Requires ESS LIC level 2.1.0, or later.
  - Not available for the ESS Models E10 and E20.
- SDD:
  - Not available for OpenVMS.

The following items are not interoperable with the ESS Model 750 or 800:

- Operating systems:
  - Open VMS 6.2.

The following items are not interoperable with the ESS Models E10 and E20:

- Fibre channel.
- Copy services.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

AlphaServer
• 800
• 1200
• 2100
• 4000, 4000A
• 4100
• 8200, 8400
• DS10, DS20, DS20E
• ES40
• GS60, GS60E, GS140
	Tru64 UNIX
	• 4.0D, 4.0E
	• 4.0F, 4.0G
	  • ASE 1.6
	• 5.0A
	  • TruCluster 5.0A
	• 5.1
	  • TruCluster 5.1
	• 5.1A [1]
	  • TruCluster 5.1A
		StorageWorks
		• KZPBA-CB
			N/A

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

AlphaServer
• 800
• 1200
• 2100
• 4000, 4000A
• 4100
• 8200, 8400
• DS10, DS20, DS20E
• ES40, ES45 [3] , ES47 [3]
• GS60, GS60E, GS140
• GS80, GS160, GS320 [1]
	Tru64 UNIX
	• 4.0F, 4.0G
	  • ASE 1.6
	• 5.0A
	  • TruCluster 5.0A
	• 5.1
	  • TruCluster 5.1
	• 5.1A [1]
	  • TruCluster 5.1A
	• 5.1B [2]
	  • TruCluster 5.1B
		StorageWorks
		• KGPSA-BC
		• KGPSA-CA
		• KGPSA-DA [2]
		• KGPSA-EA [3]
			IBM
			• 2109 Model F16 [1]
			• 2109 Model F32 [3]
			• 2109 Model M12 [3]
			• 2109 Models S08 and S16
			• 3534 Model F08 [1]

[1] Requires ESS LIC level 1.5.2, or later.

[2] Requires ESS LIC level 2.2.0, or later.

[3] Requires ESS LIC level 2.3.1, or later. The ES45 and ES47 servers also require Tru64 UNIX version 5.1B.

General notes:

- Fibre channel: Requires ESS LIC level 1.3.3.27, or later.
- SCSI: SCSI is not supported on the ESS Model 750.
- Copy services:
  - Requires ESS LIC level 1.5.2, or later.
  - Not available for the ESS Models E10 and E20.
- ESS API – CIM Agent: Not Available for Tru64 UNIX.
- ESS CLI: Not available for Tru64 UNIX.
- CS CLI:
  - Available for Tru64UNIX 4.0F, 4.0G, 5.1, 5.1A, and 5.1B.
  - Requires ESS LIC level 1.5.2, or later.
  - Not available for the ESS Models E10 and E20.
- SDD:
  - Not available for Tru64 UNIX.
  - Multi-path support is natively available in Tru64 UNIX.
- Boot device support:
  - The ESS can be used as a boot device on servers running Tru64 UNIX 5.0A and 5.1. This function requires ESS LIC level 1.3.3, or later. Refer to the IBM TotalStorage Enterprise Storage Server Host Systems Attachment Guide for additional information.

<u>The following items are not interoperable with the ESS Model 750 or 800:</u>

- Operating systems:
  - Tru64 UNIX 4.0 (all levels).

<u>The following items are not interoperable with the ESS Models E10 and E20:</u>

- Copy services.
- CS CLI.
- Servers:
  - AlphaServers ES45, ES47, GS80, GS160, and GS320.
- Operating systems:
  - Tru64 UNIX 5.1A and 5.1B.
- Fabric products:
  - IBM 3534 Model F08.
  - IBM 2109 F32 and M12.
- Adapters
  - StorageWorks KGPSA-EA.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

9406 Advanced Series
• 300, 310, 320
• 500, 510, 530
 	
9406
• 620, 640, 650
• 720, 730, 740
• S20, S30, S40
 	
iSeries
• 820, 830, 840
• SB2, SB3
	OS/400
	• Version 3
	  • V3R1 @
	  • V3R2 @
	  • V3R6 @
	  • V3R7 @
	• Version 4
	  • V4R1 @
	  • V4R2 @
	  • V4R3 @
	  • V4R4 @
	  • V4R5
	• Version 5
	  • V5R1
	  • V5R2 [1]
		IBM iSeries and AS/400
		• FC 6501
			N/A

[1] Requires ESS LIC level 1.5.2, or later.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

iSeries
• 270
• 820, 830, 840, 890 [1]
• 800, 810, 825, and 870 [3]
 	
eServer i5
• 520, 550, 570 and 595 [9]
	OS/400
	• Version 5
	  • V5R1
	  • V5R2 [1]
	
	i5/OS
	• Version 5
	  • V5R3 [9]
	
	Red Hat
	• RHEL 3.0 [10]
	
	SuSE SLES
	• 7 [2] @
	• 8 [4]
	• 9 [10]
		IBM iSeries
		• FC 0612 [6]
		• FC 0625
		• FC 0626 [6]
		• FC 0646 [6]
		• FC 2766
		• FC 2787 [5]
			Cisco
			• MDS 9120[8], MDS 9140[8]
			• MDS 9216[8]
			• MDS 9506[8], MDS 9509[8]
			
			CNT (Inrange)
			• FC/9000-64 [7], FC/9000-128 [7], FC/9000-256 [7]
			• 2042-N16 [9]
			
			IBM
			• 2005 Model B32 [9]
			• 2005 Models H08 and H16 [9]
			• 2026 Model 224 [9]
			• 2027 Models 140 and 232 [9]
			• 2045 Model N16 [9]
			• 2109 Model F16 [3]
			• 2109 Model F32 [7]
			• 2109 Model M12 [7]
			• 2109 Model M14 [9]
			• 2109 Models S08 and S16
			• 3534 Model 1RU
			• 3534 Model F08 [3]
			
			McDATA
			• Intrepid
			  • 6064 [5], 6140 [5]
			• Sphereon
			  • 3216 [5], 3232 [5]
			  • 4300 [7], 4500 [5]

[2] Requires Linux kernel level 2.4.13, and OS/400 V5R2, or later.

[3] Requires ESS LIC level 1.5.2, or later and OS/400 V5R2, or later.

[4] Requires Linux kernel level 2.4.19, OS/400 V5R2, or later, and ESS LIC level 2.1.1, or later.

[5] Requires ESS LIC level 2.1.1, or later and OS/400 V5R2, or later.

[6] Only supported with Linux.

[7] Requires ESS LIC level 2.2.0 or later, and OS/400 V5R2 or later.

[8] Requires ESS LIC level 2.3.0 or later, and OS/400 V5R2 or later.

[9] Requires ESS LIC 2.4.0 or later for the ESS Models 750 or 800, and ESS LIC level 2.3.1 or later for the ESS Models F10 and F20.

[10] Supported only with the eServer i5. Refer to the following link for additional restrictions: http://www-1.ibm.com/servers/storage/support/software/sdd/

General notes:

- Fibre channel support: Requires ESS LIC Level 1.3.2, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- Copy services: PPRC-XD requires OS/400 Version 5 Release 1, or later.
- ESS API – CIM Agent: Not Available for OS/400.
- ESS CLI: Not available for OS/400.
- CS CLI: Not available for OS/400.
- SDD: Not available for OS/400. Multipath support for ESS is provided in i5/OS V5R3.

The following items are not interoperable with the Model 750 or 800:

- Operating systems:
  - OS/400 Version 3 (all release levels).
  - OS/400 Version 4 (all release levels except V4R5).
- Fabric products:
  - IBM 3534 Model 1RU.

The following items are not interoperable with the Models E10 and E20:

- Servers
  - iSeries 800, 810, 825, 870, and 890.
  - eServer i5 520 and 570.
- Operating systems:
  - OS/400 Version 4 (all release levels except Release 5), and OS/400 Version 5 Release 2.
  - i5/OS Version 5 Release 3.
  - SuSE Linux Enterprise Server 7 for iSeries.
  - SuSE SLES 8 and 9.
- Fabric products:
  - Cisco MDS 9120, 9140, 9216, 9506 and 9509.
  - CNT (Inrange) FC/9000-64, FC/9000-128, FC/9000-256, and 2042-N16.
  - IBM 2005 Models B32, H08 and H16.
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Models F16, S08, and S16.
  - IBM 3534 Model F08.
  - McDATA Intrepid 6064, 6140.
  - McDATA Sphereon 3216, 3232, 4300, and 4500.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

pSeries
• 610 Models 6C1, 6E1
• 615 Models 6C3 and 6E3
• 620 Models 6F0, 6F1
• 630 Models 6C4, 6E4 [1]
• 640 Model B80
• 650 Model 6M2 [1]
• 655 Model 651 [1]
• 660 Models 6H0, 6H1, 6M1
• 670 Model 671 [1]
• 680 Model S85
• 690 Model 681 [1]
7012
• 397
• G40
7013
• 590, 591, 595, 59H
• J30, J40, J50
• S70, S7A
7015
• 99J, 99K
• R20, R24, R30, R40, R50
• S70, S7A
7017
• S70, S7A, S80
7024
• E20, E30
7025
• F30, F40, F50, F80
• H70
7026
• H10, H50, H70, H80
• M80
7043
• 270
7044
• 170
• 270
	AIX
	• Version 4
	  • 4.2.1 @
	  • 4.3.1 @
	  • 4.3.2 @
	  • 4.3.3 @
	• Version 5
	  • 5.1
	  • 5.2 [7]
	HACMP [2]
	• 4.2.2
	• 4.3.1
	• 4.4.0, 4.4.1
	• 4.5.0 [3]
	• 5.1.0 [12]
	• 5.2.0 [15]
		IBM pSeries and RS/6000
		• FC 2412
		• FC 6204
		• FC 6207
			N/A

[1] ESS LIC level prerequisites for servers:
- The pSeries 630, 650, and 655 require ESS LIC level 1.5.2, or later.
- The pSeries 670 requires ESS LIC level 1.5.1, or later.
- The pSeries 690 requires ESS LIC level 1.4.0, or later.

[2] Refer to Table 4 for additional HACMP support information.

[3] Requires ESS LIC level 2.0.0, or later, for the ESS Model 800 and ESS LIC level 2.1.0, or later, for the ESS Models F10 and F20.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

pSeries
• 610 Models 6C1, 6E1
• 615 Models 6C3, 6E3
• 620 Models 6F0, 6F1
• 630 Models 6C4, 6E4 [1]
• 640 Model B80
• 650 Model 6M2 [1]
• 655 Model 651 [1]
• 660 Models 6H0, 6H1, 6M1
• 670 Model 671 [1]
• 680 Model S85
• 690 Model 681 [1]
 	
eServer p5 [12, 14]
• 520, 550, 570 , 590, 595
 	
Open Power
• 720 [12, 14]
 	
IBM eServer BladeCenter
• BladeCenter JS20 [12, 14]
  • 8842
 	
RS/6000
• 7013: S70, S7A
• 7015: S70, S7A
• 7017: S70, S7A, S80
• 7025: F50, F80, H70
• 7026: H50, H70, H80, M80
• 7043: 270
• 7044: 170, 270
	AIX
	• Version 4
	  • 4.3.3 @
	• Version 5
	  • 5.1
	  • 5.2 [7]
	  • MPIO
	  • 5.3 [12]
	  • MPIO
	
	HACMP [2]
	• 4.3.1
	• 4.4.0, 4.4.1
	• 4.5.0 [3]
	• 5.1.0 [11]
	• 5.2.0 [12]
	
	Red Hat
	• RHEL 3.0 [12]
	
	SuSE SLES
	• 8 [9]
	• 9 [12]
		IBM pSeries and RS/6000
		• FC 6227
		• FC 6228
		• FC 6239 [10]
		• FC 5716 [12]
			Cisco [13]
			• MDS 9120 and 9140 [11]
			• MDS 9216 [5]
			• MDS 9506 [10] and 9509 [5]
			
			CNT (Inrange)
			• FC/9000-64 [6],FC/9000 -128 [6], and FC/9000-256 [8]
			• 2042-N16 [12]
			
			IBM
			• 2005 Model B32 [12], H08 and H16 [12]
			• 2026 Model 224 [12]
			• 2027 Models 140 and 232 [12]
			• 2045 Model N16 [12]
			• 2103 Model H07 [4]
			• 2109 Models F16 and F32 [5]
			• 2109 Models M12 [5] , M14 [12]
			• 2109 Models S08 and S16
			• 3534 Model F08 [5]
			
			IBM eServer BladeCenter [12]
			• P/N 02R9080, P/N 48P7062
			
			McDATA
			• ED-5000, ES-3016, ES-3032
			• Intrepid
			  • 6064, 6140 [5]
			• Sphereon
			  • 3216 and 3232 [5]
			  • 4300 [11] and 4500 [5]

[4] The IBM 2103 is supported for distance solutions only. Multiple initiators or targets on the same loop are not supported.

[5] Requires ESS LIC level 1.5.2, or later.

[6] Requires ESS LIC level 1.3.2.50, or later.

[7] Requires ESS LIC level 2.0.1, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[8] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[9] Requires Linux kernel level ppc64-2.4.21-231, and ESS LIC level 2.3.1, or later, and is supported with only host adapter FC 6228 or 6239 and only with IBM or McDATA fabric products.

[10] Requires ESS LIC level 2.1.1, or later.

[11] Requires ESS LIC level 2.2.0, or later.

[12] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20. Refer to the following link for additional restrictions: http://www-1.ibm.com/servers/storage/support/software/sdd/

[13] Supports the IP Storage Service Module for iSCSI on Cisco MDS fabric products with ESS LIC level 2.3.1 or later. Refer to the following link for more details: ftp://service.boulder.ibm.com/storage/san/cisco/ipStorServMod.pdf

[14] The eServer p5 servers support AIX 5.2H (or later), SuSE SLES 9, and Red Hat 3.0. The Open Power servers support SuSE SLES 9, and Red Hat 3.0. The BladeCenter JS20 supports SuSE SLES 8 and 9, Red Hat 3.0, and AIX 5.2H.

General Notes:

- Fibre channel: Requires ESS LIC level 1.2.0, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- ESS API – (CIM Agent):
  - LUN Management: Available for AIX 5.1, 5.2 and 5.3. Requires CIM agent 1.1, or later, and ESS LIC level 2.1.1, or later.
  - Copy Services: Available for AIX 5.1, 5.2 and 5.3. Requires CIM agent 1.2, or later, and ESS LIC level 2.3.0, or later.
- ESS CLI: Available for AIX 4.3.3, 5.1, 5.2 and 5.3, and requires ESS LIC level 2.1.0, or later.
- CS CLI: Available for AIX 4.3.2, 4.3.3, 5.1, 5.2 and 5.3.
- SDD:
  - Available for AIX 4.3.1, or later.
  - Available for SuSE SLES 8 , SLES 9 and Red Hat 3.0, which requires ESS LIC level 2.3.1, or later.
- Path Control Module:
  - Available for AIX 5.2 and AIX 5.3 MPIO with latest released maintenance levels.
  - Requires ESS LIC level 2.3.0, or later.
- Boot device support:
  - The ESS is supported as a boot device on pSeries, RS/6000, and RS/6000 SP servers that support Fibre Channel boot capability. This support requires ESS LIC level 1.4.0, or later, and native Fibre Channel attachment to the ESS. Boot device support when using SDD requires ESS LIC level 2.1.0, or later.

<u>The following items are not interoperable with the ESS Model 750 or 800:</u>

- Servers: Micro Channel Architecture (MCA) servers, including 7012-397, 7013-59x, 7013-Jxx, 7015-99x, and 7015 Rxx.
- Operating systems:
  - AIX 4.2.1, 4.3.1 and 4.3.2.
  - HACMP 4.2.2 and 4.3.1.
- Host adapters: IBM FC 2412.
- Fabric products: IBM 2103 Model H07.

<u>The following items are not interoperable with the ESS Models E10 and E20</u>

- ESS API and ESS CLI.
- SDD: Boot Device Support.
- Operating Systems:
  - AIX 5.2, 5.3
  - HACMP 4.5.0., 5.1.0, 5.2.0
  - SuSE SLES 8 and 9.
- Servers:
  - 615 Models 6C3 and 6E3
  - BladeCenter
  - eServer p5
- Host adapters: FC6239, FC5716
- Fabric products:
  - Cisco MDS 9120, 9140, 9216, 9506 and 9509.
  - IBM 2005 B32, H08 and H16.
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Models: F32, M12, and M14.
  - IBM 3534 Model F08.
  - CNT FC/9000- 256, 2042-N16.
  - McDATA Intrepid 6140.
  - McDATA Sphereon 3216, 3232, 4300, and 4500.

Table 6: AIX and HACMP Support Matrix

	ESS Model 750	ESS Model 800	ESS Models F10 and F20	ESS Models E10 and E20	SDD
AIX 4.2.1 with HACMP 4.2.2	--	--	--	SCSI	--
AIX 4.3.3 with HACMP 4.2.2	--	--	--	SCSI	--
AIX 4.3.3 with HACMP 4.3.1	--	--	SCSI Fibre Channel	SCSI Fibre Channel	Yes
IX 4.3.3 with HACMP 4.4.0	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	Yes
AIX 4.3.3 with HACMP 4.4.1	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	Yes [1]
AIX 4.3.3 with HACMP 4.5.0	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.1 with HACMP 4.4.0	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	Yes
AIX 5.1 with HACMP 4.4.1	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	Yes [1]
AIX 5.1 with HACMP 4.5.0	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.2 with HACMP 4.5.0	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.1 with HACMP 5.1.0 [2]	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.2 with HACMP 5.1.0 [2]	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes [3]
AIX 5.1 with HACMP 5.2.0 [2]	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.2 with HACMP 5.2.0 [2]	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes
AIX 5.3 with HACMP 5.2.0 [2]	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	--	Yes

[1] RS/6000 SP with SDD and HACMP 4.4.1 requires AIX 5.1 with ESS LIC level 1.4.0, or later.

[2] AIX 5.1 and 5.2 requires APAR iY45695.

[3] Requires SDD V1.5.0.0 or later.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

9076 Models 2xx, 3xx, 4xx, 50x, 55x, and T70 with the following nodes:
 	
Micro Channel
• FC 2002: 62MHz Thin Node
• FC 2003: 66MHz Thin Node
• FC 2004: 66MHz Thin Node 2
• FC 2005: 77MHz Wide Node
• FC 2006: 604 High Node
• FC 2007: 35MHz Wide Node
• FC 2008: 120MHz Thin Node
• FC 2009: 604E High Node
• FC 2022: 160MHz Thin Node
 	
PCI
• FC 2050: 332 MHz SMP Single Thin
• FC 2051: 332 MHz SMP Wide Node
• FC 2052: POWER3 SMP Thin Node
• FC 2053: POWER3 SMP Wide Node
• FC 2054: POWER3 SMP High Node
• FC 2055: SP Expansion I/O Unit
• FC 2056: POWER3 375MHz SMP Thin
• FC 2057: POWER3 375MHz SMP Wide
• FC 2058: POWER3 375MHz SMP High
	AIX
	• Version 4
	  • 4.2.1 @
	  • 4.3.1 @
	  • 4.3.2 @
	  • 4.3.3 @
	• Version 5
	  • 5.1 [1]
	  • 5.2 [12]
	
	PSSP [2]
	• 3.1, 3.1.1
	• 3.2
		IBM RS/6000
		• FC 2412
		• FC 6204
		• FC 6207
		• FC 6209
			N/A

[1] Requires ESS LIC level 1.4.0, or later.

[2] Refer to Table 5 for additional PSSP information. Refer to Table 4 (pSeries and RS/6000 server section) for HACMP information.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

9076 Models 2xx, 3xx, 4xx, 50x, 55x, and T70 with the following PCI nodes:
• FC 2050: 332 MHz SMP Single Thin Node
• FC 2051: 332 MHz SMP Wide Node
• FC 2052: POWER3 SMP Thin Node
• FC 2053: POWER3 SMP Wide Node
• FC 2054: POWER3 SMP High Node
• FC 2055: SP Expansion I/O Unit
• FC 2056: POWER3 375MHz SMP Thin Node
• FC 2057: POWER3 375MHz SMP Wide Node
• FC 2058: POWER3 375MHz SMP High Node
	AIX
	• Version 4
	  • 4.3.3 @
	• Version 5
	  • 5.1 [1]
	  • 5.2 [8]
	  • 5.3 [10]
	
	PSSP [2]
	• 3.1.1
	• 3.2
	• 3.4
	• 3.5
		IBM RS/6000
		• FC 6227
		• FC 6228
		• FC 6239 [8]
			Cisco
			• MDS 9120 [8] and 9140 [8]
			• MDS 9216 [4]
			• MDS 9506 [7] and 9509 [4]
			
			CNT (Inrange)
			• FC/9000-64 [5], FC/9000-128 [5], and FC/9000-256 [6]
			• 2042-N16 [10]
			
			IBM
			• 2005 Model B32 [10]
			• 2005 Models H08 and H16 [9]
			• 2026 Model 224 [10]
			• 2027 Models 140 and 232 [10]
			• 2045 Model N16 [10]
			• 2103 Model H07 [3]
			• 2109 Models F16 and F32 [4]
			• 2109 Models M12 [4], M14 [9]
			• 2109 Models S08 and S16
			• 3534 Model F08 [4]
			
			McDATA
			• ED-5000
			• ES-3016 and ES-3032
			• Intrepid
			  • 6064
			  • 6140 [4]
			• Sphereon
			  • 3216 [4]
			  • 3232 [4]
			  • 4300 [8]
			  • 4500 [4]

[3] The IBM 2103 is supported for distance solutions only. Multiple initiators or targets on the same loop are not supported.

[4] Requires ESS LIC level 1.5.2, or later.

[5] Requires ESS LIC level 1.3.2.50, or later.

[6] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[7] Requires ESS LIC level 2.1.1, or later.

[8] Requires ESS LIC level 2.2.0, or later.

[9] Requires ESS LIC level 2.3.1, or later.

[10] Requires ESS LIC level 2.4.0 or later for the ESS Models 750 and 800 or ESS LIC level 2.3.1, or later for the ESS Models F10 and F20.

General Notes:

- Fibre channel: Requires ESS LIC level 1.2.0, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- ESS API – (CIM Agent):
  - LUN management: Available for AIX 5.1, 5.2 and 5.3. Requires CIM agent 1.1, or later, and ESS LIC level 2.1.1, or later.
  - Copy Services: Available for AIX 5.1, 5.2 and 5.3. Requires CIM agent 1.2, or later, and ESS LIC level 2.3.0, or later.
- ESS CLI:
  - Available for AIX 4.3.3, 5.1, 5.2 and 5.3.
  - Requires ESS LIC level 2.1.0, or later.
  - Not available for the ESS Models E10 and E20.
- CS CLI: Available for AIX 4.3.2, 4.3.3, 5.1, 5.2 and 5.3.
- SDD:
  - Available for AIX 4.3.3, or later.
  - Requires ESS LIC level 1.3.2.50, or later.
  - Refer to Table 5 for additional information.
- Path Control Module: Available for AIX 5.2 and AIX 5.3 MPIO with latest released maintenance levels.
- Boot device support:
  - The ESS is supported as a boot device on pSeries, RS/6000, and RS/6000 SP servers that support Fibre Channel boot capability. This support requires ESS LIC level 1.4.0, or later, and native Fibre Channel attachment to the ESS.

<u>The following items are not interoperable with the ESS Model 750 or 800:</u>

- Servers: Micro Channel Architecture (MCA) servers, including 7012-397, 7013-59x, 7013-Jx, 7015-99x, and 7015 Rxx.
- Operating systems: AIX 4.2.1, 4.3.1 and 4.3.2, HACMP 4.2.2 and 4.3.1.
- Host adapters: IBM FC 2412.
- Fabric products: IBM 2103 Model H07.

<u>The following items are not interoperable with the ESS Models E10 and E20:</u>

- ESS API.
- ESS CLI.
- Operating systems: HACMP 4.5.0, AIX 5.2, AIX 5.3.
- Fabric products:
  - Cisco MDS 9120, 9140, 9216, 9506, and 9509.
  - IBM 2005 B32, H08 and H16.
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Model F32, M12 and M14.
  - CNT FC/9000- 256, 2042-N16.
  - McDATA Intrepid 6140.
  - McDATA Sphereon 3216, 3232, 4300 and 4500

Table 7: AIX, PSSP, and SDD Support Matrix

	ESS Model 750	ESS Model 800	ESS Models F10 and F20	ESS Models E10 and E20	SDD Level	MPIO
AIX 4.3.2 with: • PSSP and RVSD 3.1.0 • GPFS 1.2	--	--	SCSI	SCSI	--	--
AIX 4.3.3 with: • PSSP and RVSD 3.1.1 • GPFS 1.2	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	1.2.1.3	--
AIX 4.3.3 with: • PSSP and RVSD 3.2 • GPFS 1.3 or 1.4	Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	SCSI Fibre Channel	1.2.1.3	--
AIX 5.1 with: • PSSP 3.4, 3.5 • GPFS 1.5, 2.1	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	1.3.1.1	--
AIX 5.2 [1] • GPFS 2.1 or 2.2 • RVSD 3.5 or 4.1	Fibre Channel	Fibre Channel	Fibre Channel	--	1.5.0.0	--
AIX 5.2 [1] • GPFS 2.2 • RVSD 3.5 or 4.1	Fibre Channel	Fibre Channel	Fibre Channel	--	1.5.1.0	2.0.1.0 [2]
AIX 5.3 • CSM 1.4	Fibre Channel	Fibre Channel	Fibre Channel	--	1.5.1.4	2.0.1.0

[1] Requires ESS LIC level 2.3.0 or later.

[2] Supported with AIX 5.2 and GPFS 2.2 PTF4. For specific levels of AIX device drivers and configuration information, refer to the GPFS FAQs at: http://publib.boulder.ibm.com/clresctr/library/gpfs_faqs.html

ESCON

Servers	Operating Systems	Host Adapters	Fabric Support
zSeries z800 • IBM 2066 zSeries z890 • IBM 2086 zSeries z900 and z990 • IBM 2064 • IBM 2084 S/390 Parallel Enterprise Server • IBM 9672 Generation 3 • IBM 9672 Generation 4 • IBM 9672 Generation 5 • IBM 9672 Generation 6 ES/9000 • IBM 9021 • IBM 9121 • IBM 9221 ES/3090 • IBM 3090 S/390 Multiprise 3000 Enterprise Server • IBM 7060 S/390 Multiprise 2000 Enterprise Server • IBM 2003	z/OS • Version 1 Release 1 @ • Version 1 Release 2 @ • Version 1 Release 3 • Version 1 Release 4 [1] • Version 1 Release 5 [7] z/OS.e • Version 1 Release 3 • Version 1 Release 4 [1] • Version 1 Release 5 [7] OS/390 • Version 1 Release 3, 4, 5, 6, 7, 8, 9, and 10 @ z/VM • Version 3 Release 1 @ • Version 4 Release 1 @ • Version 4 Release 2 @ • Version 4 Release 3 • Version 4 Release 4 [5] • Version 5 Release 1 [8] VM/ESA • Version 2 Release 2 , 3, and 4 @ VSE/ESA • Version 2 Release 1 @ • Version 2 Release 2 @ • Version 2 Release 3 @ • Version 2 Release 4 @ • Version 2 Release 5 @ • Version 2 Release 6 • Version 2 Release 7 Transaction Processing Facility (TPF) [2] • Version 4 Release 1 Linux • SuSE Linux Enterprise Server for S/390 • Turbolinux Server 6 for zSeries and S/390 • SuSE SLES 8 Submarine [3] • Red Hat Entterprise Linux 3.0 Update 2 [3] • SuSE SLES 9[3]	All ESCON host adapter features offered on the servers are supported.	IBM • 9032 Model 002 • 9032 Model 003 • 9032 Model 005

[1] Requires ESS LIC level 1.5.2, or later.

[2] In the TPF environment, PPRC and FlashCopy require ESS LIC level 1.5.0, or later.

[3] Requires ESS LIC level 2.3.1, or later for ESS Model F10 and F20, and ESS LIC level 2.4.0, or later, for ESS Model 750 or 800. Direct connect only.

FICON

Servers	Operating Systems	Host Adapters	Fabric Support

zSeries z800
• IBM 2066
 	
zSeries z890
• IBM 2086
 	
zSeries z900 and z990
• IBM 2064
• IBM 2084
 	
S/390 Parallel Enterprise Server
• IBM 9672 Generation 5
• IBM 9672 Generation 6
	z/OS
	• Version 1 Release 1 @
	• Version 1 Release 2 @
	• Version 1 Release 3
	• Version 1 Release 4 [1]
	• Version 1 Release 5 [7]
	
	z/OS.e
	• Version 1 Release 3
	• Version 1 Release 4 [1]
	• Version 1 Release 5 [7]
	
	OS/390
	• Version 2 Release 8 @
	• Version 2 Release 9 @
	• Version 2 Release 10 @
	
	z/VM
	• Version 3 Release 1 @
	• Version 4 Release 1 @
	• Version 4 Release 2 @
	• Version 4 Release 3
	• Version 4 Release 4 [5]
	• Version 5 Release 1 [8]
	
	VM/ESA
	• Version 2 Release 3 @
	• Version 2 Release 4 @
	
	VSE/ESA
	• Version 2 Release 3 @
	• Version 2 Release 4 @
	• Version 2 Release 5 @
	• Version 2 Release 6
	• Version 2 Release 7
	
	Transcription Processing Facility (TPF) [2]
	• Version 4 Release 1
	
	Linux
	• SuSE SLES 8 Submarine [7]
	• SuSE SLES 9[7]
	• Red Hat Entterprise Linux 3.0 Update 2 [7]
		zSeries
		• FC 2315
		• FC 2318
		• FC 2319
		• FC 2320
		
		S/390
		• FC 2314
		• FC 2316
			Cisco
			• MDS 9216 [6]
			• MDS 9506 [6]
			• MDS 9509 [6]
			
			CNT (Inrange)
			• FC/9000-64
			• FC/9000-128
			• FC/9000-256 [4]
			• 2042-N16 [8]
			
			IBM
			• 2027 Models 140 and 232 [8]
			• 2045 Model N16 [8]
			• 2109 Model M12 [5]
			• 2109 Model M14 [6]
			
			McDATA
			• ED-5000
			• Intrepid
			  • 6064
			  • 6140 [1]
			• Sphereon
			  • 3232 [5]

[4] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[5] Requires ESS LIC level 2.2.0, or later.

[6] Requires ESS LIC level 2.3.1, or later.

[7] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20. Supported with McData via direct connect only.

[8] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20.

Fibre Channel Protocol (FCP)

Servers	Operating Systems	Host Adapters	Fabric Support
zSeries z800 • IBM 2066 zSeries z890 • IBM 2086 zSeries z900 and z990 • IBM 2064 • IBM 2084	Linux • SuSE SLES 8 Submarine [8] z/VM • Version 5 Release 1 [9]	zSeries • FC 2315 • FC 2318 • FC 2319 • FC 2320	CNT (Inrange) • FC/9000-64 • FC/9000-128 • FC/9000-256 • 2042-N16 [8] IBM • 2045-N16 [8] • 2109 Model F16 • 2109 Models S08 and S16 McDATA • Intrepid 6064

[9] Requires ESS LIC level 2.4.2, or later, for ESS Models 750 and 800, and 2.3.3, or later, for the ESS models F10 and F20.

General Notes:

- FICON:
  - Requires ESS LIC level 1.4.0, or later.
  - FICON is not supported on the ESS Models E10 and E20.
- Fibre Channel Protocol (FCP):
  - Requires ESS LIC level 2.1.1, or later.
  - FCP is not supported on the ESS Models E10 and E20.
  - Multipath support is available with LVM.
- Copy Services: For Linux, copy services is only supported with SuSE SLES 8 Submarine and Red Hat Enterprise Linux 3.0.
- ESS API – CIM Agent: Not available for zSeries and S/390 operating systems.
- ESS CLI: Not available for zSeries and S/390 operating systems.
- CS CLI: Not available for zSeries and S/390 operating systems.

<u>The following items are not interoperable with the ESS Model 750 or 800:</u>

- Operating systems:
  - OS/390 levels 1.3, 2.4, 2.5, 2.6, 2.7, 2.8, and 2.9.
  - VM/ESA levels 2.2 and 2.3.
  - VSE/ESA levels 2.1, 2.2, and 2.3.

<u>The following items are not interoperable with the ESS Models E10 and E20:</u>

- FCP.
- FICON.
- Servers: z890
- Operating systems:
  - z/OS level 1.4.
  - z/OS level 1.5.
  - z/OS.e level 1.4
  - z/OS.e level 1.5.
  - z/VM level 4.4, z/VM level 5.1.
  - VSE/ESA level 2.7.
  - IBM eServer Integrated Platform for e-business on zSeries.
  - Linux: SuSE SLES 8, Red Hat Enterprise Linux 3.0.
- ESS copy services in the TPF environment.

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Fibre Channel

Servers

Pentium Pro or later 32 bit and 64 bit processors [9]

- 200 MHz processor or faster
- 128 MB memory or greater
- Excludes IBM Netfinity 3000

IBM eServer[8]

- 325/326
- BladeCenter HS20
  - 8678
  - 8832
  - 8843
- BladeCenter HS40
  - 8839

IBM xSeries Servers [8]

- 206
- 225/226
- 235/236
- 255
- 306
- 335/336
- 345/346
- 360/365
- 440/445
- 450/455

Operating Systems

Red Hat Linux

- 7.1 [1] @,7.2 [1] @, 7.3 [1] @

Red Hat Enterprise Linux

- 2.1 [2]
- 3.0 [12]
  - GPFS 2.2 [16]
  - VERITAS Volume Manager with DMP
    - 3.2 U5 [15]
  - VERITAS Cluster Server
    - 2.2 [13]

SuSE Linux

- 7.2 @, 7.3 @, Ent Serv 7 [3] @

SuSE SLES

- 8 [7]
  - GPFS 2.2 [16]
  - VERITAS Volume Manager with DMP
    - 3.2 U5 [15]
  - VERITAS Cluster Server
    - 2.2 [13]
- 9 [20]

Asianux 1.0

- Red Flag Linux DataCenter
  - v4.1 [17]

Red Flag Linux Advanced Server

- v4.1 [17]

Host Adapters

Emulex

- LP9002L / LP9002DC [4]
- LP9402DC [4]
- LP9802 [4]
- LP10000/10000DC [19]

QLogic

- QLA2300F
- QLA2310F / QLA2310FL [4]
- QLA2340/L / QLA2342/L [5]

IBM Netfinity/xSeries

- P/N 19K1246
- P/N 24P0960

Fabric Support

Cisco [11]

- MDS 9120 and 9140 [10]
- MDS 9216 [4], 9506 [9], 9509 [4]

CNT (Inrange)

- FC/9000-64, FC/9000-128
- FC/9000-256 [6]
- 2042-N16 [16]

IBM

- 2005 Model B32 [16]
- 2005 Models H08 and H16 [13]
- 2026 Model 224 [16]
- 2027 Models 140 and 232 [16]
- 2045 Model N16 [16]
- 2109 Models F16 and F32 [4]
- 2109 Model M12 [4], M14 [13]
- 2109 Models S08 and S16
- 3534 Model F08 [4]

IBM eServer BladeCenter

- P/N 02R9080 [10]
- P/N 26K6477
- P/N 48P7062
- P/N 90P0165

McDATA

- ED-5000, ES-3016, ES-3032
- Intrepid 6064 and 6140 [4]
- Sphereon
  - 3216 and 3232 [4]
  - 4300[10] and 4500 [4]

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[1] Red Hat 7.x requires kernel level 2.4.18-24.7xbigmen or 2.4.18-27.7xbigmen, and ESS LIC level 2.1.1, or later.

[2] Red Hat Enterprise Linux 2.1 requires kernel level 2.4.9-e48 (enterprise or summit for X440 server) and ESS LIC level 2.3.1, or later, for the ESS Model F10 or F20, and ESS LIC level 2.4.0, or later, for the ESS Model 750 or 800.

[3] SuSE Linux Enterprise Server 7 Update requires kernel level k_smp-2.4.18-224, and ESS LIC level 2.1.1, or later.

[4] Requires ESS LIC level 1.5.2, or later. However, a minimum level of 2.1.0 is recommended.

[5] Requires ESS LIC level 2.1.0, or later.

[6] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[7] Requires SP 3 kernel level k_smp-2.4.21-251 and ESS LIC level 2.3.1 or later.

[8] For information on OS and HBA support, refer to the following link: http://www.pc.ibm.com/us/compat/indexsp.html

[9] 64 bit processor support is only available for Red Hat Enterprise Linux 3.0 with ESS LIC Level 2.4.0 or later, on the ESS Models 750 or 800.

[10] Requires ESS LIC level 2.2.0, or later.

[11] Supports the IP Storage Service Module for iSCSI on Cisco MDS fabric products with ESS LIC level 2.1.0 or later. Refer to the following link for more details: ftp://service.boulder.ibm.com/storage/san/cisco/ipStorServMod.pdf

[12] Requires kernel level k_smp 2.4.21-20.EL or hugemem 2.4.21-20.EL and ESS LIC level 2.3.1, or later.

[13] Requires ESS LIC level 2.3.1, or later.

[15] Requires ESS LIC level 2.3.1, or later and fabric only. RAID 5 VERITAS software options are not supported.

[16] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20.

General Notes:

- Linux is interoperable with only the ESS Models F10, F20, 750, and 800.
- ESS API – (CIM Agent):
  - LUN management: Available for Red Hat Linux 7.2. Requires CIM agent 1.1, or later, and ESS LIC level 2.1.1, or later.
  - Copy services: Available for Red Hat Linux 7.2.[18] Requires CIM agent 1.2, or later, and ESS LIC level 2.3.0, or later.
- ESS CLI: Available for Red Hat 7.2 and 7.3, RedHat Enterprise Linux 3.0, and SuSE SLES 8.
- CS CLI: Available for Red Hat 7.2 and 7.3, RedHat Enterprise Linux 2.1 and 3.0 and SuSE SLES 8.
- SDD:
  - Available for Asianux, Red Flag, Red Hat 7.2, Red Hat Enterprise Linux 2.1 and 3.0, SuSE 7.3, SuSE Linux Enterprise Server 7, and SuSE SLES 8 and 9.
  - SDD is not supported on the eServer 325 and 326.
  - SDD cannot be run concurrently with VERITAS Volume Manager.
- Boot device support:
  - The ESS is supported as a boot device on Red Hat Enterprise Linux 2.1 and 3.0, and SuSE SLES 8 that supports Fibre Channel boot capability. This support requires ESS LIC level 2.3.1, or later, and is only supported with Qlogic adapters: QLA2300F, QLA2310F / QLA2310FL, QLA2340/L / QLA2342/L. This support is not available with the e325 server. SDD support is only available with Red Hat Enterprise Linux 3.0.

<u>The following items are not interoperable with the Model 750 or 800:</u>

- Operating systems: Red Hat Linux 7.1 and SuSE Linux 7.2.

[17] Requires ESS LIC level 2.4.0 for the ESS Models 750 and 800 and ESS LIC level 2.3.1, or later for the ESS Models F10 and F20 and kernel level 2.4.21-9.30AXsmp. Supported with QLogic QLA2310 and QLA234X adapters only.

[18] Requires JAVA-version 1.3.1_02.

[19] Only available for Red Hat Enterprise Linux 3.0 with ESS LIC Level 2.4.0 or later, on the ESS Models 750 or 800, or ESS LIC Level 2.3.1 or later on the ESS Models F10 or F20.

[20] Requires kernel level 2.6.5-7-139 and supports QLogic host adapters only. SLES 9 requires SDD, refer to the following link for additional restrictions: http://www-1.ibm.com/servers/storage/support/software/sdd/

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

Pentium Pro or later processors
• 200 MHz processor or faster
• 128 MB memory or greater
	Novell NetWare
	• 4.11 @
	• 4.2
	  • Standby Server
	• 5.0
	  • Cluster Services 1.00
	  • Cluster Services 1.01
	• 5.1
	  • Cluster Services 1.01
	• 6.0 [1]
		Adaptec
		• AHA-2944UW
		
		IBM xSeries / Netfinity
		• P/N 08L6517 [2]
		• P/N 59H3900
		
		QLogic
		• QLA1041
			N/A

[1] Requires ESS LIC level 1.5.2, or later.

[2] Host adapter IBM P/N 08L6517 includes an incorrect SCSI cable for ESS attachment. Order ESS feature number 9701 / 2801 (10 meter) or feature number 9702 / 2802 (20 meter) to obtain the correct SCSI cable to use this host adapter with the ESS.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Pentium Pro or later processors
• 200 MHz processor or faster
• 128 MB memory or greater
• Excludes IBM Netfinity 3000 and IBM PC Server 325
 	
IBM eServer [10]
• BladeCenter HS20
  • 8678
  • 8832
• BladeCenter HS40
  • 8839
 	
IBM xSeries Servers [10]
• 206
• 225/226
• 235/236
• 255
• 306
• 335/336
• 345/346
• 360/365
• 440/445
• 450/455
	Novell NetWare
	• 4.2
	  • Standby Server
	• 5.0
	  • Cluster Services 1.00
	  • Cluster Services 1.01
	• 5.1
	  • Cluster Services 1.01
	• 6.0 [1]
	  • Cluster Services 1.6
	• 6.5 [8]
	  • Cluster Services 1.70
		Emulex
		• LP9002L / LP9002DC [1]
		• LP9402DC [1]
		• LP9802 [1]
		• LP10000 / 10000DC [9]
		
		IBM xSeries / Netfinity
		• P/N 01K7297
		• P/N 00N6881
		• P/N 19K1246
		• P/N 24P0960
		
		QLogic
		• QLA2100F
		• QLA2200F
		• QLA2310F / QLA2310FL [1]
		• QLA2340/L / QLA2342/L [1]
			Cisco
			• MDS 9120 [7] and 9140 [7]
			• MDS 9216 [1]
			• MDS 9506 [6] and 9509 [1]
			
			CNT (Inrange)
			• FC/9000-64 [4], FC/9000-128 [4], and FC/9000-256 [5]
			• 2042-N16 [9]
			
			IBM
			• 2026 Model 224 [9]
			• 2027 Models 140 and 232 [9]
			• 2045 Model N16 [9]
			• 2103 Model H07 [3]
			• 2109 Models F16 and F32 [1]
			• 2109 Model M12 [1]
			• 2109 Models S08 and S16
			• 3534 Model 1RU [3]
			• 3534 Model F08 [1]
			
			IBM eServer BladeCenter
			• P/N 02R9080
			• P/N 26K6477
			• P/N 48P7062
			• P/N 90P0165
			
			McDATA
			• ED-5000
			• ES-3016 and ES-3032
			• Intrepid
			  • 6064 [4] and 6140 [4]
			• Sphereon
			  • 3216 [4] and 3232 [4]
			  • 4300 [7] and 4500 [1]

[3] Supported for distance solutions only. Multiple initiators or targets on the same loop are not supported.

[4] Requires ESS LIC level 1.5.2, or later, and NetWare 5.1, or later.

[5] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[6] Requires ESS LIC level 2.1.1, or later.

[7] Requires ESS LIC level 2.2.0, or later.

[8] Requires ESS LIC 2.4.0 or later for the ESS Models 750 or 800, and ESS LIC level 2.3.1 or later for the ESS Models F10 and F20.

[9] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20.

[10] For information on OS and HBA support, refer to the following link: http://www.pc.ibm.com/us/compat/indexsp.html

General Notes:

- Fibre Channel support: Requires ESS LIC level 1.3.0, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- Clustering support: Requires ESS LIC level 1.2.0, or later.
- ESS API – CIM Agent: Not available for NetWare.
- ESS CLI: Not available for NetWare.
- CS CLI:
  - Available for NetWare 4.2, 5.1, 6.0, or 6.5.
  - NetWare 6.0 requires ESS LIC 2.1.0, or later.
- SDD:
  - Refer to the *IBM TotalStorage Enterprise Storage Server, IBM TotalStorage SAN Volume Controller, IBM TotalStorage SAN Volume Controller for Cisco MDS 9000 Subsystem Device Driver's User's Guide* for support information when running NetWare 5.1, 6.0 and 6.5 with SDD.
  - Requires NetWare 5.1, or later, and ESS LIC level 2.1.0, or later.
  - Not interoperable with the Emulex LP9002L / LP9002DC, LP9402DC, and LP9802.
  - Not available for the ESS Model E10 and E20.
  - NetWare 6.0 cluster services supported on fibre channel only.
  - NetWare 6.5 supported on fibre channel only.

<u>The following items are not interoperable with the ESS Model 750 or 800:</u>

- Operating systems: NetWare 4.11 and 4.2.
- Host adapters:
  - IBM P/N 01K7297.
  - QLogic QLA1041 and QLA2100F.
- Fabric products:
  - IBM 2103 Model H07 and IBM 3534 Model 1RU.

<u>The following items are not interoperable with the ESS Models E10 and E20:</u>

- CS CLI: NetWare 6.0.
- SDD.
- Operating systems: NetWare 6.0, 6.5.
- Host adapters:
  - Emulex LP90002L, LP9002L / LP9002DC, LP9402DC , LP9802, and LP10000 / LP10000DC.
  - QLogic QLA2310F / QLA2310FL and QLA2340 / QLA2342L.
- Fabric products:
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Models F32, and M12.
  - IBM 3534 Model F08.
  - CNT FC/9000- 256, 2042-N16.
  - McDATA Intrepid 6140.
  - McDATA Sphereon 3216, 3232, 4300, and 4500
- Servers: BladeCenter.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Intel Pentium II Xeon and above[4]
• 900 Mhz or faster
• 2 – 16 processors
• 512 MB RAM or higher
	VMware [1, 5]
	• ESX 2.0.1@
	• ESX 2.5.0
	
	VMware guest support[3]
	• Windows 2000
	• Windows 2003
	• SuSE SLES 8 [2]
	• Red Hat Enterprise Linux 2.1 [2]
	• Red Hat Enterprise Linux 3.0 [2]
		Emulex
		• LP9402DC
		• LP9802
		
		QLogic
		• QLA2300F@
		• QLA2310F / QLA2310FL
		• QLA2340/L / QLA2342/L
		
		IBM Netfinity/ xSeries
		• P/N 19K1246
		• P/N 24P0960
			Cisco
			• MDS 9120
			• MDS 9140
			• MDS 9216
			• MDS 9506
			• MDS 9509
			
			IBM
			• 2026 Model 224
			• 2027 Models 140 and 232
			• 2109 Models F16 and F32
			• 2109 Model M12
			• 2109 Models S08 and S16
			• 3534 Model F08
			
			McDATA
			• ES-3016 and ES-3032
			• Intrepid
			  • 6064
			  • 6140
			• Sphereon
			  • 3216
			  • 3232
			  • 4300
			  • 4500

[1] Requires ESS LIC level 2.3.1 or later. Only fabric connections are supported. VMFS cannot be shared between servers.

[2] Refer to the Linux (Intel) section for supported kernel levels

[3] Windows 2000 Clustering for guest operating systems is only supported.

[4] For more information on server minimum requirements, please refer to: http://www.vmware.com/products/server/esx_specs.html.

[5] Restricted support is available for ESX 2.1.1. For more information, refer to: http://www.storage.ibm.com/disk/ess/ess800/additional_config.html.

General Notes:

- VMware is not available for the ESS Model E10 or E20
- ESS API – CIM Agent:
  - Not available for VMware.
- ESS CLI:
  - Not available for VMware.
- CS CLI:
  - Not available for VMware.
- SDD:
  - Not available for VMware.

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SCSI

Servers	Operating Systems	Host Adapters	Fabric Support
Pentium Pro or later 32 bit and 64 bit processors • 200 MHz processor or faster • 128 MB memory or greater	Microsoft Windows NT • Server 4.0 • Server 4.0, Enterprise Edition including Microsoft Cluster Server (MSCS) Microsoft Windows 2000 • Server • Advanced Server including Cluster service Microsoft Windows Server 2003 [6] • Standard Edition • Enterprise Edition including cluster service	Adaptec • AHA-2944UW IBM Netfinity/ xSeries • P/N 08L6517 [1] • P/N 59H3900 • P/N 19K1246 • P/N 24P0960 QLogic • QLA1041 Symbios • LSI8751D	N/A

[1] Host adapter IBM 08L6517 includes an incorrect SCSI cable for ESS attachment. Order ESS feature number 9701 / 2801 (10 meter) or feature number 9702 / 2802 (20 meter) to obtain the correct SCSI cable to use this host adapter with the ESS.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Pentium Pro or later 32 bit and 64 bit processors
• 200 MHz processor or faster
• 128 MB memory or greater
• Excludes IBM Netfinity 3000
 	
IBM eServer [7]
• 325/326
• BladeCenter HS20
  • 8678
  • 8832
  • 8843
• BladeCenter HS40
  • 8839
 	
IBM xSeries Servers [7]
• 206
• 225/226
• 235/236
• 255
• 306
• 335/336
• 345/346
• 360/365
• 440/445
• 450/455
	Microsoft Windows NT
	• Server 4.0
	• Server 4.0, Enterprise Edition including Microsoft Cluster Server (MSCS)
	
	Microsoft Windows 2000
	• Server
	• Advanced Server including Cluster service
	• Datacenter Server
	• VERITAS Volume Manager with DMP
	  • 3.1 [11]
	• VERITAS Cluster Server
	  • 3.1 [13]
	  • PPRC/VCS Agent
	
	Microsoft Windows Server 2003 [6]
	• Standard Edition
	• Enterprise Edition including cluster service
	• Datacenter Edition including cluster service
	• VERITAS Volume Manager with DMP
	  • 4.0 [12]
		Emulex
		• LP7000E
		• LP8000
		• LP9002L / LP9002DC [2]
		• LP9402DC [2]
		• LP9802 [2]
		• LP10000/10000DC [12]
		
		IBM Netfinity/xSeries
		• P/N 01K7297
		• P/N 00N6881
		• P/N 19K1246
		• P/N 24P0960
		
		QLogic
		• QLA2100F
		• QLA2200F
		• QLA2310F / QLA2310FL [2]
		• QLA2340/L / QLA2342/L [2]
			Cisco [10]
			• MDS 9120 and 9140
			• MDS 9216 [2]
			• MDS 9506 [8] and 9509 [2]
			
			CNT
			• FC/9000: 64 [4],128 [4], 256 [5]
			• 2042-N16 [13]
			
			IBM
			• 2005 Mode B32 [13]
			• 2005 Models H08, H16 [12]
			• 2026 Model 224 [13]
			• 2027 Models 140 & 232 [13]
			• 2045 Model N16 [13]
			• 2103 Model H07 [3]
			• 2109 Models F16 & F32 [2]
			• 2109 Model M12 [2], M14 [12]
			• 2109 Models S08 and S16
			• 3534 Model F08 [2], 1RU [3]
			
			IBM eServer BladeCenter
			• P/N 02R9080
			• P/N 26K6477
			• P/N 48P7062
			• P/N 90P0165
			
			McDATA
			• ED-5000
			• ES-3016 and ES-3032
			• Intrepid: 6064 and 6140 [2]
			• Sphereon:
			  • 3216 and 3232 [2]
			  • 4300 and 4500 [2]

[2] Requires ESS LIC level 1.5.2, or later.

[3] Supported for distance solutions only. Multiple initiators or targets on the same loop are not supported.

[4] Requires ESS LIC level 1.3.2.50, or later.

[5] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[6] Requires ESS LIC level 2.2.0, or later. Windows 2003 is not supported on the Emulex LP7000E, QLogic QLA2100F, and IBM P/N 01K7297 host adapters, and the Cisco fabric switches.

[7] For information on OS and HBA support, refer to the following link: http://www.pc.ibm.com/us/compat/indexsp.html

[8] Requires ESS LIC level 2.1.1, or later.

[10] Supported with the IP Storage Service Module for iSCSI on Cisco fabric products. Refer to the following link for more details: ftp://service.boulder.ibm.com/storage/san/cisco/ipStorServMod.pdf

[11] Requires ESS LIC level 2.3.1 or later. Supported for fabric connections only. Not supported with Host Adapters: Emulex LP7000E, Qlogic QLA21004, Fabric: Cisco, CNT, IBM 2103 Model H07, McDATA ED-5000, and Servers: BladeCenter.

[12] Requires ESS LIC level 2.3.1, or later. The LP10000/10000DC is not supported with Windows NT.

[13] Requires ESS LIC 2.4.0 or later for the ESS Models 750 or 800, and ESS LIC level 2.3.1 or later for the ESS Models F10 and F20.

General Notes:

- Fibre channel support: Requires ESS LIC level 1.2.0, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- ESS API – (CIM Agent):
  - LUN management: Available for Windows 2000 and Windows Server 2003. Requires CIM agent 1.1, or later, and ESS LIC level 2.1.1, or later.
  - Copy Services: Available for Windows 2000 and Windows Server 2003. Requires CIM agent 1.2, or later, and ESS LIC level 2.3.0, or later.
- ESS CLI:
  - Available for all levels of Windows 2000, and Windows Server 2003.
  - Requires ESS LIC level 2.1.0, or later.
  - Not available for the ESS Models E10 and E20.
- CS CLI: Available for all levels of Windows NT, Windows 2000, and Windows Server 2003.
- SDD:
  - Available for all levels of Windows NT and Windows 2000 and Windows 2003 (see additional notes on following page).
  - Load balancing is not available in Windows NT or Windows 2000 cluster configurations.
- Boot device support:
  - The ESS is supported as a boot device on Windows 2000 (32 bit) or Windows Server 2003 (32 bit or 64 bit) servers that support Fibre Channel boot capability. This support requires ESS LIC level 2.2.0, or later (for Windows 2000) or ESS LIC level 2.3.1, or later (for Windows Server 2003), with host adapters QLA23xx (32 bit or 64 bit) and LP9xxx (32 bit support only). Requires SDD level 1.4.0.0 (for Windows 2000) or 1.5.1.x (for Windows Server 2003). Refer to the IBM TotalStorage Enterprise Storage Server Host Systems Attachment Guide for additional information.

The following items are not interoperable with the ESS Model 750 or 800:

- Host adapters:
  - Emulex LP7000E.
  - IBM 01K7297.
  - QLogic QLA1041 and QLA2100F.
  - Symbios SYM8751D.
- Fabric products:
  - IBM 2103 Model H07.
  - IBM 3534 Model 1RU.

The following items are not interoperable with the ESS Models E10 and E20

- BladeCenter.
- ESS CLI.
- Operating systems:
  - Datacenter Server.
  - VERITAS Volume Manager with DMP
  - VERITAS Cluster Server
- Host adapters:
  - Emulex LP9002L / LP9002DC.
  - Emulex LP9802 and LP9402DC.
  - Emulex LP 10000/10000DC.
  - QLogic QLA2310F / QLA2310FL and QLA2340 / QLA2342L.
- ESS API, including Copy Services API.
- Fabric products:
  - Cisco MDS 9120, 9140, 9216, 9506, and 9509.
  - IBM 2005 Models B32, H08 and H16.
  - IBM 2026 Model 224.
  - IBM 2027 Models 140 and 232.
  - IBM 2045 Model N16.
  - IBM 2109 Models F32, M12 and M14.
  - IBM 3534 Model F08.
  - CNT FC/9000- 256
  - McDATA Intrepid 6140.
  - McDATA Sphereon 3216, 3232, 4300, and 4500.

General Notes (cont.):

- Windows NT
  - Enterprise Edition with Microsoft Cluster Server (MSCS) support requires ESS LIC level 1.3.0, or later.
- Windows 2000
  - Server and Advanced Server:
    - Requires ESS LIC Level 1.2.0, or later.
    - Advanced Server with Cluster service support requires ESS LIC level 1.3.0, or later.
    - When using SDD, Advanced Server with Cluster service support requires ESS LIC level 1.4.0, or later. The QLogic QLA2100F is not supported in this configuration.
  - Datacenter Server:
    - Requires ESS LIC level 1.5.0, or later.
    - When using SDD, Datacenter Server requires ESS LIC level 2.0.0, or later, for the ESS Model 800 and ESS LIC level 2.1.0, or later, for the ESS Models F10 and F20.
    - For a list of specific ESS configurations supported with Datacenter Server, refer to the Microsoft Hardware Compatibility Listing (HCL) at http://www.microsoft.com/hcl/. Enter “Enterprise Storage Server” and “All Product Categories” as the search criterion. Use the IBM RPQ process to request support for additional ESS configurations.
- Windows 2003
    - When using standard and clustering SDD configurations Windows 2003 64-bit requires ESS LIC level 2.3.0, or later.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support

Enterprise
• 220R, 250, 420R, 450
• 3000, 4000, 5000, 6000
• 3500, 4500, 5500, 6500
• 10000
 	
Netra
• 1125
 	
SPARCcenter / SPARCserver
• 1000, 1000E
• 2000, 2000E
 	
Ultra
• 1, 2, 5, 10, 20, 30, 60, 80
	Solaris
	• 2.5.1
	• 2.6
	  • VERITAS Volume Manager with DMP
	  • 3.1 and 3.2
	  • VERITAS Cluster Server
	  • 1.1.2 and 1.3
	• 7
	  • VERITAS Volume Manager with DMP
	  • 3.1 and 3.2
	  • VERITAS Cluster Server
	  • 1.1.2 and 1.3
	• 8
	  • VERITAS Volume Manager with DMP
	  • 3.1.1 and 3.2
	  • VERITAS Cluster Server
	  • 1.3
		Sun
		• X1062A
		• X1065A
		• X6541A
			N/A

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Enterprise
• 220R, 250, 420R, 450
• 3000, 4000, 5000, 6000
• 3500, 4500, 5500, 6500
• 10000
 	
Netra
• 1125
 	
SPARCcenter / SPARCserver
• 1000, 1000E
• 2000, 2000E
 	
Sun Fire
• V120 [1]
• V210 [11]
• V240 [11]
• V250 [11]
• V280R [1]
• V440 [11]
• V480 [1]
• V880 [1]
• V1280 [11]
• 3800 [1]
• 4800 [1], 4810 [1], 6800 [1]
• 120000 [2], 15000 [2]
 	
Ultra
• 1,2, 5, 10, 20, 30, 60, 80
	Solaris
	• 2.6
	  • VERITAS Volume Manager with DMP
	  • 3.1 and 3.2
	  • VERITAS Cluster Server
	  • 1.1.2, 1.3, and 2.0 [3]
	• 7
	  • VERITAS Volume Manager with DMP
	  • 3.1 and 3.2
	  • VERITAS Cluster Server
	  • 1.1.2, 1.3 and 2.0 [3]
	• 8
	  • Sun Cluster 3.0 [10]
	  • MPxIO 4.1, 4.2
	  • Sun Cluster 3.1 [13]
	  • MPxIO 4.2, 4.3
	  • VERITAS Volume Manager with DMP
	  • 3.1.1, 3.2, 3.5, and 4.0 [14]
	  • VERITAS Cluster Server
	  • 1.3 and 2.0
	  • 3.5 and 4.0 [14]
	  • PPRC/VCS Agent [14]
	• 9 [3, 7]
	  • Sun Cluster 3.0 [10]
	  • MPxIO 4.1, 4.2
	  • Sun Cluster 3.1 [13]
	  • MPxIO 4.2, 4.3
	  • VERITAS Volume Manager with DMP
	  • 3.5 and 4.0 [14]
	  • VERITAS Cluster Server
	  • 3.5 and 4.0 [14]
	  • PPRC/VCS Agent [14]
		AMCC / JNI [12]
		• FC64-1063-N
		• FCC-6562 / FCC2-6562 [3]
		• FCX-6562 / FCX2-6562 [3]
		• FCI-1063-N
		• FCE-1473-N [1]
		• FCE-6460-N [1]
		
		Emulex
		• LP8000
		• LP8000S [4]
		• LP9002C [3]
		• LP9002L / LP9002DC [1]
		• LP9002S [1]
		• LP9402DC [1]
		• LP9802 [1]
		
		QLogic
		• QLA2200F
		• QLA2310F/QLA2310FL [1]
		• QLA2340/L / QLA2342/L [1]
		• QCP2340 [9]
		
		Sun [10]
		• 6727A
		• 6757A
		• 6767A (SG-XPCI1FC-QF2)
		• 6768A (SG-XPCI2FC-QF2)
		• 6799A
			Cisco
			• MDS 9120 and 9140 [11]
			• MDS 9216 [1]
			• MDS 9506 [9] and 9509 [1]
			
			CNT (Inrange)
			• FC/9000-64 [6], -128 [6], -256 [8]
			• 2042-N16 [14]
			
			IBM
			• 2005 Model B32 [14]
			• 2005 Models H08 & H16 [14]
			• 2026 Model 224 [14]
			• 2027 Models 140 & 232 [14]
			• 2045 Model N16 [14]
			• 2103 Model H07 [5]
			• 2109 Models F16 and F32 [1]
			• 2109 Model M12 [1], M14 [14]
			• 2109 Models S08 and S16
			• 3534 Model F08 [1]
			
			McDATA
			• ED 5000,
			• ES-3016 and ES-3032
			• Intrepid
			  • 6064 and 6140 [1]
			• Sphereon
			  • 3216 and 3232 [1]
			  • 4300 [11] and 4500 [1]

[1] Requires ESS LIC level 1.5.2, or later.

[2] Requires ESS LIC level 2.0.0, or later, for the ESS Model 800 and ESS LIC level 2.1.0, or later, for the ESS Models F10 and F20.

[3] Requires ESS LIC level 2.1.0, or later.

[4] Requires ESS LIC level 1.5.0, or later.

[5] Supported for distance solutions only. Multiple initiators or targets on the same loop are not supported.

[6] Requires ESS LIC level 1.3.2.50, or later.

[7] The Sun filesystem requires patch113454-14, which requires ESS LIC level 2.3.0 or later. When using SDD, this patch requires SDD 1.5.0.4, or later.

[8] Requires ESS LIC level 2.1.0, or later, for the ESS Model 800, and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[9] Requires 2.1.1, or later.

[10] Requires ESS LIC level 2.2.0, or later. MPxIO is supported only with the Sun host adapters.

[11] Requires ESS LIC level 2.2.0, or later.

[12] Not interoperable with ESS Fibre Channel ports shared with PPRC over Fibre Channel configurations.

[13] Requires ESS LIC level 2.3.1, or later. MPxIO is supported only with the Sun host adapters.

[14] Requires ESS LIC level 2.4.0, or later, for the ESS Models 750 and 800, and ESS LIC level 2.3.1, or later, for the ESS Models F10 and F20.

General Notes:

- Fibre channel support: Requires ESS LIC level 1.3.0, or later.
- SCSI support: SCSI is not supported on the ESS Model 750.
- ESS API – CIM Agent: Not Available for Solaris.
- ESS CLI:
  - Available for Solaris 8.
  - Requires ESS LIC level 2.1.0, or later.
  - Not available for the ESS Models E10 and E20.
- CS CLI: Available for only Solaris 2.6, 7, 8, and 9.
- SDD:
  - Available for only Solaris 2.6, 7, 8, and 9. (SDD is not supported in Sun Cluster environments.)
  - Solaris 7, or later is required when using the Emulex LP8000.
  - In clustered configurations, VERITAS Cluster Manager and VERITAS Volume Manager with DMP should be used instead of SDD.
  - SDD does not support SUN adapters.
- VERITAS: Support for VERITAS Volume Manager is limited to Solaris 7 when using ESS LIC level 1.0.x, 1.1.x or 1.2.x.
- The following items are not interoperable with the ESS Model 750 or 800:
  - Operating systems: Solaris 2.5.1.
  - Fabric products: IBM 2103 Model H07.
- The following items are not interoperable with the ESS Models E10 and E20
  - ESS CLI.
  - Servers:
    - Sunfire V120, V210, V240, V250, V280R, V440, V480, V880, V1280, 3800, 4800, 4810, 6800, 12K, and 15K.
  - Host adapters:
    - JNI FCC2-6562, FCS-6562 / FCX2-6562, FCE-1473-N and FCE6460-N.
    - Emulex LP9002C, LP9002L / LP9002DC, LP9002S, and LP9402DC, and LP9802.
    - QLogic QLA2310F / QLA2310FL and QLA2340 / QLA2342L.
    - Sun 6727A, 6757A, 6767A, 6768A, and 6799A.
  - Operating Systems:
    - Sun cluster 3.1 and 4.0 and MPxIO, Veritas Cluster Server 3.5 and 4.0, Solaris 9.
  - Fabric products:
    - Cisco MDS 9120, 9140, 9216, 9506, and 9509.
    - IBM 2005 Models B32, H08 and H16
    - IBM 2026 Model 224.
    - IBM 2027 Models 140 and 232.
    - IBM 2045 Model N16.
    - IBM 2109 Models F32, M12, and M14.
    - IBM 3534 Model F08.
    - CNT FC/9000- 256
    - McDATA Intrepid 6140.
    - McDATA Sphereon 3216, 3232, 4300, and 4500.

ADDITIONAL STORAGE ATTACHMENT

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Macintosh G4 and G5	OS X 10.3	Apple
		• Fibre Channel PCI-X card
		  • 065-5136
		
		ATTO[1]
		• 3300
		• 3321
			IBM
			• 2109 Model F16
			• 2109 Model M12
			
			McDATA
			• Intrepid
			  • 6064

General Notes:

- DS Open API – (CIM Agent): Not available.
- DS CLI: Not available.
- SDD: Not available.

[1] Only one PCI slot on the G5 can be used with the ATTO Host Adapter.

SCSI

Servers	Operating Systems	Host Adapters	Fabric Support
AviiON • 4900 • 5000	DG/UX • 4.2	Adaptec • AHA-2944UW • AHA-4944W	N/A

General notes:

- ESS API – CIM Agent:
  - Not available for DG-UX
- ESS CLI:
  - Not available for DG-UX.
- CS CLI:
  - Not available for DG-UX.
- SDD:
  - Not available for DG-UX.
- Data General servers are not interoperable with the ESS Model 750 or 800.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support

Primepower
• 200, 250
• 400,450
• 650
• 800, 850
• 900
• 1000, 1500
• 2000, 2500
	Solaris
	• 2.6
	  • VERITAS Volume Manager with DMP
	  • 3.1 and 3.2
	• 8
	  • VERITAS Volume Manager with DMP
	  • 3.1.1, 3.2, and 3.5
		Emulex
		• LP8000
		• LP9002
			IBM
			• 2109 Model F16
			• 2109 Model S16

General Notes:

- Fujitsu Primepower requires ESS LIC level 2.3.0, or later.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support
2000 • E100 • E200 • E320 • E400, E410 • xSeries 430	ptx (DYNIX) [1] • 4.4.7, 4.4.8, 4.4.9, 4.4.10 • 4.5.1, 4.5.2, 4.5.3 • 4.6.1	IBM NUMA-Q • IOC-0210-54	IBM • 2109 Models S08 and S16

General Notes:

- NUMA-Q support requires ESS LIC level 1.2.1, or later.
- ESS API – CIM Agent:
  - Not available for ptx.
- ESS CLI:
  - Not available for ptx.
- CS CLI:
  - Available for all levels of ptx.
- SDD:
  - Not available for ptx.

- The following items are not interoperable with the ESS Model 750 or 800:
  - Operating systems:
    - ptx 4.4.7, 4.4.8, 4.4.9, and 4.4.10.
    - ptx 4.5.1 and 4.5.2.
    - ptx 4.6.1.

[1] ptx general notes:
- ptx 4.4.7, 4.4.8, 4.4.9, and 4.4.10 interoperability is available only via RPQ (NSBO).
- ptx 4.4.10 requires ESS LIC level 1.4.0, or later.
- ptx 4.5.1 requires service pack 3.

NAS Gateway[1]	Fabric Support
NAS Gateway 300 • 5196 Model G00 • 5196 Model G01 • 5196 Model G02[3] • 5196 Model G25 • 5196 Model G26 • 5196 Model G27[2] NAS Gateway 500 • 5198 Model 001[4]	Cisco [6] • MDS 9120, 9140, 9506, 9509. 9216 CNT • FC/9000 IBM • 2109 Models S08 and S16 [7] • 2109 Models F16, and F32 [5] • 2109 Model M12 [6] • 3534 Model F08 [6] McDATA • ED-5000 [7] • Intrepid 6064 and 6140 [6] • Sphereon 3216, 3232, 4300, and 4500 [6]

General Notes:

- The following items are not interoperable with the ESS Models E10 and E20
  - NAS Gateway 300
    - 5196 Model G00
    - 5196 Model G01
    - 5196 Model G02
    - 5196 Model G25
    - 5196 Model G26
    - 5196 Model G27
  - NAS Gateway 500
    - 5198 Model 001

[1] NAS interoperability requires ESS LIC level 1.3.2.49 or later. Higher levels may be required for specific models.

[2] Requires ESS LIC level 2.0.1, or later for the ESS Model 800 and ESS LIC level 1.5.2, or later, for the ESS Models F10 and F20.

[3] Requires ESS LIC level 1.5.2 or later.

[4] Requires ESS LIC level 2.3.0 or later.

[5] Requires ESS LIC level 1.5.2 for models of the NAS Gateway 300, and ESS LIC level 2.3.0 or later for models of the NAS Gateway 500.

[6] Not supported with the NAS Gateway 300.

[7] Not supported with the NAS Gateway 500.

Fibre Channel

Servers	Operating Systems	Host Adapters	Fabric Support
Origin Servers • 200 • 2100 • 2200 • 2400 • 2800	IRIX • 6.5.13 • 6.5.14 • 6.5.15 • 6.5.16 • 6.5.17	SGI • PCI-FC-1P-OPT • PCI-FC-1P-OPT-A • PCI-FC-1POPT-B [3] • PCX-FC-2POPT-B [3]	IBM[1] • 2109 Models S08 and S16 • 2109 Model F16 • 3534 Model F08

General Notes:

- SGI support requires ESS LIC level 2.1.1, or later.
- ESS API – CIM Agent:
  - Not available for IRIX.
- ESS CLI:
  - Not available for IRIX.
- CS CLI:
  - Not available for IRIX.
- SDD:
  - Not available for IRIX.

- <u>The following items are not interoperable with the ESS Models E10 and E20:</u>
  - SGI Servers
    - Origin 200, 2100, 2200, 2400, and 2800

[1] Cascaded switches are not supported.
[3] Requires ESS LIC level 2.2.0, or later.

APPENDIX A: ESS HOST ADAPTERS AND CABLES

Table 8: ESS Host Adapter Features

Feature Number	Features Description	Supported ESS Models	Minimum ESS LIC Level
3002	SCSI Host Adapter	Exx / Fxx / 800	1.0.0
3011	Standard ESCON Host Adapter	Exx / Fxx	1.0.0
3012	Enhanced ESCON Host Adapter	Fxx / 800	1.4.0
3013	64-bit ESCON Host Adapter	750 / 800	2.1.0
3019 [1]	Fibre Channel Host Adapter (interim NUMA-Q)	Exx / Fxx	1.1.0
3020 [1]	Fibre Channel Host Adapter (interim)	Exx / Fxx	1.1.0
3021	Fibre Channel / FICON Host Adapter (long wave)	Fxx	1.4.0
3022	Fibre Channel Host Adapter (short wave)	Exx / Fxx	1.2.0
3023	Fibre Channel / FICON Host Adapter (short wave)	Fxx	1.4.0
3024	2Gb Fibre Channel / FICON Host Adapter (long wave)	750 / 800	2.0.0
3025	2Gb Fibre Channel / FICON Host Adapter (short wave)	750 / 800	2.0.0

Table 9: ESS Fibre Channel / FICON Cable Features

Specify Feature	Optional Feature	Feature Description	Cable Length
9750	2850	9 micron Fibre Cable (SC connectors)	31 meters
9751	2851	9 micron Fibre Cable (SC / LC connectors)	31 meters
9752	2852	9 micron Fibre Cable (LC connectors)	31 meters
9753	2853	9 micron Fibre Cable (SC / LC connectors)	2 meters (pigtail)
9760	2860	50 micron Fibre Cable (SC connectors)	31 meters
9761	2861	50 micron Fibre Cable (SC / LC connectors)	31 meters
9762	2862	50 micron Fibre Cable (LC connectors)	31 meters
9763	2863	50 micron Fibre Cable (SC / LC connectors)	2 meters (pigtail)

Table 10: ESS SCSI Cable Features

Specify Feature	Optional Feature	Feature Description	Cable Length
9701	2801	Ultra SCSI	10 meters
9702	2802	Ultra SCSI	20 meters
9703	2803	SCSI-2 Fast/Wide	10 meters
9704	2804	SCSI-2 Fast/Wide	20 meters
9705	2805	SCSI-2 Fast/Wide (AS/400)	10 meters
9706	2806	SCSI-2 Fast/Wide (AS/400)	20 meters
9707	2807	SCSI-2 Fast/Wide (Sun PCI/HP PCI dual port)	10 meters
9708	2808	SCSI-2 Fast/Wide (Sun PCI/HP PCI dual port)	20 meters
9709	2809	SCSI-2 Fast/Wide (HP single port)	10 meters
9710	2810	SCSI-2 Fast/Wide (HP single port)	20 meters

[1] Withdrawn from marketing.

APPENDIX B: HOST ADAPTER PRODUCTS

Table 11: SCSI Host Adapters

Adapter	Description	ESS Cable Feature
Adaptec AHA-2944UW	PCI-to-Ultra Wide Differential SCSI Host Adapter	9701 or 9702
Adaptec AHA-4944W	Quad Channel PCI-to-Fast and Wide Differential SCSI Host Adapter	9701 or 9702
Hewlett-Packard A4800A	Fast/Wide Ultra Differential SCSI-2 (PCI)	9709 or 9710
Hewlett-Packard A4107A	Fast/Wide Differential SCSI-2 (HP-HSC)	9703 or 9704
Hewlett-Packard A2969A	20 MB Fast/Wide Differential SCSI-2 (HP-HSC)	9703 or 9704
Hewlett-Packard A5159A	Dual Port Fast/Wide Differential SCSI-2 (PCI)	9707 or 9708
Hewlett-Packard 28696A	Fast/Wide Differential SCSI-2 (HP-PB)	9703 or 9704
IBM AS/400 FC 6501	Tape/Disk Device Controller	9705 or 9706
IBM Netfinity P/N 59H3900	3449 Adapter Card	9701 or 9702
IBM Netfinity P/N 08L6517	Adapter card + cable + terminator	9701 or 9702
IBM RS/6000 FC 2412	Enhanced SCSI-2 Differential Fast/Wide Adapter/A	9703 or 9704
IBM RS/6000 FC 6204	PCI Universal Differential Ultra SCSI Adapter	9701 or 9702
IBM RS/6000 FC 6207	PCI Differential Ultra SCSI Adapter	9701 or 9702
IBM RS/6000 FC 6209	PCI SCSI-2 Fast/Wide Differential Adapter	9703 or 9704
QLogic QLA1041	PCI-to-Ultra SCSI Host Adapter	9701 or 9702
Storage Works KZPBA-CB	Ultra SCSI Differential Adapter (PCI)	9701 or 9702
Sun X1062A	SCSI-2 Fast/Wide Differential (SBus)	9701 or 9702
Sun X1065A	Ultra SCSI (SBus)	9701 or 9702
Sun X6541A	Ultra SCSI-2, Fast/Wide Differential Dual Channel (PCI)	9707 or 9708
Symbios SYM8751D	PCI-to-Fast/Ultra Wide Differential SCSI Host Adapter	9701 or 9702

Table 12: Fibre Channel Host Adapters

Adapter	Description
Emulex LP7000E	LightPulse Fibre Channel PCI Host Adapter (32 bit)
Emulex LP8000	LightPulse Fibre Channel PCI Host Adapter (1Gb)
Emulex LP8000S	LightPulse Fibre Channel SBus Host Adapter (1Gb)
Emulex LP9000C	LightPulse Fibre Channel cPCI Host Bus Adapters (2Gb)
Emulex LP9002L	LightPulse Fibre Channel PCI Host Adapter (2Gb)
Emulex LP9002DC	Light Pulse Fibre Channel PCI Host Adapter (2Gb) (two ports)
Emulex LP9002S	LightPulse Fibre Channel SBus Host Adapter (2Gb)
Emulex LP9402DC	LightPulse Fibre Channel PCI-X Host Adapter (2Gb) (two ports)
Emulex LP9802	LightPulse Fibre Channel PCI-X Host Adapter (2GB)
Emulex LP10000	LightPulse Fibre Channel PCI-X Host Adapter (2Gb)
Emulex LP10000DC	LightPulse Fibre Channel PCI-X Host Adapter (2Gb) (two ports)
Hewlett-Packard A3404A	1063 Mbps Fibre Channel K Class Adapter (HP-HSC)
Hewlett-Packard A3591B	1062 Mbps Fibre Channel Adapter (HP-HSC)
Hewlett-Packard A5158A	PCI Tachlite Fibre Channel Adapter
Hewlett-Packard A6684A	HSC Tachlite Fibre Channel Adapter
Hewlett-Packard A6685A	HSC Tachlite Fibre Channel Adapter
Hewlett-Packard A6795A	PCI Tachlite 2Gb Fibre Channel Adapter
Hewlett-Packard A6826A	PCI 2Gb Fibre Channel Adapter
Hewlett-Packard A9782A	PCI-x 2Gb Fibre Channel Adapter
IBM iSeries FC 0612	Linux Direct Attachment
IBM iSeries FC 0625	PCI-x Fibre Channel Adapter
IBM iSeries FC 0626	Linux Direct Attachment
IBM iSeries FC 2766	PCI Fibre Channel Disk Controller
IBM iSeries FC 2787	PCI Fibre Channel Disk Controller
IBM Netfinity P/N 01K7297	Netfinity PCI Fibre Channel Adapter
IBM Netfinity P/N 00N6881	Netfinity FAStT Host Adapter
IBM NUMA-Q IOC-0210-54	Fibre Channel PCI Adapter
IBM pSeries FC 5716	Fibre Channel Adapter 64-bit for PCI-x Bus (2 Gb)
IBM pSeries FC 6227	Fibre Channel Adapter for PCI Bus
IBM pSeries FC 6228	Fibre Channel Adapter 64-Bit for PCI Bus (2Gb)
IBM pSeries FC 6239	Fibre Channel Adapter 64-bit for PCI Bus (2Gb)
JNI FC64-1063-N	FibreStar 64-Bit SBus Fibre Channel Host Bus Adapter
JNI FCC-6562	FibreStar CompactPCI-to-Fibre Channel Host Bus Adapter (2Gb)
JNI FCC2-6562	FibreStar CompactPCI-to-Fibre Channel Host Bus Adapter (2Gb) (two ports)
JNI FCX-6562	FibreStar PCI-X-to-Fibre Channel Host Bus Adapter (2Gb)
JNI FCX2-6562	FibreStar PCI-X-to-Fibre Channel Host Bus Adapter (2Gb) (two ports)
JNI FCI-1063-N	FibreStar 32-Bit PCI-to-Fibre Channel Host Bus Adapter
JNI FCE-1473-N	FibreStar 2Gb 64-bit SBus-to-Fibre Channel Host Bus Adapter
JNI FCE-6460-N	FibreStar 2Gb 64-bit PCI-to-Fibre Channel Host Bus Adapter
QLogic QCP2340	64-Bit 66MHz PCI 2Gb Fibre Channel Adapter
QLogic QLA2100F	64-Bit PCI-to-Fibre Channel Adapter

Table 12: Fibre Channel Host Adapters (cont.)

Adapter	Description
QLogic QLA2200F	64-Bit PCI-to-Fibre Channel Adapter (33MHz or 66 MHz)
QLogic QLA2300F	65-Bit PCI-to-Fibre Channel Adapter (66MHz)
QLogic QLA2310F	66MHz PCI-X Fibre Channel Adapter
QLogic QLA2310FL	66MHz PCI-X Fibre Channel Adapter (low profile)
QLogic QLA2340/L	133MHz PCI-X Fibre Channel Adapter (low profile)
QLogic QLA2342/L	133MHz PCI-X Fibre Channel Adapter (two ports; low profile)
SGI PCI-FC-1P-OPT	Optical SW 1GB Fibre Channel Adapter
SGI PCI-FC-1P-OPT-A	Optical SW 1GB Fibre Channel Adapter
SGI PCI-FC-1POPT-B	Optical SW 2 GB Fibre Channel Adapter
SGI PCX-FC-2POPT-B	Optical SW 2GB Fibre Channel Adapter (two ports)
StorageWorks KGPSA-BC	64-bit / 33 MHz PCI-to-Fibre Channel Host Bus Adapter
StorageWorks KGPSA-CA	64-bit / 33 MHz PCI-to-Fibre Channel Host Bus Adapter
StorageWorks KGPSA-DA	64-bit / 66MHz PCI 2Gb Fibre Channel Adapter
StorageWorks KGPSA-EA	PCI-x 2Gb Fibre Channel Adapter
Sun 6727A	64-Bit PCI-to-Fibre Channel Adapter (33MHz or 66 MHz) (dual port)
Sun 6757A	25 MHz SBus Fibre Channel Adapter (dual port)
Sun 6767A (SG-XPCI1FC-QF2)	66MHz PCI-X 2Gb Fibre Channel Adapter
Sun 6768A (SG-XPCI2FC-QF2)	133MHz PCI-X 2Gb Fibre Channel Adapter (two ports; low profile)
Sun 6799A	64-Bit PCI-to-Fibre Channel Adapter (33MHz or 66 MHz)

Fibre Channel / FICON Intermix

The ESS supports Fibre Channel / FICON intermix. With intermix, both FCP (Fibre Channel Protocol) and FICON upper level protocols can be supported within the same director when deployed independently by port.

For specific support, implementation details and operational information for using intermix, refer to the Fibre Channel Director websites.

Table13: SAN Fabric Products

Product	IBM Machine Type and Model or Part Number	Description
Cisco MDS 9120	IBM 2061 Model 020	Cisco Multilayer Fabric Switch (2Gb, 20-port)
Cisco MDS 9140	IBM 2061 Model 040	Cisco Multilayer Fabric Switch (2Gb, 40-port)
Cisco MDS 9216	IBM 2062 Model D01	Cisco Multilayer Fabric Switch (2Gb, 48-port)
Cisco MDS 9506	IBM 2062 Models D04 / T04	Cisco Multilayer Director (2Gb, 128-port)
Cisco MDS 9509	IBM 2062 Models D07 / T07	Cisco Multilayer Director (2Gb, 224-port)
CNT (INRANGE) FC/9000-64	IBM 2042 Model 001	CNT (INRANGE) FC/9000 Fibre Channel Director (2Gb, 64-port)
CNT (INRANGE) FC/9000-128	IBM 2042 Model 128	CNT (INRANGE) FC/9000 Fibre Channel Director (2Gb, 128-port)
CNT (INRANGE) FC/9000-256	IBM 2042 Model 256	CNT (INRANGE) FC/9000 Fibre Channel Director (2Gb, 256-port)
CNT UMD	IBM 2042 Model N16	CNT Ultranet Multi-service Director (2Gb, 256-port)
IBM 2005 Model B32		IBM TotalStorage SAN32B-2 (4Gb, 32-port)
IBM 2005 Model H08	P/N 2005H08	IBM TotalStorage SAN Switch (2Gb, 8-port)
IBM 2005 Model H16	P/N 2005H16	IBM TotalStorage SAN Switch (2Gb, 16-port)
IBM 2026 Model 224		IBM TotalStorage SAN24M-1 (2Gb, 24-port)
IBM 2027 Model 140		IBM TotalStorage SAN140M (2Gb, 140-port)
IBM 2027 Model 232		IBM TotalStorage SAN32M-1 (2Gb, 32-port)
IBM 2045 Model N16		IBM TotalStorage SAN256N (2Gb, 256-port)
IBM 2103 Model H07		IBM Fibre Channel Storage Hub
IBM 2109 Model F16	P/N 2109F16	IBM TotalStorage SAN Switch (2Gb, 16-port)
IBM 2109 Model F32		IBM TotalStorage SAN Switch (2Gb, 32-port)
IBM 2109 Model M12	P/N 2109M12	IBM TotalStorage SAN Switch (2Gb, 64-port)
IBM 2109 Model M14	P/N 2109M14	IBM TotalStorage SAN Switch (2Gb, 128-port)
IBM 2109 Model S08	P/N 2109S08	IBM TotalStorage SAN Switch (1Gb, 8-port)
IBM 2109 Model S16	P/N 2109S16	IBM TotalStorage SAN Switch (1Gb, 16-port)
IBM 3534 Model F08	P/N 3534F08	IBM TotalStorage SAN Switch (2Gb, 8-port)
IBM 3534 Model 1RU	P/N 35341RU	IBM TotalStorage SAN Managed Hub
IBM eServer BladeCenter	P/N 48P7062	BladeCenter 2 Pt Fibre Channel Switch Module
IBM eServer BladeCenter	P/N 02R9080	BladeCenter HS20 Optical Pass Thru Module
IBM eServer BladeCenter	P/N 90P0165	BladeCenter Internal Brocade Switch
McDATA ES-3016	IBM 2031 Model 016	McDATA ES-3016 Fabric Switch (1Gb, 16-port)
McDATA ES-3032	IBM 2031 Model 032	McDATA ES-3016 Fabric Switch (1Gb, 32-port)
McDATA Sphereon 3216	IBM 2031 Model 216	McDATA Sphereon Fabric Switch (2Gb, 16-port)

Table13: SAN Fabric Products (cont:)

Product	IBM Machine Type and Model or Part Number	Description
McDATA Sphereon 3232	IBM 2031 Model 232	McDATA Sphereon Fabric Switch (2Gb, 32-port)
McDATA Sphereon 4300	IBM 2034 Model 212	McDATA Sphereon Fabric Switch (2Gb, 12-port)
McDATA Sphereon 4500	IBM 2031 Model 224	McDATA Sphereon Fabric Switch (2Gb, 24-port)
McDATA ED-5000	IBM 2032 Model 001	McDATA ED-5000 Fibre Channel Director
McDATA Intrepid 6064	IBM 2032 Model 064	McDATA Intrepid 6064 Director (2Gb, 64-port)
McDATA Intrepid 6140	IBM 2032 Model 140	McDATA Intrepid 6140 Director (2Gb, 140-port)

November 17, 2004

Unless stated otherwise, these items require ESS LIC level 2.4.0, or later.

Operating Systems, Path Management, and Clustering
- SuSE SLES 9: (pSeries, eServer p5, eServer i5, Intel (Linux))
- Red Hat Enterprise Linux 3.0: (pSeries, eServer p5, eServer i5)
- pSeries: AIX 5.3 MPIO Path Control Module
- z/VM 5.1: zSeries
- AIX 5.3: RS/6000 SP

Host Adapters
- Emulex LP10000/10000DC: Intel (NetWare)
- IBM iSeries FC 0625

SAN Fabric
- IBM 2026 Model 224: Hewlett-Packard (HP-UX), iSeries, pSeries, Intel (Linux, Netware, VMWare, Windows), Sun
- IBM 2027 Models 140 and 232: Hewlett-Packard (HP-UX), iSeries,pSeries, zSeries(FICON), Intel (Linux, Netware, VMWare, Windows), Sun
- IBM 2045 Model N16: Hewlett-Packard (HP-UX), iSeries, pSeries, z/Series(FICON, FCP), Intel (Linux, Netware, Windows), Sun
- IBM 2042 Model N16: z/Series(FCP)
- IBM 2005 Model B32: Hewlett-Packard (HP-UX), iSeries, pSeries, Intel (Linux, Windows), Sun

Servers
- IBM eServer p5 (Models 590 and 595)
- IBM eServer i5 (Model 595)

July 30, 2004

Unless stated otherwise, these items require ESS LIC level 2.4.0, or later.

Operating Systems, Path Management, and Clustering
- AIX 5.3 (pSeries)
- GPFS: Intel (Linux)
- HACMP 5.2.0 (pSeries)
- SuSE SLES 8: zSeries (ESCON/FICON)
- Red Hat Enterprise Linux: zSeries (ESCON/FICON), eServer 325
- Red Flag Linux (Intel)
- VERITAS Cluster Server: Windows 2000
- PPRC/VCS: Intel (Windows 2000), Sun (Solaris)
- VMWare: Guest support for Windows 2003, Red Hat Enterprise Linux 3.0

Host Adapters
- IBM pSeries FC 5716
- HP A6826A: Hewlett-Packard (HP-UX)
- HP A9782A: Hewlett-Packard (HP-UX)
- Storage Works KGPSA-EA: Hewlett-Packard (OpenVMS, Tru64)
- IBM Netfinity/xSeries P/N 19K1246, P/N 24P0960: Linux(Intel)
- Emulex 10000/10000DC: Linux(Intel)

Servers
- IBM eServer p5
- BladeCenter (Novell)

May 28, 2004

Unless stated otherwise, these items require ESS LIC level 2.4.0, or later.

Operating Systems, Path Management, and Clustering
- i5/OS V5 R3 (iSeries)
- HP/UX 11iV2
- VERITAS Cluster Server: Intel (Linux)
- Novell Netware 6.5
- VERITAS Volume Manager 4.0: Intel (Windows Server 2003)
- Windows Server 2003 Boot Support
- z/OS and z/OS.e Version 1 Release 5

ESS Copy Services
- Cisco IP Storage Service Module support for XRC with FICON

- Cisco CWDM support for XRC with FICON
- ESS CLI and CS CLI: Intel (Red Hat Advanced Server 3.0)

Host Adapters
- Emulex LP10000/10000DC: Intel (Windows)

SAN Fabric
- IBM 2109 M14 (pSeries, RS/6000 SP, iSeries, HP, Intel (Linux, Windows), and Sun)
- IBM 2005 H08 and H16 (pSeries, RS/6000 SP, iSeries, HP, Intel (Linux, Windows), and Sun)
- zSeries: IBM 2109 M14 FICON support
- zSeries: CISCO MDS 9216, 9506, 9509 FICON support

Servers
- IBM eServer i5
- IBM eServer BladeCenter JS20
- IBM eServer 325
- Hewlett-Packard Integrity Servers
- Hewlett-Packard AlphaServers ES45, ES47

April 20, 2004

Unless stated otherwise, these items require ESS LIC level 2.4.0, or later.

ESS Copy Services
- Asynchronous PPRC (PPRC Global Mirror)

April 7, 2004

Unless stated otherwise, these items require ESS LIC level 2.3.1, or later.

Servers
- ZSeries: Model z890

February 9, 2004

Unless stated otherwise, these items require ESS LIC level 2.3.1, or later.

Operating Systems, Path Management, and Clustering
- Intel (Linux) Boot Support
- Support for Microsoft Volume Shadow Copy Service
- VERITAS Volume Manager: Intel (Windows)
- Sun Cluster 3.1
- VMWare ESX 2.0.1

ESS Copy Services
- ADVA FSP 2000 support for PPRC over Fibre
- Cisco CWDM Distance Solution support for PPRC over Fibre
- Cisco IP Storage Service Module support for PPRC over Fibre

Gateways
- NAS Gateway 500

Fabric
- McDATA Sphereon 4300 (pSeries, RS/6000 SP, iSeries, HP, Intel (Linux, Netware, Windows), and Sun)
- zSeries: IBM 2109 M12 FICON support
- zSeries: McDATA Sphereon 3232 FICON support
- iSeries: CISCO MDS 9120, 9140, 9216, 9506, 9509 support
- iSeries: IBM 2109 F32 and M12

Servers
- IBM TotalStorage SAN Volume Controller for CISCO MDS9000
- Sun Fire V210, V240, V250, V440, V1280

Host Adapters
- Sun 6757A