IBM TotalStorage Product Guide

TotalStorage

DS4300

Strategic storage imperatives

Information technology is the lifeblood of any business, especially today when organizational performance depends on information on demand. Business accountability hinges on it, laws and regulations mandate it, customers demand it and effective business processes rely on it. With information on demand, businesses can respond quickly with the flexibility to meet customer requirements, market opportunities or external threats. But as utterly valuable as information on demand has become, it also has become more costly to store, maintain and protect.

A comprehensive approach to the challenges of providing information on demand

To meet these challenges, IBM® has taken a holistic approach to the problem, looking well beyond storage products alone to help you share, manage and protect your data. To provide complete solutions for businesses using the on demand model, IBM has addressed three areas of IT.

Infrastructure simplification

Few would question the statement that IT infrastructures have grown more complex in recent years. The dramatic growth in the use of IT, combined with distributed computing architectures, is part of the reason. But business processes have also become more complex and integrated too, driving a greater need for complex interconnections among systems.

The added complexity that accompanies growth can stand in the way of fully realizing the benefits of IT. *Infrastructure simplification* is a way to look at the entire IT operation and help eliminate the complexity that can raise costs, reduce reliability and create dependencies on specialized skills—factors making it harder to operate as an on demand business.

Three proven methods for simplifying an IT infrastructure are consolidation, virtualization and automated management. Each technique can be applied to all areas that compose an IT operation—servers, storage and networks.

Within the storage arena, consolidation can include reducing the number of data centers and sharing fewer large-capacity storage systems among a greater number of application servers. Consolidated resources can cost less and can be easier to share and protect.

Storage virtualization involves a shift in thinking from physical to logical—treating storage as a logical pool of resources, not individual devices. Not only can this help simplify the storage environment, but it also can help increase utilization and availability.

The storage arena is ripe with opportunities to lower administrative costs through automation. Once tasks are automated, administrators can deal with more strategic issues. In addition, automation can help reduce errors and contribute to higher system performance.

Business continuity

On demand businesses rely on their IT systems to conduct business. Everything must be working all the time. Nothing less is acceptable. A sound and comprehensive *business continuity* strategy encompasses high availability, near continuous operations and disaster recovery. For each of these areas, the IBM TotalStorage® Resiliency Family includes a comprehensive set of products that are compatible with multiple platforms.

Information lifecycle management

The primary goal of *information lifecycle management* (ILM) techniques is to optimize the storage and management of information based on its value to your business. An ILM process can help a business maximize the value of information, from the moment of its creation to the moment of its disposal. Corporate governance policies, business processes and compliance guidelines all influence ILM policies.

The primary capabilities from IBM that support ILM include optimized storage environments with tiered storage platforms, policy-based retention management software, content and records management applications, and non-erasable, non-rewritable media. The potential benefits to your business include improved risk management, optimum storage utilization, better handling of compliance issues and lower costs.

Storage Area Network (SAN) Products

Entry SAN switches for easy-to-use SMB solutions

2005-H08 IBM TotalStorage SAN Switch H08
- Provides SAN switching for IBM @server® xSeries®, iSeries™ and pSeries®. Entry 4 to 8-port, 1 and 2 Gbps fabric switch for Windows® and UNIX®, includes zoning, Fabric Watch and WEBTOOLS

2006-L10 IBM TotalStorage Storage Switch L10
- Provides storage switching for IBM @server xSeries and IBM @server BladeCenter™. Entry 4 to 10-port, 1 or 2 Gbps storage switch for Windows and Linux®, includes zoning and integrated Web server

2026-E12 IBM TotalStorage SAN12M-1
- Provides SAN switching for Intel® processor-based servers, IBM @server iSeries and pSeries. Entry 4, 8, 12-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes zoning, SANpilot and 4-port FlexPort upgrades

2034-212 McDATA 4300 Fabric Switch
- Provides SAN switching for IBM @server xSeries. Entry 4, 8, 12-port, 1 and 2 Gbps fabric switch for Windows and Linux, includes zoning, SANpilot and 4-port FlexPort upgrade options

Midrange SAN switches for scalable SMB and enterprise solutions

2005-H16 IBM TotalStorage SAN Switch H16
- Provides SAN switching for IBM @server xSeries, iSeries and pSeries. Midrange 8 to 16-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes zoning, Fabric Watch and WEBTOOLS

2109-F16 IBM TotalStorage SAN Switch F16
- Provides SAN switching for IBM @server xSeries, iSeries and pSeries. Midrange 8 to 16-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes zoning, Fabric Watch and WEBTOOLS

2109-F32 IBM TotalStorage SAN Switch F32
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Midrange 16 to 32-port, 1 and 2 Gbps fabric and FICON® switch for Windows, Linux, UNIX and z/OS® includes zoning, Fabric Watch and WEBTOOLS

2026-224 IBM TotalStorage SAN24M-1
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries and pSeries. Entry 8, 16, 24-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes zoning, SANpilot and 8-port FlexPort upgrades

2026-232 IBM TotalStorage SAN32M-1
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries®. Midrange 8 to 32-port, 1 and 2 Gbps fabric and FICON switch for Windows and UNIX and z/OS, includes zoning, SANpilot

2061-020 Cisco MDS 9120 Fabric Switch
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries and pSeries. Midrange 4 to 20-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes Virtual SAN and Cisco Fabric Manager

2061-040 Cisco MDS 9140 Fabric Switch
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries and pSeries. Midrange 4 to 40-port, 1 and 2 Gbps fabric switch for Windows and UNIX, includes Virtual SAN and Cisco Fabric Manager

2062-D1A Cisco 9216A; 2062—D1H

Cisco 9216i Multilayer Fabric Switch
- Provides SAN switching for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Midrange 16-port, 1 and 2 Gbps fabric and FICON switch for Windows, Linux, UNIX and z/OS server, includes one module slot, Virtual SAN and Cisco Fabric Manager. 9216i provides 14 Fibre Channel and 2 Gigabit Ethernet ports

Enterprise SAN directors for high availability and scalability enterprise solutions

2109-M12 IBM TotalStorage SAN Switch M12
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides one or two 16 to 64 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2109-M14 IBM TotalStorage SAN Switch M14
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 128 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2027-140 IBM TotalStorage SAN140M
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 140 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2032-064 McDATA Intrepid 6064 Director
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 64 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2042-001; -128; -256 CNT FC/9000 Directors
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 64; 24 to 128; 32 to 256 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2042-N16 CNT UltraNet Multi-service Director
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 32 to 256 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2062-D04 Cisco MDS 9506 Director
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 64 port (16-port modules) and 32 to 128 port (32-port modules) 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

2062-D07 Cisco MDS 9509 Director
- High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and zSeries. Provides 16 to 112 port (16-port modules) and 32 to 224 port (32-port modules) 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers

Product	Highlights	Technology	Length (m/feet)	Capacity Native	Compressed (typical)	Part Number	Related Products	Part Number
Enterprise Tape	• Custom labeling and initialization services are available • Server tracks help improve data integrity • Cartridge intermix within libraries supports smooth migration, legacy systems • Write Once Read Many (WORM) functionality	Enterprise Tape Cartridge 3592	610/2001 610/2001 246/810 246/810	300GB 300GB WORM 60GB 60GB WORM	900GB 900GB WORM 180GB 180GB WORM	18P7534 18P7538 24R0316 24R0317		
		Enterprise Tape Cartridge 3590	320/1050	10/20/30GB	30/60/90GB	05H4434	3590 Conductive Abrasive Cleaning Cartridge	05H4435
		Enterprise Tape Cartridge 3590E	634/2070	20/40/60GB	60/120/180GB	05H3188 05H3302-J-less 08L6091-K-less	3480/3490 Conductive Cleaner 3480/3490 Cleaning Cartridge 3592 Cleaning Cartridge	05H3917 4780527 18P7535
		3490E Enhanced Capacity Tape Cartridge (36-track)	335/1100	800MB	2.4GB	09G4494		
		3480 Tape Cartridge (18-track)	165/541	200MB		4479753		
.31" MP Tape	• Unique midpoint load mechanism enables the system to locate data fast • Durable cartridge case helps protect the tape • Self-contained tape path helps improve reliability and extend tape life • Almost instantaneous head/tape contact at load time speeds processing	Magstar® MP Fast Access Linear Tape Cartridge	167/54	5GB	15GB	05H2462—B 08L6187—C	Cleaning Cartridge	05H2463
		Magstar MP Fast Access Linear Tape Cartridge—XL	227/745	7GB	21GB	08L6663-C-XL		
LTO® Tape	• Media uses industry-leading, interchangeable LTO format • Cartridge is highest-capacity open standard tape cartridge available • Custom labeling is available • IBM-exclusive Statistical Analysis and Reporting System (SARS) statistics are stored in cartridge memory • High durability helps support automation environments	Ultrium® 3 Ultrium 2 Ultrium 1	680/2231 609/1997 609/1997	400GB 200GB 100GB	(up to) 800GB 400GB 200GB	24R1922 08L9870 08L9120	Ultrium Cleaning Cartridge (all) Leader Pin Attachment Kit LTO 6-Cartridge Magazine	35L2086 08L9129 19P4529
SDLTtape	• Optical servo and backcoating technologies help support precision positioning and high-capacity recording • New leader buckle helps accurate loading and new durable cartridge design	SDLT-1 SDLT220 SDLT-1 SDLT320	557/1800 557/1800	110GB 160GB	220GB 320GB	35L1119 35L1119	Cleaning Cartridge	19P4357
DLTtape	• Two visible reel-lock indicators show open or damaged locks to protect drives • Cartridge labeling area and labels are included • DLTtape IV is backward-compatible with earlier DLT 4000 and 7000 drives • VS1 Data Cartridge	DLT 4000 DLT 7000 DLT 8000 VS1	548/1800 548/1800 548/1800 563/1850	20GB 35GB 40GB 80GB	40GB 70GB 80GB 160GB	59H3040 59H3040 59H3040 18P8923	Cleaning Cartridge - DLT Cleaning Cartridge - VS160	59H3092 18P8924
VXA-2	• Durable coating can resist oxidation and moisture • Advanced archival and capacity properties are included • Wide selection of compatible cartridge capacities support daily or full backups • Media enclosure shutter locks out dirt and debris • V-MEDIA and X-MEDIA are interchangeable	VXA 8mm—V6 VXA 8mm—V17 VXA 8mm—V23 VXA 8mm—X6 VXA 8mm—X10 VXA 8mm—X23	62/203 170/558 230/754 62/703 107/350 230/754	20GB 59GB 80GB 36GB	40GB 118GB 160GB 72GB	19P4878 19P4877 19P4876 24R2134 24R2136 24R2137	Cleaning Cartridge—V-MEDIA Cleaning Cartridge—X-MEDIA	19P4880 24R2138
AIT-2 AIT-3	• Advanced Metal Evaporated media format provides highly durable tape • Built-in memory chip stores critical information and helps provide fast access to data • High native recording capacity with 50GB or 100GB can store more information in less space	AIT	230/754 230/754	50GB 100GB	100GB 260GB	18P6482 18P6483	Cleaning Cartridge	18P7057

Product	Highlights	Technology	Length (m/feet)	Capacity Native	Compressed (typical)	Part Number	Related Products	Part Number
4mm Tape	• Precision-matched tape reels and reel heights help support reliable operation • Proprietary hub lock helps reduce positioning errors to improve data integrity • Improved media coating helps reduce head friction and provide cleaner operation	DDS-1	90/295	2GB	4GB	21F8754	Cleaning Cartridge—4mm	21F8763
		DDS-2	120/393	4GB	8GB	8191151		
		DDS-3	125/410	12GB	24GB	59H3465		
		DDS-4	150/492	20GB	40GB	59H4456		
		DAT72	170/557	36GB	72GB	18P7912		
8mm Tape	• Special media formulation can help reduce drop-out to improve reliability • Rigid magnetic stability specification helps increase coercivity to prolong shelf life and improve read reliability • 100 percent media enclosure can help lock out dirt and debris to protect the cartridge • Built-in electrostatic discharge shield helps reduce risks to data and hardware	Metal Particle	112/367	2.5GB	5.0GB	21F8575	Cleaning Cartridge—AME	35L1409
			160/524	3.5GB	7GB	87G1603	Cleaning Cartridge—Metal Particle	16G8467
		AME	22/73	2.5GB	5GB	59H2671		
			170/557	20GB	40GB	59H2678		
		Mammoth-2 (w/ SmartClean)	225/738	60GB	150GB	18P6485		
			150/492	40GB	100GB	09L5323		
			75/246	20GB	50GB	35L1044		
SLR (QIC) Cartridges	• Sophisticated mirror optics support BOT and EOT recognition • Advanced media-binder process provides ultra-clean operation • Stringent wheel-pin perpendicularity specification enables smoother operation and fewer re-reads • Proprietary belt design provides steady tension • Special stippled base-plate design helps provide rigidity and a stabletape path • Cartridge cover shields against static discharge and airborne debris • Durastat on drive rollers dissipates static	5.25" DC9120/QIC-1000	290/950	1.2GB	NA	21F8730	QIC 5.25" Wet Process Cleaning Cartridge	16G8572
		5.25" DC9250/QIC-2GB-DC	366/1200	2.5GB	5GB	16G8436	QIC 5.25" MLR/SLR Cleaning Cartridge (50 uses)	35L0844
		5.25" SLR5/QIC-4GB-DC	458/1500	4GB	8GB	59H3660		
		5.25" MLR1/QIC-5010-DC	458/1500	16GB	32GB	59H4175		
			60/200	2GB	4GB	35L0589		
		5.25" MLR3/QIC-5120-DC	462/1515	25GB	50GB	59H4128		
		5.25" SLR60/SLR100	47/156	5GB	10GB	35L0661	155' Data Cartridge	
			274/900	30GB	60GB	19P4209	900' Data Cartridge	
		5.25" SLR60	366/1200	37.5GB	75GB	24R0146		
		5.25" SLR100	457/1500	50GB	100GB	35L0968	1500' Data Cartridge	
		NS20	226/740	10GB	20GB	59H4364		
	1-888-IBM-MEDIA **ibm.com**/storage/media	Travan 40	228.7/750	20GB	40GB	19P4882	Travan Cleaning Cartridge	19P4881

Products

	Tape Products			
	3592	**3590**	**3494**	**3494-VTS**
Product	1/2" Tape Drive	1/2" Tape Drive	1/2" Cartridge Tape Library	Virtual Tape Server
Machine Model	**3592** J1A	**3590**	**3494 (Frames)** L12, L14, L22-Library D12,D14,D22,D24-Library (Frame) S10-Storage HA1-High Availability	**3494** B10, B20
Product Strengths	Multipurpose drive, capacity, performance, Write Once Read Many (WORM) support	Capacity, performance, reliability	Modular, reliable automation for high-volume storage	Virtualtape,fastaccess peer-to-peercopy
Technology	Longitudinal Serpentine	Longitudinal Serpentine		Disk: Emulated 3490E Tape: 3592, 3590 1/2"
Number of Heads/Tracks	8/512	H: 16/384 E: 16/256	Drive Dependent	N/A
Number of Drives	1	1	Drive Dependent	64–256 (virtual)
Max Number of Cartridges	N/A	N/A	6,240[2]	500,000 (virtual volumes)
Cartridge Capacity Native/Compressed	300/900GB 300/900GB WORM 60/180GB 60/180GB WORM	E: 20/60GB EX: 40/120GB H: 30/90GB HX: 60/180GB	Drive Dependent	Drive Dependent
Max System Capacity Compressed[1]	900GB	EX: 120GB HX: 180GB	H: 561TB HX: 1122TB J1A: 5616TB	Disk: up to 5.2TB Tape: 5616TB
Max Drive Data Rate[1] Native/Compressed	40/120MB/sec	E: 14/42MB/sec H: 14/42MB/sec	Drive Dependent	VTS: Drive Dependent
Time to Data[4]	Cartridge Dependent	Model Dependent	Drive Dependent	VTS: 1–3 seconds if data in VTS Cache
Interface	FC, ESCON®, FICON, 2Gb FICON	SCSI-2 F/W, Diff PCI, Ultra SCSI, FC, ESCON, FICON, 2Gb FICON	SCSI-2 F/W, Diff PCI, Ultra SCSI, FC, ESCON, FICON, 2Gb FICON	Ultra SCSI, ESCON, FICON
SAN-Ready[5]	pSeries, iSeries, RS/6000®, Sun, HP, Windows NT®, Linux, Windows 2000	pSeries, iSeries, RS/6000, Sun, HP, Windows NT, Linux, Windows 2000, Tru64 UNIX	pSeries, iSeries, RS/6000, Sun, HP, Windows NT, Linux, Windows 2000, Tru64 UNIX	pSeries, RS/6000, Windows NT, Windows 2000, Sun
Supported Platforms[5]	iSeries, AS/400®, pSeries, RS/6000, zSeries, S/390®, Linux, Windows 2000, Sun, HP	iSeries, AS/400, pSeries, RS/6000, zSeries, S/390, Tru64 UNIX, Linux, Windows 2000, Sun, HP	iSeries, AS/400, pSeries, RS/6000, zSeries, S/390, Linux, Windows 2000, Sun, HP	pSeries, RS/6000, zSeries, S/390, Windows 2000, Sun, HP
ISV (Independent Software Vendor)[5]	Model Dependent[7]	Model Dependent[7]	A B D E F G H I J K L M[8]	
Media Part number 1-888-IBM-Media	18P7534	05H4434 X: 05H3188	18P7534 (3592) 05H4434 (3590) X: 05H3188 (3590)	18P7534 05H4434 X: 05H3188
Warranty	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7

Products (continued)

Midmarket Tape Products

	3580	3581	3582	3583	3584
Product	Tape Drive	Tape Autoloader	Tape Library	Tape Library	Tape Library
Machine Model	**3580** L33 Ultrium 3 L23 Ultrium 2 H23 Ultrium 2	**3581** L28 Ultrium 2 F28 Ultrium 2 L23 Ultrium 2 H23 Ultrium 2	**3582** L23 Ultrium 2 F23 Ultrium 2	**3583** L18-18 Carts L36-36 Carts L72-72 Carts	**3584** L22-base frame for 3592, D22-expansion frame for 3592, up to 15 frames may be added L52-base frame for LTO, D52-expansion frame for LTO, up to 15 frames may be added
Product Strengths	Open systems attach, high capacity, fast data transfer rate, desktop footprint	Open systems attach, multiplatform, high capacity, optional barcode reader	Open systems attach, multiplatform, scalable, high capacity, direct-to-SAN attach	Open systems attach, multiplatform, scalable, high capacity, direct-to-SAN attach	Open Systems attach, Multiplatform, Advanced Library Management System, Ultra-Scalable, High Capacity, Enterprise Tape Drive 3592 support, WORM support
Technology	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine
Number of Heads/Tracks	Ultrium 3: 16/704 Ultrium 2: 8/512	Ultrium 2: 8/512	Ultrium 2: 8/512	Ultrium 2: 8/512	3592: 8/512 Ultrium 2: 8/512
Number of Drives	1	1	1–2	1–6	1–192
Max Number of Cartridges	1	8 - L28, F28 7 - L23, H23	24	72	6,887[2]
Cartridge Capacity Native/Compressed	Ultrium 3: 400GB Native Ultrium 2: 200/400GB	Ultrium 2: 200/400GB	Ultrium 2: 200/400GB	Ultrium 2: 200/400GB	3592: 300/900GB 3592: 300/900 WORM Ultrium 2: 200/400GB
Max System Capacity Compressed[1]	Ultrium 3: 800GB Ultrium 2: 400GB	L23, H23: 2.8TB L28, F28: 3.2TB	Ultrium 2: 9.6TB	Ultrium 2: 28.8TB	3592: 5.63PB Ultrium 2: 2.75PB
Max Drive Data Rate[1] Native/Compressed	Ultrium 3: 80MB/sec* Ultrium 2: 35/70MB/sec	Ultrium 2: 35/70MB/sec	Ultrium 2: 35/70MB/sec	Ultrium 2: 35/70MB/sec	3592: 40/120MB/sec Ultrium 2: 35/70MB/sec
Time to Data[4]	Ultrium 3: 49 seconds Ultrium 2: 49 seconds	Ultrium 2: 49 seconds	Ultrium 2: 49 seconds	Ultrium 2: 49 seconds	3592: Cartridge Dependent Ultrium 2: 49 seconds
Interface	L33, L23, LVD H23, HVD	L28, F28-FC fabric L23, LVD H23, HVD	LVD, HVD, FC fabric	LVD, HVD, FC fabric	3592: FC fabric Ultrium 2: FC Fabric
SAN-Ready[5]	pSeries, RS/6000, Windows NT, Sun	pSeries, RS/6000, Windows NT, Sun	pSeries, RS/6000, Windows NT, Sun	pSeries, RS/6000, Windows NT, Sun	pSeries, RS/6000, Windows NT, Sun
Supported Platforms[5]	xSeries, Netfinity®, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux
ISV (Independent Software Vendor)[5]	A C D E F G H I J L N[8]	A C D E F G H I J L N[8]	A C D E F G H I J L N[8]	A C D E F G H I J L N[8]	A C D E F G H I J L N[8]
Media Part number 1-888-IBM-Media	Ultrium 3: 24R1922 Ultrium 2: 08L9870	Ultrium 2: 08L9870	Ultrium 2: 08L9870	Ultrium 2: 08L9870	3592: 18P7534 Ultrium 2: 08L9870
Warranty	L33: 3 years, CRU** L23, H23: 3 years, CRU	F28, L28: 3 years, CRU	3 years, CRU	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7

* Native only

** In most countries

Products (continued)

	Complementary Storage Products								
	7204	**7206**	**7206-VX2**	**7332**	**7208**	**7205**	**7207**	**7212-102**	**7212-312**
Product	External Disk Drive	4mm DDS-4 4mm Gen 5 (DAT72)	8mm VXA-2 Tape Drive	4mm DDS-3,4 Tape Autoloader	8mm Mammoth Tape Drive	SDLT Drive Tape Drive	SLR (QIC) Compatible External Tape Drive	Storage Device Enclosure	VXA-2 Autoloader
Machine Model	7204 518-18GB 536-36GB 573-73GB	7206 220-DDS4 336-DDS Gen 5	7206 VX2	7332 220-DDS4	7208 345-Mammoth-2	7205 550	7207 122 330	7212 102	7212 312
Product Strengths	External deskside disk storage	Cost-effective streaming tape drive	Low-cost, high-capacity VXA-2 technology	Autoload tape cartridges into DDS-4 drive	High-performance 8mm technology	Cost-effective save/restore/archive solution	Backward read/write compatible with iSeries internal	Rack-mountable 2-drive enclosure utilizes only 1U (1.75") of space	Rack-mountable Only 1 EIA rack unit high
Technology	N/A	Helical Scan	Helical Scan	Helical Scan	Helical Scan	Longitudinal Serpentine	SLR (QIC format)	DDS, DVD, VXA	Helical Scan
Number of Heads/Tracks	8 heads 4 disks	Rotating Drum	Rotating Drum	Rotating Drum	Rotating Drum	8/536	1/1	DDS/VXA: Rotating Drum	Rotating Drum
Number of Drives	1	1	1	1	1	1	1	1–2	1
Max Number of Cartridges	N/A	1	1	6	1	1	1	2	10
Cartridge Capacity Native/Compressed	N/A	220: 20/40GB 336: 36/72GB	20/40GB 59/118GB 80/160GB	20/40GB	60/150GB	160/320GB	122: 4/8GB 330: 30/60GB	DDS-4: 20/40GB DAT72: 36/72GB VXA-2: 80/160GB	80 GB/160GB
Max System Capacity Compressed[1]	518: 18GB 536: 36GB 573: 73GB	220: 40GB 336: 72GB	160GB	240GB	150GB	320GB	122: 4/8GB 330: 30/60GB	160GB with two VXA-2 drives 18.8GB with two DVD-RAM drives	1600 GB
Max Drive Data Rate[1] Native/Compressed	80MB/sec	220: 3/6MB/sec 336: 3/6MB/sec	6/12MB/sec	3/6MB/sec	12/30MB/sec	16/32MB/sec	122: .38/.76MB/sec 330: 4/8MB/sec	DDS/DAT72: 3/6MB/sec VXA: 6/12MB/sec	6/12MB/sec
Time to Data[4]	70ms	50 seconds	50 seconds	40 seconds	93 seconds	70 seconds	122: 85 seconds 330: 50 seconds	VXA-2: 40 seconds VXA: 40 seconds DAT72: 50 seconds	50 seconds
Interface	SCSI-3 ULTRA, LVD/SE, 160/320	SCSI-2 F/W SE, LVD/SE	SCSI-3 ULTRA, LVD/SE, 160/320	SCSI-2 F/W SE, LVD/SE	SCSI-2 Ultra2 LVD	SCSI-2 F/W, Diff PCI, Ultra2 SCSI LVD	SCSI-2 SE, ULTRA, LVD/SE, 160/320	SCSI-3 ULTRA, LVS/SE, 160/320	SCSI-3 Ultra, LVD-SE, 160/320
SAN-Ready[5]	pSeries, RS/6000	pSeries, RS/6000	pSeries, RS/6000, iSeries, AS/400, Windows NT	pSeries, RS/6000	pSeries, RS/6000, iSeries, AS/400, Windows NT	pSeries, RS/6000	iSeries, AS/400, pSeries, RS/6000		pSeries/RS6000
Supported Platforms[5]	pSeries, RS/6000	pSeries, RS/6000	pSeries, RS/6000, iSeries, AS/400	pSeries, RS/6000	pSeries, RS/6000, iSeries, AS/400	pSeries, RS/6000[3]	iSeries, AS/400, pSeries, RS/6000	pSeries, RS/6000, iSeries, AS/400	pSeries/RS6000
ISV (Independent Software Vendor)[5]	A B C E[8]	A B C E[8]	A B C E[8]	A B C E[8]	A B C E J[8]	A B C E[8]	A B C D E[8]	Varies	A B C E[8]
Media Part number 1-888-IBM-Media	N/A	DDS-4: 59H4456 DAT72: 18P7912	19P4876 (230M), 19P4877 (170M), 19P4878 (62M)	DDS-4: 59H4456	18P6485-60GB	35L1119	122: 59H3660 330: 19P4209	DDS-4: 59H4456 DAT72: 18P7912 VXA-2: 19P4876 SLR60: 19P4209 SLR100: 35L0968	19P4876
Warranty	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 Year, 24x7	IBM Onsite Repair 1 Year, 24x7	IBM Onsite Repair 1 Year, 24x7	CRU, IBM Onsite Repair 1 year, 24x7

Selecting a Solution

	Model	Technology	Maximum System Capacity (GB)*	zSeries S/390	iSeries AS/400	pSeries RS/6000	xSeries Netfinity	Open Systems**
Enterprise Tape Products	3592-J1A	1/2" Enterprise	900	Yes	Yes	Yes	Yes	Yes
	3590, E1A, H1A, E11, H11	1/2" Enterprise	180	Yes	Yes	Yes	Yes	Yes
	3494, L12, L14, L22, D12, D14, D22, D24, S10, HA1	1/2" Enterprise	Up to 5616000	Yes	Yes	Yes	Yes	Yes
	3494-B10, B20 Virtual Tape Server	Virtual Tape 1/2" Enterprise	Up to 5616000	Yes	No	Yes	Yes	Yes
Midmarket Tape Products	3580-L23, H23 3580-L13, H13, L11, H11	LTO LTO	400 200	Yes	Yes	Yes	Yes	Yes
	3581-L13, H13, L17, H17	LTO	1400	Yes	Yes	Yes	Yes	Yes
	3581-L23, H23	LTO	2800	Yes	Yes	Yes	Yes	Yes
	3582-L23, H23, F23	LTO	9600	Yes	Yes	Yes	Yes	Yes
	3583-L18, L36, L72	LTO	28800	Yes	Yes	Yes	Yes	Yes
	3584-L32, D32	LTO	2752400 (2.75PB)	Yes	Yes	Yes	Yes	Yes
Complementary Storage Products	7204-536	HDD	36	No	No	Yes	No	No
	7204-573	HDD	73	No	No	Yes	No	No
	7204-646	HDD	146	No	No	Yes	No	No
	7205-550	SDLT	320	No	No	Yes	No	No
	7206-220	4mm DDS-4	40	No	No	No	No	Yes
	7206-336	DAT72	72	No	No	Yes	No	No
	7206-VX2	8mm VXA-2	160	No	No	Yes	No	No
	7207-122	QIC	8	No	Yes	No	No	No
	7207-330	SLR	60	No	Yes	No	No	No
	7208-345	8mm Mammoth-2	150	No	Yes	No	No	No
	7212-102	DVD, 4mm, SLR, VXA-2	320	No	No	Yes	No	No
	7212-102	DVD, SLR, VXA-2	320	No	Yes	No	No	No
	7212-312	VXA-2	1600	No	No	Yes	No	No
	7332-220	4mm DDS-4	240	No	No	No	No	Yes

* Compressed; see **ibm.com**/totalstorage for specific capacities.

** See **ibm.com**/totalstorage for specific open systems connectivity.

■ Yes   □ No

IBM @server Systems and IBM TotalStorage

Customer demand for lightning-fast communication and transactions has driven the need for universal commitment to e-business. No matter what industry, or what size company, success today hinges on building a high-performance, responsive infrastructure that embraces open standards—exactly what you will find in the IBM @server product portfolio. Investments in servers often result in demands on disk and tape storage systems. IBM has a family of storage offerings that complements the @server product portfolio. There is no better storage offering for IBM @server systems than an IBM TotalStorage product. These offerings are tested and supported by IBM and are backed by outstanding IBM service and support.

IBM TotalStorage Proven Program Helps Simplify Interoperability

The IBM TotalStorage Proven™ Program is designed to help customers identify storage solutions and configurations that have been pretested for interoperability. IBM TotalStorage Proven means that the applications and hardware you choose from leading companies, combined with state-of-the-art IBM storage technology, can provide you with flexible, ready-to-run and more easily installed solutions that can help address your software and infrastructure needs.

Storage Proven means integrated solutions are more than just hardware and software—they are tested together for specific applications and configurations. IBM helps take the guesswork out of putting a total solution together, which can help simplify your purchase decision, freeing you to focus on running your business.

Please visit the Storage Proven Web site at **ibm.com**/totalstorage/proven to view more than one hundred available products and solutions to meet your storage needs.

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More than 140 worldwide IBM TotalStorage Solution Centers can deliver one-stop shopping for storage hardware, software and consulting services. The Solution Centers offer you both a local venue for hands-on testing of IBM storage solutions and a platform for proof-of-concept and benchmarking activities. These centers also work with the leading storage software providers to support a wide variety of choices for interoperability. IBM Business Partners will help you select and implement a solution to help your business succeed in today's dynamic marketplace. Visit: **ibm.com**/storage/tssc

Host-Attached Storage Products

	ESS 800	ESS 750	DS8300	DS8100	DS6800
Product	Enterprise Storage Server®	Enterprise Storage Server	IBM TotalStorage DS8000 Series	IBM TotalStorage DS8000 Series	IBM TotalStorage DS6800
Machine/Model	2105/750	2105/750	2107/922/9A2	2107/921	1750/511
Platform Support[1]	xSeries, iSeries, AS/400, pSeries, RS/6000, zSeries, S/390, i5/OS, OS/400®, AIX®, Solaris, HP-UX, Dynix, OpenVMS, Tru64, Windows NT, Windows 2000, Windows Server 2003, NetWare, VMWare, Linux for S/390, z/OS, z/VM®, OS/390®, VM/ESA®, VSE/ESA™, TPF, Linux for Intel systems, Fujitsu Primepower, SGI Origin IRIX	xSeries, iSeries, AS/400, pSeries, RS/6000, zSeries, S/390, i5/OS, OS/400®, AIX®, Solaris, HP-UX, Dynix, OpenVMS, Tru64, Windows NT, Windows 2000, Windows Server 2003, NetWare, VMWare, Linux for S/390, z/OS, z/VM®, OS/390®, VM/ESA®, VSE/ESA™, TPF, Linux for Intel systems, Fujitsu Primepower, SGI Origin IRIX	xSeries, iSeries, pSeries, RS6000, zSeries, S/390, i5/OS, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for S/390, z/OS, z/VM, VSE/ESA, TPF, Linux for iSeries, Linux for pSeries, Linux for Intel systems, OpenVMS*, TRU64*, NetWare*, VMWare*, Apple Macintosh OS X, Fujitsu Primepower, SGI IRIX	xSeries, iSeries, pSeries, RS6000, zSeries, S/390, i5/OS, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for S/390, z/OS, z/VM, VSE/ESA, TPF, Linux for iSeries, Linux for pSeries, Linux for Intel systems, OpenVMS*, TRU64*, NetWare*, VMWare*, Apple Macintosh OS X, Fujitsu Primepower, SGI IRIX	xSeries, iSeries, pSeries, RS6000, zSeries, S/390, i5/OS, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for S/390, z/OS, z/VM, VSE/ESA, TPF, Linux for iSeries, Linux for pSeries, Linux for Intel systems, OpenVMS*, TRU64*, NetWare*, VMWare*, Apple Macintosh OS X, Fujitsu Primepower
Host Connectivity	1Gb and 2Gb Fibre Channel/FICON, ESCON, SCSI	1Gb and 2Gb Fibre Channel/FICON, ESCON	1Gb and 2Gb Fibre Channel, FICON, ESCON	1Gb and 2Gb Fibre Channel, FICON, ESCON	1Gb and 2Gb Fibre Channel/FICON
SAN Support	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric
Copy Services	FlashCopy®, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror. Interoperable with DS8000 and DS6000	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Interoperable with DS8000 and DS6000	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror - Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy, as target for z/OS Global Mirror - Interoperable with ESS 800, ESS 750 and DS8000 series
Availability Features	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver	Fault Tolerant, dual redundant and hot-swap RAID Controller Cards, Battery Backup Units, Fibre Channel switch controllers, power supplies, non-disruptive hardware and software code load updates, multi-pathing device driver	Fault Tolerant, dual redundant and hot-swap RAID Controller Cards, Battery Backup Units, Fibre Channel switch controllers, power supplies, non-disruptive hardware and software code load updates, multi-pathing device driver	Fault Tolerant, dual redundant and hot-swap RAID Controller Cards, Battery Backup Units, Fibre Channel switch controllers, power supplies, non-disruptive hardware and software code load updates, multi-pathing device driver
Controller	SMB dual active; optional turbo feature	SMB dual active	Dual active/active	Dual active/active	Dual active/active
Cache (min, max)	8GB, 64GB	8GB, 16GB	32/256GB	16/128GB	4GB
RAID Support	5, 10	5, 10	5, 10	5, 10	5, 10
Capacity (min, max)	582GB, 55.9TB (physical capacity)	1.1TB, 4.6TB	1.1TB, 192TB	1.1TB, 115TB	292GB, 67.2TB
Drive Interface	SSA	SSA	2Gb Fibre Channel	2Gb Fibre Channel	2Gb Fibre Channel
Drive Support	18.2GB, 36.4GB, 72.8GB and 145.6GB 10,000 rpm disk drives 18.2GB, 36.4GB and 72.8GB 15,000 rpm disk drives	72.8GB, 145.6GB (10,000rpm)	73GB 15K, 146GB10K, 300GB 10K	73GB 15K, 146GB10K, 300GB 10K	73GB 15K, 146GB10K, 300GB 10K
Certifications	Microsoft™ RAID, Cluster and Data Center, GDPS, HACMP™, NetWare, Linux	Microsoft RAID, Cluster and Data Center, GDPS, HACMP, NetWare, Linux			

1: Consult product information for details. 2: RedHat, SUSE LINUX and TurboLinux. Please verify specific product information for details. 3: Via IBM TotalStorage SAN Controller 160; no cluster or HACMP support. 4: Also, verification will be completed for HP Service Guard. 5: Metro Mirror is synchronous replication; Global Mirror is asynchronous replication; Metro/Global Mirror is two- or three-site cascading asynchronous replication; Global Copy is extended distance copying. * supported in 1Q05

Host-Attached Storage Products (continued)

	DS4500	DS4400	DS4300	DS4100
Product	DS4500 (formerly FAStT900 Storage Server)	DS4400 (formerly FAStT700 Storage Server)	DS4300 (formerly FAStT600 Storage Server)	DS4100 (formerly FAStT100 Storage Server)
Machine/Model	1742-90U	1742-1RU	1722-60U/6LU	1724-100/1SC
Platform Support[1]	pSeries, select RS/6000 servers, xSeries, select Netfinity servers, select Sun and HP UNIX servers and other Intel processor-based servers, Windows NT, Windows 2000, NetWare, VMWare, Linux, AIX, Solaris, HP-UX	pSeries, select RS/6000 servers, xSeries, select Netfinity servers, Windows NT, Windows 2000, NetWare, Linux, AIX, HP-UX, Solaris, VMWare	pSeries, xSeries, Windows 2000; optional support for AIX, Solaris, HP-UX, NetWare, Linux, VMWare	Windows Server™ 2003, Windows 2000 Server & Adv.Server, Novell NetWare 5.1 w/SP6, Red Hat Enterprise Linux 3.0, SUSE LINUX Enterprise Server 8 3, VMware ESX 2.1, AIX 5.1/5.2, HP UX 11/11i, Solaris 8/9
Host Connectivity	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel
SAN Support	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric
Copy Services	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, VolumeCopy (turbo option only), FlashCopy	FlashCopy option
Availability Features	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, single/dual controllers, concurrent microcode update capability, dual-pathing driver	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver
Controller	Dual active 2GB RAID controllers	Dual active 2GB RAID controllers	Single/dual active 2GB RAID controllers; optional turbo feature	Single/dual 2GB RAID controller
Cache (min, max)	2GB, 2GB	2GB, 2GB	256, 256 (single), 512MB, 512MB (base) 2GB, 2GB (turbo option)	256MB, 512MB
RAID Support	0, 1, 3, 5, 10	0, 1, 3, 5, 10	0, 1, 3, 5, 10	0, 1, 3, 5, 10
Capacity (min, max)	32GB, 32TB via EXP700/EXP710 (FC) 250GB, 56TB via EXP100 (Serial ATA)	32GB, 32TB via EXP700/EXP710	Base Single: 2TB Base: 32GB, 8.2TB via EXP700 (FC), 250GB, 28TB via EXP100 (Serial ATA) Turbo option: 32GB, 16.4TB via EXP700/EXP710 (FC), 250GB, 28TB via EXP100 (Serial ATA)	250GB, Dual controller supports 28TB with seven Expansion Units Single controller supports 3.5TB
Drive Interface	2Gb FC-AL	2Gb FC-AL	2Gb FC-AL	2Gb FC-AL
Drive Support	36.4GB, 73.4GB and 146.8GB 10,000 rpm disk drives; 18.2GB, 36.4GB and 73.4GB 15,000 rpm disk drives	36.4GB, 73.4GB and 146.8GB 10,000 rpm disk drives; 18.2GB, 36.4GB and 73.4GB 15,000 rpm disk drives	36.4GB, 73.4GB and 146.8GB 10,000 rpm disk drives; 18.2GB, 36.4GB and 73.4GB 15,000 rpm disk drives	250GB 7,200 rpm SATA disk drives
Certifications	Microsoft RAID, Cluster, NetWare Cluster, HACMP, VERI-TAS Clustering[4]	Microsoft RAID, Cluster and Data Center, HACMP, NetWare Cluster, VERITAS Clustering	Microsoft RAID, Cluster and Data Center, HACMP, VERI-TAS Clustering	Microsoft Clustering Services, IBM SAN Volume Controller 1.1.1

Host-Attached Storage Products (continued)

	DS400	DS300	EXP Plus 320	7133
Product	DS400	DS300	EXP Plus 320	Serial Disk System
Machine/Model	1700-2RD	1701-2RD	2104/DS4, TS4	7133/D40, T40
Platform Support[1]	Windows 2000, Windows 2003, Linux, Netware, VMware	Windows 2000, Windows 2003, Linux, Netware	pSeries, select RS/6000 servers, AIX	pSeries, select RS/6000 servers, xSeries, select Netfinity servers, AIX, Windows NT, Windows 2000, Solaris, HP-UX and many others
Host Connectivity	Fibre Channel	iSCSI	Ultra 320 SCSI	SSA, Fibre Channel[3], SCSI[3]
SAN Support	Direct, FC-AL, Switched Fabric	Direct, Switched Ethernet	N/A	FC-AL[3], Switched Fabric
Copy Services	FlashCopy, Metro Mirror	FlashCopy, Metro Mirror	N/A	Remote Copy (up to 10 km), 3-way copy, Instant Copy[3]
Availability Features	Fault Tolerant, RAID, Redundant Hotswap Power, Hotswap drives, Dual controller, dual pathing drivers	Fault Tolerant, RAID, Redundant Hotswap Power, Hotswap drives, Dual controller, dual pathing drivers	RAID with server adapters, redundant power/cooling, hot-swap drives, enclosure services	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual adapters, enclosure services, dual-pathing driver
Controller	Dual Active 2GB FC RAID Controllers	Dual active 1GB iSCSI RAID Controllers	Adapters in server	Single/multiple active adapters
Cache (min, max)	256MB, 1GB (Single), 512MB, 2GB (Dual)- Battery Back-up	256MB, 1GB (Single), 512MB, 2GB (Dual)- Battery Back-up	N/A	0, 32MB write and 64MB read
RAID Support	0, 1, 5, 10, 50	0, 1, 5, 10, 50	0, 1, 5 (using server-based adapters)	0,1,5,10 (using adapters)
Capacity (min, max)	36GB , 5.8TB with 2 EXP400 Expansion Units	36GB, 2TB	32GB, 2TB	72.8GB, 14TB
Drive Interface	Ultra320 SCSI	Ultra320 SCSI	Ultra 320 SCSI	SSA
Drive Support	36GB, 73GB, 146GB 10,000 RPM Disk Drives; 36GB, 73GB, 15,000 RPM Disk Drives	36GB, 73GB, 146GB 10,000 RPM Disk Drives; 36GB, 73GB, 15,000 RPM Disk Drives	18.2GB, 36.4GB, 73.4GB and 146.8GB 10,000 rpm disk drives; 36.4GB and 73.4GB 15,000 rpm disk drives	18.2GB, 36.4GB, 72.8GB and 145.6GB 10,000 rpm disk drives; 36.4GB and 72.8GB 15,000 rpm disk drives
Certifications	Microsoft Windows MSCS	Microsoft Windows MSCS	HACMP	Microsoft RAID, Cluster, HACMP

Selecting a Solution

	ESS	DS8300	DS8100	DS6800	DS4500
Local copy within controller	Yes	Yes	Yes	Yes	Yes
Remote Copy (>10 km)	Yes	Yes	Yes	Yes	Yes
Centralized management	Yes	Yes	Yes	Yes	Yes
Storage area network	Yes	Yes	Yes	Yes	Yes
Concurrent heterogeneous servers (UNIX and Intel)	Yes	Yes	Yes	Yes	Yes
Concurrent microcode install	Yes	Yes	Yes	Yes	Yes
Intermix disk capacities	Yes	Yes	Yes	Yes	Yes
Multiple RAID options	Yes	Yes	Yes	Yes	Yes
Controller-based call-home		Through DS Storage Manager Server	Through DS Storage Manager Server	Through DS Storage Manager Server	Yes
Rack mount	No	Yes	Yes	Yes	Yes
Virtualization	No	Yes	Yes	Yes	No
Virtualization through SAN Volume Controller	No	Yes	Yes	Yes	Yes

* Remote Copy (>10 km) is via TotalStorage Proven vendors (Legato, CNT, NSI)   ▮ Yes   ▯ No

Selecting a Solution (continued)

	DS4400	DS4300	DS4100	DS400	DS300	7133	EXP Plus 320
Local copy within controller	Yes	Yes	Yes	Yes	Yes	requires 7140 or 2108-S20	No
Remote Copy (>10 km)	*	Turbo option only	No	No	No	No	No
Centralized management	Yes	Yes	Yes	Yes	Yes	Yes	No
Storage area network	Yes	Yes	Yes	Yes	iSCSI	Yes	No
Concurrent heterogeneous servers (UNIX and Intel)	Yes	Yes	Yes	Intel only	Intel only	Yes	No
Concurrent microcode install	Yes	Yes	Yes	No	No	No	No
Intermix disk capacities	Yes	Yes	Yes	Yes	Yes	Yes	No
Multiple RAID options	Yes	Yes	Yes	Yes	Yes	Yes	requires adapter
Controller-based call-home	Yes	Yes	Yes	Yes	Yes	No	No
Rack mount	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Virtualization	No	No	No	No	No	No	No
Virtualization through SAN Volume Controller	Yes	Yes	Yes	Yes	Yes	No	No

* Remote Copy (>10 km) is via TotalStorage Proven vendors (Legato, CNT, NSI)   ▮ Yes   ▯ No

Highlights

Enterprise Storage Server 800
- Provides enterprise strength reliability and function, SAN-ready disk system
- Designed to provide high availability, performance, manageability and scalability
- Host connectivity via SCSI, FC/FICON, or ESCON interfaces to a wide variety of UNIX, Windows, iSeries, and zSeries servers
- Features state-of-the-art copy services for rapid backup and disaster recovery

Enterprise Storage Server 750
- ESS 800 reliability and function at an attractive entry capacity enterprise storage price point .
- Includes ESS 800 comprehensive server support and support for state of the art copy services
- Design supports non-disruptive upgrade to the ESS 800

DS8300
- A new standard in enterprise class functionality with extraordinary performance and up to 192TB of physical capacity
- Host connectivity via FC/FICON or ESCON interfaces to a wide variety of UNIX, Windows, iSeries, and zSeries servers
- Top notch storage consolidation system with Storage System LPAR capability
- Offers FlashCopy and Global and Metro Mirroring functions that are interoperable with the DS6000, ESS 800 and 750
- Call home and remote support as well as a 4-year warranty

DS8100
- A new standard in enterprise class functionality and performance with up to 115TB of physical capacity
- Host connectivity via FC/FICON or ESCON interfaces to wide variety of UNIX, Windows, iSeries and zSeries servers.
- Offers FlashCopy and Global and Metro Mirroring functions that are interoperable with the DS6000, ESS 800 and 750
- Call home and remote support as well as a 4-year warranty

DS6800
- Provides enterprise-class disk offering in a modular package at an affordable price
- Designed to provide host connectivity via FC/FICON to a wide variety of UNIX, Windows, iSeries, and zSeries servers
- Features interoperability of advanced copy services with ESS 800, ESS 750, and DS8000 series
- Designed for easy installation and serviceability and includes a 4-year warranty

DS4500
- Provides SAN-ready flexible disk storage system for UNIX and Intel processor-based environments
- Offers high-performance, full fiber solution with 2Gb Fibre Channel Connectivity
- Supports business continuance with its optional high-availability software and advanced Enhanced Remote Mirroring function
- Helps protect customer data with its multi-RAID capability and hot-swappable redundant components

DS4400
- Provides SAN-ready flexible disk storage system for UNIX and Intel processor-based environments
- Offers high-performance, full fiber solution with 2Gb Fibre Channel Connectivity
- Supports business continuance with its high-availability software and advanced Enhanced Remote Mirroring function
- Helps protect customer data with its multi-RAID capability and hot-swappable redundant components

DS4300
- Provides four 2Gb FC host ports to support multipath failover for directly attached UNIX and Intel-based servers
- Designed to deliver high performance of up to 768MB/sec throughput with turbo option
- Supports up to 112 fibre disk drives or 16.4TB capacity with Turbo option, 112 SATA disk drives or 28TB capacity with dual base or Turbo option
- Can help improve service response time with automated alerts from the optional DS4000 Service Alert feature

DS4100
- Features SAN ready, Fibre Channel attach, single or dual controller models, entry-level SATA solution to support general use, data archiving, reference data, and near-line storage applications
- Provides a low cost, entry level solution for UNIX and Intel servers
- Designed to provide scalability for easy growth (250GB to 28TB)
- Offers powerful, intuitive storage management tools

DS400
- Designed to provide cost-effective, entry-level Fibre Channel storage
- Designed to support heterogeneous operating environments including Windows, Linux, VMWare and Netware
- Features easy-to-use IBM ServeRAID manager
- Feature reliable Ultra320 SCSI drives
- Designed to scale to 5.8TB physical capacity with EXP400 SCSI Enclosures

DS300
- Designed to provide iSCSI host connectivity that leverages standard Ethernet Infrastructure
- Designed to support heterogeneous operating environments including Windows, Linux and Netware
- Features easy-to-use IBM ServeRAID manager and reliable Ultra320 SCSI drives
- Designed to scale to 2TB physical capacity

EXP Plus 320
- Provides flexible, scalable and cost-effective SCSI-attach disk storage for RS/6000 and pSeries servers
- Supports Internet-centric service providers

7133 Serial Disk System
- Provides high-throughput, high-density, scalable serial disk storage for UNIX servers
- Incorporates an architecture that avoids single points of failure and includes high-function 7133 controller
- Provides concurrent maintenance with redundant power and cooling components
- Provides flexibility and availability with its multi-RAID data protection options
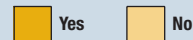
Additional information on these IBM Disk Storage products is available on the Web at **ibm.com**/totalstorage/disk

Operating Systems and Copy Services Platform Coverage

	ESS 750/800	DS8300	DS8100	DS6800	DS4500
Windows NT	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series				FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows 2000	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows Server 2003	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
NetWare	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—interoperable with ESS 800, ESS 750, DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Linux[1]	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
AIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
VMWare	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	
Dynix	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series				
HP-UX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Solaris	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
IRIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series				*
Tru64 UNIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	*
OpenVMS	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	
z/OS, OS/390	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror z/OS Global Mirror (XRC)—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy, as target for z/OS Global Mirror—Interoperable with ESS 800, ESS 750 and DS8000 series	
i5/OS	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror—Interoperable with DS8000 and DS6000 Series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS6000 series	FlashCopy, Metro Mirror, Global Mirror, Global Copy—Interoperable with ESS 800, ESS 750 and DS8000 series	

*   Request via RPQ process

1: Linux distribution support varies per product. Refer to product-specific information for current support. This chart reflects IBM's current intentions. Changes may occur without notice. Consult the appropriate Web pages for support details.

☐ Yes   ☐ No

Operating Systems and Copy Services Platform Coverage (continued)

	DS4400	DS4300[2]	DS4100	DS300/DS400	7133
Windows NT	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		Instant copy (7140)
Windows 2000	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		Instant copy (7140)
Windows Server 2003	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		
NetWare	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		
Linux[1]	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		
AIX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror			3-way copy (SSA Adapter, 7140)
VMWare				DS400 only	
Dynix					
HP-UX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		Instant copy (7140)
Solaris	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy		Instant copy (7140)
IRIX	*	*			
Tru64 UNIX	*	*			
OpenVMS					
z/OS, OS/390					
i5/OS					
DG/UX					

* Request via RPQ process

1: Linux distribution support varies per product. Refer to product-specific information for current support. This chart reflects IBM's current intentions. Changes may occur without notice. Consult the appropriate Web pages for support details.

2: VolumeCopy, Metro Mirror, Global Copy and Global Mirror requires turbo option

3: Metro Mirror is synchronous replication; Global Mirror is asynchronous replication; Metro/Global Mirror is two- or three-site cascading asynchronous replication; Global Copy is extended distance copying.

▢ Yes ▢ No

IP Attached Storage Products

	IBM TotalStorage NAS Gateway 500	IBM TotalStorage DR550
Model	5198-001	
Highlights	• Installation—Offers installation wizard designed to help simplify installation and setup • Increased access—Is designed to allow IP clients and servers to access SAN devices without each server or client being directly connected by Fibre Channel • Flexibility—Enables cross-platform file sharing (CIFS [Microsoft Windows], NFS [UNIX]) that can help reduce network complexity and expense, and allow data to be shared across the organization • Interoperability—Supports attachment to non-IBM storage via the IBM TotalStorage SAN Volume Controller† • Scalability—Supports nondisruptive capacity increases up to 224TB of direct attached or SAN-attached physical storage • Manageability—Includes integrated system diagnostics and management tools, which are designed to help minimize downtime • High performance—Is optimized for network file serving and storage requirements • Redundancy—Offers redundant fans, power supplies, disk drive, adapters, processors and clustered nodes • Copy services—Provides extensive on-board and out-board disaster recovery data protection features	• Designed as a preconfigured, integrated offering to help store, retrieve, manage, share and secure regulated and nonregulated data in non-erasable and non-rewritable format • Designed to offer automatic provisioning, migration, expiration and archiving capabilities • Supports nondisruptive enterprise scalability of up to 56TB physical capacity • Offers a comprehensive suite of software tools for policy- and event-based data management • Designed to avoid single points of failure
Scalability	Up to 224TB of SAN-attached physical storage	Single node: 3.5 and 7TB, Dual node: 3.5 7, 14, 28 and 56TB
Nodes	Single- or dual-node configurations Dual-node configuration offers active/active clustering	Single- or dual-node configurations Dual-node configuration offers active/passive clustering
Processors	1.45GHz POWER4+™ processor (orderable as 2-way or 4-way per node)	One 1.5GHz POWER5™ processor per node
Network Protocol Support	NFS v2 and v3 (UNIX and Linux), CIFS (Windows), HTTP, FTP, NTP, SNMP, SMTP	IBM Tivoli Storage Manager for Data Retention application programming interface (API)
Operating System	AIX 5L™ 5.2B	AIX 5.2 ML4
Performance**	276MB/sec CIFS 68,444 I/Os per sec NFS v3	Performance testing not completed at time of publication
PCI Slots Available	6/node	N/A
Network Connectivity	Eight (10/100/1000) Ethernet ports (copper and fiber) for file serving or service management on PCI adapters Eight (2Gbps) Fibre Channel ports for external tape and storage attachment	2 port Gigabit Copper or Fibre Ethernet (upgrades available)
ECC SDRAM Memory (max)	16GB with 2-way processor and 32GB with 4-way processor per node	1GB per node
Data Protection	On-board data protection using snapshots to create copies and snap rollback to restore backup copies of snapped data. Out-board remote mirroring over IP networks or SAN networks to provide copies of data at remote disaster recovery sites	Mirrored OS, RAID-5 for user data
Redundancy/High Availability	Redundant, hot swappable disk bays, power supplies, fans and PCI adapters	HACMP, redundant DS4100 controllers, RDAC driver to provide path failover, RAID
Backup	External tape (SCSI or FC)	External tape (recommended IBM 3592 WORM tape)
RAID Levels	SAN disk dependent	RAID-5
Systems Management	NAS WebSM, SMIT, SNMP v3, NAS CLI	SMIT, DS4000 Storage Manager GUI, SNMP
Storage Management	IBM Tivoli® Storage Resource Manager (ITSRM) agent, IBM Tivoli Storage Manager client and storage agent, IBM Tivoli SAN Manager (ITSANM) agent; additional third-party products are supported†	IBM Tivoli Storage Manager client and storage agent

*   Each IBM customer is responsible for ensuring its own compliance with legal requirements. It is the customer's sole responsibility to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the customer may need to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer is in compliance with any law.

**   Please visit **ibm.com**/totalstorage/nas for additional performance information.

†   For more information on third-party product support, please refer to "IBM NAS Interoperability" at **ibm.com**/totalstorage/nas.

SAN Virtualization

Create a tiered storage environment and increase the flexibility within your storage infrastructure by introducing solutions based on IBM TotalStorage virtualization software. Offerings include the IBM TotalStorage SAN File System, the IBM TotalStorage SAN Volume Controller and the IBM TotalStorage SAN Volume Controller for Cisco MDS 9000.

Product	Function and Value	Highlights
IBM TotalStorage SAN File System (SFS)	SAN File System is designed to virtualize and consolidate file systems across Windows, UNIX, and Linux servers and provide a common pool of storage that can be shared across servers. It supports multiple tiers of storage and provides policy based allocation of space at a file level and policy based migration of files between storage pools.	• **Simplify data management:** SFS provides policy-based data management that can help improve file and database management as well as administrator productivity. • **Improve data access:** SFS is designed to enable secure data sharing between Windows, UNIX, and Linux servers with ease and efficiency, resulting in reduced storage costs and optimized storage resources. • **Flexible, on demand operating environment:** SFS enables customers to maintain flexibility in their IT environments by virtualizing the relationship between applications and their data. This provides the flexibility to take advantage of technology as it advances, rather than being locked into one specific vendor. Contributes to automation, integration, and support for open standards. • **Reduce storage needs:** SFS is designed to provide a common pool of file space that can be accessed and used by any server on the SAN File System. SFS supports multiple tiers of storage allowing customers to match the type of storage being used to the business value of the data. • **Improve application availability:** SFS enables you to move, add, or change the file system capacity without requiring application outages. It also provides a file-based FlashCopy function that can reduce maintenance windows used for taking backups.
IBM TotalStorage SAN Volume Controller (SVC)	Based on Virtualization technology, the IBM TotalStorage SAN Volume Controller is designed to manage all disk storage as a single resource from a single point to simplify the operation of the environment. It is designed to allow a tiered storage environment to be deployed better than relying on physical disk arrays alone.	• **Manage storage volumes from a central point:** The SVC is designed to enhance the flexibility of your storage environment. It can combine the storage capacity from multiple disk arrays from different suppliers into a single pool of storage which can be managed from a central point. • **Create a tiered storage environment:** Utilizing virtualization technology, the SVC enables customers to match the cost of the storage to the value of their data. Mission-critical data can be stored on high-performance, highly available Fibre-Channel disks while non-mission-critical data can be stored on serial-ATA disks. • **Virtually eliminate downtime related to storage:** The SVC enables data migrations, storage software upgrades and changes to the physical storage without impacting host applications. • **Improve storage resource utilization:** By combining the storage capacity from multiple disk arrays into a single pool, SVC uses existing storage capacity more efficiently, which can defer additional storage purchases to save costs. • **A single, cost-effective set of advanced copy services:** The SVC can apply copy services across all the managed storage, regardless of the disk array supplier. This capability helps simplify the environment, reduce the costs of implementing disaster recovery solutions and increases the productivity of the personnel.
IBM TotalStorage SAN Volume Controller for Cisco MDS 9000 Solution	IBM and Cisco combine the SAN Volume Controller storage software with the Caching Services Module from the Cisco MDS 9000 Family of switches and directors to deliver the benefits of the SAN Volume Controller in a switch-based implementation, aiding with both data integration and consolidation of the storage network.	• **Manage storage volumes from a central point:** The SVC storage software can combine the storage capacity from multiple disk arrays from different suppliers into a single pool of storage which can be managed from a central point in the Cisco switched-fabric environment. • **Create a tiered storage environment:** Utilizing virtualization technology, the SVC for Cisco MDS 9000 solution enables customers to match the cost of the storage to the value of their data. Mission-critical data can be stored on high-performance, highly available Fibre-Channel disks while non-mission-critical data can be stored on serial-ATA disks. • **Virtually eliminate downtime related to storage:** The SVC storage software enables data migrations, storage software upgrades and changes to the physical storage without impacting host applications. • **Improve storage resource utilization:** By combining the storage capacity from multiple disk arrays into a single pool, the SVC storage software uses existing storage capacity more efficiently, which can defer additional storage purchases to save costs. And integrating the software into a Cisco switched fabric saves costs even more by reducing the space requirements within the data center. • **A single, cost-effective set of advanced copy services:** The SVC storage software can apply copy services across all the managed storage, regardless of the disk array supplier. This helps simplify the environment, reduce the costs of implementing disaster recovery solutions and increases the productivity of the personnel.

IBM TotalStorage Expert Family

Adds value to the storage subsystem solution by providing information for better management.

Product	Function and Value
IBM TotalStorage ESS Expert	Provides storage administrators with the capability to manage the performance of the IBM Enterprise Storage Server; this innovative tool furnishes storage asset and capacity management capabilities to centrally manage Enterprise Storage Servers located across the enterprise
IBM TotalStorage ETL Expert	Provides a high-performance monitoring tool to help simplify the management of IBM tape subsystems that include the IBM TotalStorage Enterprise Tape Library, Virtual Tape Server and Peer-to-Peer Virtual Tape Server
IBM TotalStorage Management Toolkit	Offers a collection of products designed to provide a comprehensive menu of solutions to meet the storage management requirements of z/OS customers
IBM TotalStorage XRC Performance Monitor	Provides the ability to monitor and evaluate the performance of a running XRC configuration; the monitor function provides information at the real-time, historic and summary levels

DFSMS Family

Provides automated and central storage management in the z/OS environment

Product	Function and Value
DFSMSdfp™	Provides data access, program and device management functions that furnish effective management of active data
DFSMSdss™	Provides data movement, copy, backup and space management functions
DFSMShsm™	Provides backup, recovery, migration and space management functions that furnish effective management of inactive data
DFSMSrmm™	Provides a policy-driven solution for the management of removable media, such as tape cartridges and reels
DFSORT™	Provides a solution for faster and easier data sorting, reporting and analysis
DFSMStvs	Enables batch jobs and CICS® (Customer Information Control Systems) online transactions to update shared VSAM data sets concurrently

IBM Tivoli Storage Manager

Function and Value

IBM Tivoli Storage Manager is designed to provide protection of your 24x7 applications and key data in the event of hardware, software or network failures. It offers move-and-store techniques and policy-based automation, which are designed to work together to help increase data and application protection, decrease disaster recovery time and lower storage administration costs. It manages inactive data, helping you match the value of the data to the most cost-effective storage management practices. Tivoli Storage Manager is designed to scale easily to protect hundreds of computers running a dozen operating systems ranging from laptops to mainframes and connected together via the Internet, WANs, LANs or SANs. Tivoli Storage Manager also offers open, easy-to-use APIs designed to enable ISVs to more easily adapt their solutions to IBM software, helping to allow joint customers to customize, better secure and extend the functionality of their storage environment.

Highlights
- Designed to protect valuable data in the most cost-effective manner
- Designed to archive inactive data to help reduce costs
- Designed to help ensure continuity and recovery

IBM TotalStorage Productivity Center

Product	Function and Value	Highlights
TotalStorage Productivity Center for Disk (Formerly known as IBM TotalStorage Multiple Device Manager)	In a pooled or virtualized SAN environment, multiple devices work together to create a storage solution. IBM TotalStorage Productivity Center for Disk is designed to provide integrated administration, optimization and replication features for these virtualization solutions.	• Designed to help reduce the complexity and cost of storage management while improving data availability • Offers centralized, open standards–based management of storage devices • Designed to help enhance storage administrator productivity • Offers proactive management of storage devices • Designed to monitor and automate replication operations across storage devices
TotalStorage Productivity Center for Replication (Formerly known as IBM TotalStorage MDM Replication Manager)	TotalStorage Productivity Center For Replication is designed to simplify and automate the configuration of your replication environment allowing for more effective Peer-to-Peer Remote Copy (PPRC) and IBM FlashCopy management. It is also designed to monitor copy operations across devices to support a replication environment.	• Automates the configuration of your ESS advanced copy services (FlashCopy and PPRC) • Monitors and manages the ESS copy operations to ensure successful completion from your source volumes to your disaster recovery volumes bsystems
IBM TotalStorage Productivity Center for Data (Formerly known as IBM Tivoli Storage Resource Manager)	IBM TotalStorage Productivity Center for Data is an intelligent console for storage environments that provide a set of policy-driven automated tools for managing storage capacity, availability, events, performance and assets, including DAS, NAS and SAN technologies.	• Designed to help leverage and optimize existing storage resources and perform storage management with a high level of control • Designed to help maximize storage utilization • Designed to be able to manage more storage with the same staff
IBM TotalStorage Productivity Center for Fabric (formerly known as IBM Tivoli SAN Manager)	IBM TotalStorage Productivity Center for Fabric is designed to help automate the management of heterogeneous storage networks and works with a broad range of devices, so businesses can leverage and better use existing technology investments. It is designed to provide comprehensive management of physical and logical configurations for multi-vendor SANs with automatic resource discovery, event monitoring and alerting, zone control and SAN error-prediction capabilities.	• Designed to help predict storage network failures before they happen, enabling preventative maintenance • Designed to help accelerate problem isolation when failures occur • Designed to report on storage network performance • Designed to create a single point of control, administration and security for the management of heterogeneous storage networks

IBM Global Services for Storage and Storage Networking

Data Storage Services from IBM can help companies achieve their business objectives by creating cost-effective data storage solutions that address the requirements of key business applications. These solutions can support multiple platforms and product vendors, helping to provide enhanced protection for critical business data, increased asset utilization, availability and reliability levels with reduced management costs.

IBM Global Services, as the leading data storage services provider, brings best practices from its thousands of customer engagements to work with your employees to integrate new solutions and technology with your business and IT needs. IBM offers a comprehensive portfolio of data storage services including:

Assess
- Analysis of enterprise information needs and environment
- Defined enterprise-wide storage strategies
- Quantified business benefits

Plan
- Backup/restore and business continuity planning
- Performance and capacity planning
- Enterprise security architecture
- Storage migration and consolidation

Design
- Networked storage architecture design
- SAN configuration and integration services
- Proof of concept, validation and certification

Implement
- Implementation, testing and migration services
- Education and training
- Installation, relocation, cabling and site preparation

Run
- Business and application recovery services
- Systems monitoring and management
- Managed Storage Services

IBM Global Services has a track record in offering services for open and mainframe storage, data migration, installation and support services for IBM and non-IBM environments. Some examples are:
- IBM Storage Strategy Assessment assists with the vision and strategy, assessment, architecture and conceptual designs to help customers optimize their storage infrastructure to new architectures.
- IBM Planning Services for 3494 Automated Tape Library and Virtual Tape Server can help improve tape storage management and gain control of an often expanding library of tapes.
- IBM Operational Support Services for Tivoli® Storage Manager assists customers in the planning and implementation of storage management software.
- IBM Managed Storage Services offer scalable, cost-effective storage capacity, management and backup/restore services on a usage basis.

More information about IBM storage services can be found at **ibm.com**/services/storage.

IBM Global Financing

IBM Global Financing offers competitive financing to credit-qualified customers and IBM Business Partners to assist them in acquiring IT solutions. Our offerings include financing for IT acquisition—including hardware, software and services, both from IBM and other manufacturers or vendors—as well as commercial financing (revolving lines of credit, term loans, acquisition facilities and inventory-financing credit lines) for IBM Business Partners. Offerings (for all customer segments: small, medium and large enterprise), rates, terms and availability may vary by country. Contact your local IBM Global Financing organization or visit the Web at **ibm.com**/financing.