IBM

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, particularly through workflows. 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.

Entry SAN switches for easy-to-use SMB solutions

IBM TotalStorage SAN16B-2 switch (2005-B16) IBM TotalStorage SAN16B-2 Express Model switch (2005-16B)	• Provides high performance, scalable and simple-to-use fabric switch with 8, 12 or 16 port operating at 1, 2 and 4 Gigabits per second (Gbps) fabric for servers running Microsoft® Windows®, UNIX®, Linux®, NetWare® and OS/400® operating systems, server clustering, infrastructure simplification and business continuity solutions. The SAN16B-2 includes Advanced Web Tools, an easy-to-use configuration wizard designed to simplify setup and ongoing maintenance for novice users.
IBM TotalStorage Storage Switch L10 (2006-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
IBM TotalStorage SAN16M-2 switch (2026-416)	• Provides high performance, scalable and simple-to-use fabric with 8, 12 or 16 port operating at 1, 2 and 4 Gigabits per second (Gbps) fabric for servers running Microsoft Windows, UNIX®, Linux, NetWare® and OS/400® operating systems, server clustering, infrastructure simplification and business continuity solutions. The base switch includes dual power, zoning, EFCM Basic management and an easy-to-use installation wizard designed to simplify setup and ongoing maintenance for novice users.
IBM TotalStorage SAN12M-1 (2026-E12) IBM TotalStorage SAN16M-2 Express Model switch (2026-16E)	• 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

Midrange SAN switches for scalable SMB and enterprise solutions

IBM TotalStorage SAN32B-2 switch (2005-B32) IBM TotalStorage SAN32B-2 Express Model switch (2005-32B)	• Provides high performance, scalable and simple-to-use fabric switch with 16, 24 or 32 port operating at 1, 2 and 4 Gigabits per second (Gbps) fabric for servers running Microsoft Windows, UNIX, Linux, NetWare and OS/400 operating systems, server clustering, infrastructure simplification and business continuity solutions. The SAN16B-2 includes dual replaceable power supplies, Advanced Zoning, Fabric Watch and Webtools.
IBM TotalStorage SAN32M-2 switch (2026-432) IBM TotalStorage SAN32M-2 Express Model switch (2026-32E)	• Provides high performance, scalable and simple-to-use fabric with 16, 24 or 32 port operating at 1, 2 and 4 Gigabits per second (Gbps) fabric for servers running Microsoft Windows, UNIX, Linux, NetWare and OS/400 operating systems, server clustering, infrastructure simplification and business continuity solutions. The base switch includes dual power, zoning, EFCM Basic management and an easy-to-use installation wizard designed to simplify setup and ongoing maintenance for novice users.
IBM TotalStorage SAN24M-1 switch (2026-224)	• 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
IBM TotalStorage SAN32M-1 switch (2026-232)	• Provides SAN switching for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. Midrange 8 to 32-port, 1 and 2 Gbps fabric and FICON® switch for Windows and UNIX and z/OS, includes zoning, SANpilot
Cisco MDS 9120 Fabric Switch (2061-020)	• 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
Cisco MDS 9140 Fabric Switch (2061-040)	• 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
Cisco 9216A and Cisco 9216i Multilayer Fabric Switch (2062-D1A and 2062-D1H)	• Provides SAN switching for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. 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

IBM TotalStorage SAN256B director (2109-M48)	• High performance, high density and high availability SAN director designed to be the foundation for large enterprise-class infrastructure simplification and business continuity solutions. The SAN256B director provides from 16 to 256 ports and contains two control processors for high availability and from one to eight blades, each of which contains either 16 or 32 ports. Each port can support 4, 2 or 1 Gigabits per second (Gbps) link speeds. Standard features including Advanced Inter-Switch Link (ISL) Trunking, Web Tools, Advanced Zoning, Fabric Watch, Performance Monitoring and Fabric Access Layer (API).
IBM TotalStorage SAN Director M14 (2109-M14)	• High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. Provides 16 to 128 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers
IBM TotalStorage SAN140M director (2027-140)	• High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. Provides 16 to 140 port, 1 and 2 Gbps Fibre Channel and FICON switch for Windows, Linux, UNIX and z/OS servers
IBM TotalStorage SAN256M director (2027-256)	• High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. Provides 64 to 256 port, 1 and 2 Gbps Fibre Channel and FICON director with 10 Gbps backbone links for Windows, Linux, UNIX and z/OS servers. Includes Director FlexPar capability for up to four logical partitions with separate fabric services
Cisco MDS 9506 Director (2062-D04)	• High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. 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
Cisco MDS 9509 Director (2062-D07)	• High availability enterprise SAN director for Intel processor-based servers, IBM @server iSeries, pSeries and System z9. 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
IBM TotalStorage SAN16B-R SAN router (2109-R16)	• Provides multiprotocol SAN routing for IBM @server xSeries, iSeries and pSeries. Router includes 8, 16 1 and 2 Gbps Fibre Channel and Gigabit Ethernet ports and iSCSI server connectivity. FC-FC Routing for SAN island consolidation and FCIP Tunneling Service for SAN extension of IP WAN infrastructures features
IBM TotalStorage SAN04M-R SAN router (2027-R04)	• Provides two Fibre Channel ports for attachment to existing SANs and two Gigabit Ethernet ports with Internet SCSI, iSCSI server connectivity for cost-effective infrastructure simplification solutions. Internet Fibre Channel Protocol, iFCP features are offered for cost-effective high performance metro and global business continuity solutions.
IBM TotalStorage SAN16M-R SAN router (2027-R16)	• Provides multiprotocol SAN routing with twelve 2 Gbps Fibre Channel ports for attachment to existing SANs and four Gigabit Ethernet ports with iSCSI server connectivity for enterprise infrastructure simplification solutions. SAN Routing features for SAN island consolidation and iFCP features for SAN extension over IP WAN infrastructures for enterprise business continuity solutions are offered.

Entry-level Tape Products

	Tape Drives							Desktop Tape Libraries	Optical
	7205	**7206**	**7206-VX2**	**7207**	**7212-102***	**7212-312**	**3580**	**3581**	**7210**
Product	SDLT Drive Tape Drive	4mm DDS-4 4mm Gen 5 (DAT72)	8mm VXA-2 Tape Drive	SLR (QIC) Compatible External Tape Drive	Storage Device Enclosure	VXA-2 Autoloader	Tape drive	Tape autoloader	External DVD-RAM
Machine model	**7205** 550	**7206** 336-DDS Gen 5	**7206** VX2	**7207** 330	**7212** 102	**7212** 312	**3580** LTO Gen 2 LTO Gen 3 L33 Ultrium 3 L23 Ultrium 2 H23 Ultrium 2	**3581** LTO Gen 2 LTO Gen 3 L28 Ultrium 2 F28 Ultrium 2 L23 Ultrium 2 H23 Ultrium 2	**7210** 025-9.4GB 030-9.4GB
Product strengths	Cost-effective save/restore/archive solution	Cost-effective streaming tape drive	Low-cost, high-capacity VXA-2 technology	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	Open systems attach, high capacity, fast data transfer rate, desktop footprint	Open systems attach, multi-platform, high capacity, optional barcode reader	External deskside Optical storage
Number of heads/tracks	8/536	Rotating Drum	Rotating Drum	1/1	4mm/VXA: Rotating Drum	Rotating Drum	Ultrium 3: 16/704 Ultrium 2: 8/512	Ultrium 3 Technology is now available Ultrium 2: 8/512	025-enclosed media 030-back media
Number of drives	1	1	1	1	1–2	1	1	1	1
Max number of cartridges	1	1	1	1	2	10	1	8 - L28, F28 7 - L23, H23	1
Cartridge capacity native/compressed	160/320GB	336: 36/72GB	36/72GB 80/160GB	330: 30/60GB	DAT72: 36/72GB SLR: 60/100GB VXA-2: 80/160GB Ultrium HH: 200/400GB	80 GB/160GB	Ultrium 3: 400GB Native Ultrium 2: 200/400GB	Ultrium 3 Technology is now available Ultrium 2: 200/400GB	2.6GB-7.4GB
Max system capacity compressed[1]	320GB	336: 72GB	160GB	330: 30/60GB	160GB with two VXA-2 drives 18.8GB with two DVD-RAM drives	1600 GB	Ultrium 3: 800GB Ultrium 2: 400GB	L23, H23: 2.8TB L28, F28: 3.2TB L38; F38: 6.4TB	N/A
Max drive data rate[1] native/compressed	16/32 MBps	336: 3/6 MBps	6/12 MBps	330: 4/8 MBps	DDS/DAT72: 3/6 MBps VXA: 6/12 MBps	6/12 MBps VXA-2	Ultrium 3: 80 MBps* Ultrium 2: 35/70 MBps	Ultrium 3: 80/160 MBps Ultrium 2: 35/70 MBps	N/A
Time to data[4]	70 seconds	50 seconds	50 seconds	330: 50 seconds	VXA-2: 40 seconds SLR: 50 seconds DAT72: 50 seconds	50 seconds	Ultrium 3: 47 seconds Ultrium 2: 49 seconds	Ultrium 3: 47 seconds Ultrium 2: 49 seconds	5 seconds
Interface	SCSI-2 F/W, Diff PCI, Ultra2 SCSI LVD	SCSI-2 F/W SE, LVD/SE	SCSI-3 ULTRA, LVD/SE, 160/320	SCSI-2 SE, ULTRA, LVD/SE, 160/320	SCSI-3 ULTRA, LVS/SE, 160/320	SCSI-3 Ultra, LVD-SE, 160/320	L33, L23, LVD H23, HVD	L28, F28-FC fabric L23, LVD H23, HVD L38, LVD; F38, FC fabric	SCSI-3 ULTRA, LVD-SE, 160/320
Supported platforms[5]	p5, pSeries, RS/6000[3]	p5, pSeries, RS/6000	p5, pSeries, RS/6000, i5, iSeries, AS/400	i5, iSeries, AS/400, p5, pSeries, RS/6000	p5, pSeries, RS/6000, i5, iSeries, AS/400	p5, pSeries/RS6000	pSeries, RS/6000, Windows NT, Sun	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	p5, pSeries, RS/6000, i5, iSeries, AS/400
Media part number 1-888-IBM-Media	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	xSeries, Netfinity®, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	Refer to Tape Media, page 8	Refer to Tape Media, page 8
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	CRU, IBM Onsite Repair 1 year, 24x7	A C D E F G H[6]	F28, L28: 3 years, CRU	IBM Onsite Repair 1 year, 24x7

* 7212-102 also offers DVD-ROM and DVD-RAM optical drives
For most current information, visit: **ibm.com**/servers/storage/tape/compatibility/index.html

F/W = Fast/Wide, **Diff** = Differential, **N/A** = Not Applicable, **FC** = Fibre Channel, **X** = Extended length cartridge, **IOE** = IBM Onsite Exchange, **CRU** = Customer Replaceable Unit
NOTES 1: Compressed data rates are estimates and are data-, application- and processor-dependent. User results may vary. **2:** Max number of cartridges decreases as tape drives are added. **3:** AIX 4.1.5 or later. **4:** Load and search only. **5:** Server platforms with SAN-ready attachability, model- and feature-dependent. **6:** Depends on virtual cartridge configuration. **7:** The latest ISV support can be found in the connectivity section at **ibm.com**/storage/tape/conntrix. **A** = IBM Tivoli Storage Manager, **B** = Symantec VERITAS NetBackup, **C** = Symantec VERITAS Backup Exec, **D** = EMC Legato NetWorker, **E** = CA BrightStor ARCserve Backup, **F** = HP OpenView Storage Data Protector, **G** = CommVault Galaxy, **H** = BakBone NetVault, **I** = LSC, **J** = IBM BRMS, **K** = IBM OnDemand, **L** = Help/Systems Robot/Save, **M** = LXI Media Management, **N** = Dantz.

Midrange Tape Products

	Tape Libraries		
	3582	**3583**	**3584**
Product	Tape library	Tape library	Tape library
Machine model	**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
Product strengths	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, Dual robotic accessors
Number of heads/tracks	Ultrium 3 Technology is now available Ultrium 2: 8/512	Ultrium 3 Technology is now available Ultrium 2: 8/512	3592: 8/512 Ultrium 3 Technology is now available Ultrium 2: 8/512
Number of drives	1–2	1–6	1–192
Max number of cartridges	24	72	6,887[2]
Cartridge capacity native/com-pressed	Ultrium 3 Technology is now available Ultrium 2: 200/400GB	Ultrium 3 Technology is now available Ultrium 2: 200/400GB	3592: 300/900GB 3592: 300/900 WORM Ultrium 3 Technology is now available Ultrium 2: 200/400GB
Max system capacity compressed[1]	Ultrium 3: 19.2TB Ultrium 2: 9.6TB	Ultrium 3: 57.6TB Ultrium 2: 28.8TB	3592: 5.63PB Ultrium 3: 5.63PB Ultrium 2: 2.75PB
Max drive data rate[1] native/compressed	Ultrium 3: 80/160 MBps Ultrium 2: 35/70 MBps	Ultrium 3: 80/160 MBps Ultrium 2: 35/70 MBps	3592: 40/120 MBps Ultrium 3: 80/160 MBps Ultrium 2: 35/70 MBps
Time to data[4]	Ultrium 3: 47 seconds Ultrium 2: 49 seconds	Ultrium 3: 47 seconds Ultrium 2: 49 seconds	3592: Cartridge Dependent Ultrium 3: 47 seconds Ultrium 2: 49 seconds
Interface	LVD, HVD, FC fabric	LVD, HVD, FC fabric	3592: FC fabric Ultrium 3: FC fabric Ultrium 2: FC Fabric
SAN-ready[5]		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
ISV (Independent Software Vendor)[5]		A C D E F G H[8]	A C D E F G H[8]
Media part number 1-888-IBM-Media	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8
Warranty	3 years, CRU	IBM Onsite Repair 1 year, 24x7	IBM Onsite Repair 1 year, 24x7

* Native only

** In most countries

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Enterprise Tape Products

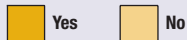|	Tape Drives			Tape Libraries		
	3588	**3590**	**3592**	**3584**	**3494**	**3494-VTS**
Product	LTO Gen 3 Tape Drive	1/2" Tape Drive	1/2" Tape Drive	Tape library	1/2" Cartridge Tape Library	Virtual Tape Server
Machine model	3588 F3A	3590 E11 / E1A H11 / H1A	3592 J1A	3584 L52-base frame for LTO, D52-expansion frame for LTO, up to 15 frames may be added	3494 (Frames) L12, L14, L22-Library D12,D14,D22,D24-Library (Frame) S10-Storage HA1-High Availability	3494 B10, B20
Product strengths	Open systems attach, high capacity, fast data transfer rate	Capacity, performance, reliability	Multipurpose drive, capacity, performance, Write Once Read Many (WORM) support	Open Systems attach, Multiplatform, Advanced Library Management System, Ultra-Scalable, High Capacity, Enterprise Tape Drive 3592 support, WORM support, Dual robotic accessors	Modular, reliable automation for high-volume storage	Virtual Tape, fastaccess Peer-to-Peer copy
Number of heads/tracks	Ultrium 3: 16/704	H: 16/384 E: 16/256	8/512	3592: 8/512 Ultrium 3 Technology is now available Ultrium 2: 8/512	Drive Dependent	N/A
Number of drives	1	1	1	1–192	N/A	B10 VTS 64 Virtual Drives B20 VTS 128/256 Virtual Drives PtP VTS 128/256 Virtual Drives
Max number of cartridges	N/A	N/A	N/A	6,887[2]	6,240[2]	500,000 (virtual volumes)
Cartridge capacity native/compressed	400/800GB 400/800GB WORM	E: 20/60GB EX: 40/120GB H: 30/90GB HX: 60/180GB	300/900GB 300/900GB WORM 60/180GB 60/180GB WORM	3592: 300/900GB 3592: 300/900 WORM Ultrium 3 Technology is now available Ultrium 2: 200/400GB	N/A	N/A
Max system capacity compressed[1]	800GB	EX: 120GB HX: 180GB	900GB	3592: 5.63PB Ultrium 3: 5.63PB Ultrium 2: 2.75PB	H: 0.5 PB HX: 1.1 PB J1A: 5.6 PB	Disk: up to 5.2TB Tape: 5616TB
Max drive data rate[1] native/compressed	80/160 MBps	E: 14/42 MBps H: 14/42 MBps	40/120 MBps	3592: 40/120 MBps Ultrium 3: 80/160 MBps Ultrium 2: 35/70 MBps	Drive Dependent xxx GB/hour with 3590 xxx GB/hour with 3592	VTS: Drive Dependent
Time to data[4]	Ultrium 3: 47 seconds	Model Dependent	Cartridge Dependent 32 sec average for JJ/JX cartridge 60 sec average for JA/JW cartridge xx sec average for 3590 xx sec average for 3592	3592: Cartridge Dependent Ultrium 3: 47 seconds Ultrium 2: 49 seconds	Drive Dependent	VTS: 1–3 seconds if data in VTS Cache
Interface	2 Gbps FC, SCSI-LVD	SCSI-2. 2 Gbps FC, Diff PCI, Ultra SCSI, FC, ESCON®, FICON, 2Gb FICON	2 Gbps FC, FICON	3592: FC fabric Ultrium 3: FC fabric Ultrium 2: FC Fabric	SCSI-2 F/W, Diff PCI, Ultra SCSI, FC, ESCON, FICON, 2Gb FICON	N/A
SAN-ready[5]		pSeries, iSeries, RS/6000, Sun, HP, Windows NT, Linux, Windows 2000, Tru64 UNIX	pSeries, iSeries, RS/6000®, Sun, HP, Windows NT®, Linux, Windows 2000	pSeries, RS/6000, Windows NT, Sun	pSeries, iSeries, RS/6000, Sun, HP, Windows NT, Linux, Windows 2000, Tru64 UNIX	pSeries, RS/6000, Windows NT, Windows 2000, Sun
Supported platforms[5]	xSeries, Netfinity®, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	iSeries, AS/400, pSeries, RS/6000, System z9, S/390, Tru64 UNIX, Linux, Windows 2000, Sun, HP	iSeries, AS/400®, pSeries, RS/6000, System z9, S/390®, Linux, Windows 2000, Sun, HP	xSeries, Netfinity, iSeries, AS/400, pSeries, RS/6000, Windows 2000, Windows Server 2003, Sun, HP, Linux	iSeries, AS/400, pSeries, RS/6000, System z9, S/390, Linux, Windows 2000, Sun, HP	pSeries, RS/6000, System z9, S/390, Windows 2000, Sun, HP
ISV (Independent Software Vendor)[5]	A B D E F G H[8]	A B D E F G H[8]	A B D E F G H[8]	A C D E F G H[8]	A B D E G H[8]	A B D E G H[8]
Media part number 1-888-IBM-Media	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8	Refer to Tape Media, page 8
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

Selecting a Solution

	Model	Technology	Typical Capacity (GB)*	System z9	p5/pSeries	i5/iSeries**	xSeries Netfinity	Open Systems***
Entry Tape Products	7204-536	HDD	36	No	Yes	Yes	No	Yes
	7204-573	HDD	73	No	Yes	Yes	No	Yes
	7204-646	HDD	146	No	Yes	Yes	No	Yes
	7205-550	SDLT	320	No	Yes	Yes	No	Yes
	7206-336	DAT72	72	No	Yes	Yes	No	Yes
	7206-VX2	8mm VXA-2	160	No	Yes	Yes	No	Yes
	7207-330	SLR	60	No	Yes	Yes	No	Yes
	7212-102	DVD, SLR, VXA-2	320	No	Yes	Yes	No	Yes
	7212-312	VXA-2	1600	No	Yes	Yes	No	Yes
Midrange Tape Products	3580-L23, H23 3580-L13, H13, L11, H11	Gen 3	400 200	Yes	Yes	Yes	Yes	Yes
	3581-L13, H13, L17, H17	Gen 2	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	5.6PB	Yes	Yes	Yes	Yes	Yes
Enterprise Tape Products	3588			Yes	Yes	Yes	Yes	Yes
	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 5.6PB	Yes	Yes	Yes	Yes	Yes
	3494-B10, B20 Virtual Tape Server	Virtual Tape 1/2" Enterprise	Up to 5.6PB	Yes	Yes	No	Yes	Yes

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

** Available on i5 through AIX/Linux partitioning

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

Yes   No

IBM 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 IBM Systems 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

Overview
The IBM TotalStorage Proven program has been designed on a simple premise: give customers the ability to select the best combination of interoperable storage technologies to help minimize their investment risk, increase business efficiency and expedite their infrastructure implementation.

The IBM TotalStorage Proven program is all about leveraging IBM storage with business applications, ISV and Business Partner software, and market leading hardware components which together deliver solutions that address today's client needs.

Customer Benefits
Pre-qualified configurations

Customers will be better able to identify a variety of pre-qualified, interoperable storage elements. By taking pre-qualified applications and hardware and combining them with IBM storage technology a client can have an easier time identifying solutions that address their storage needs.

IBM Business Partner Benefits
Potential for reduced sales cycle and integration issues

For IBM Business Partners, the IBM TotalStorage Proven program is intended to help reduce the sales cycle and integration issues, allowing more time for higher margin customization. Another added value for IBM Business Partners is the interoperability qualification program where companies work together with IBM, which can help supports their ability to develop and deliver products or solutions that interoperate with the broad portfolio of IBM TotalStorage products.

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Media Tape	Highlights	Technology	Capacity			Part number	Related products	Part number
			Length (m/feet)	native	Compressed (typical)			
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	3592 Tape Cartridge	610/2001 610/2001 246/810 246/810	300GB 300GB WORM 60GB 60GB WORM	900GB 900GB WORM 180GB 180GB WORM	18P7534 18P7538 24R0316 24R0317		
		3590 Tape Cartridge	320/1050	10/20/30GB	30/60/90GB	05H4434	3590 Conductive Abrasive Cleaning Cartridge	05H4435
		3590E Tape Cartridge	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 on VXA-2 Drive	VXA 8mm—V6 VXA 8mm—V17 VXA 8mm—V23 VXA 8mm—X6 VXA 8mm—X10 VXA 8mm—X23	62/203 170/558 230/754 62/203 124/406 230/754	20GB 59GB 80GB 20GB 40GB 80GB	40GB 118GB 160GB 40GB 80GB 160GB	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

Media Tape	Highlights	Technology	Capacity Length (m/feet)	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 stable tape 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

Entry-level Disk Systems

	xSeries Only SAN Solutions		pSeries Only Direct Attach Solutions	SATA SAN Solutions	pSeries Only Direct Attach Solutions
	DS300	**DS400**	**EXP Plus 320**	**DS4100**	**7204**
Product	DS300	DS400	EXP Plus 320	DS4100 (formerly FAStT100 Storage Server)	External Disk Drive
Machine/model	1701-1RL, 1701-1RS, 1701-2RD	1700-1RS, 1700-2RD	2104/DS4, TS4	1724-100/1SC	7204-573, 7204-646
Platform support[1]	Windows 2000, Windows 2003, RedHat 3, RedHat 4, SuSE 8, SuSE 9, SteeleEye	Windows 2000, Windows 2003, RedHat 3, RedHat 4, SuSE 8, SuSE 9, SteeleEye	pSeries, select RS/6000 servers, AIX	Windows Server™ 2003, Windows 2000 Server w/SP4 & Adv. Server, Novell NetWare 6.0 w/SP4, NetWare 6.5 w/SP2, Red Hat Enterprise Linux 3.0, 4.0, SUSE LINUX Enterprise Server 8, 9, VMware ESX 2.5.1, AIX 5.1/5.2, 5.3, HP UX 11/11i, Solaris 7/8/9	pSeries, select RS/6000 servers, AIX 7204 646 – also supports LINUX® version SLES 9
Host connectivity	iSCSI	Fibre Channel	Ultra 320 SCSI	Fibre Channel	Ultra SCSI - LVD
SAN support	Switched Ethernet	Direct, Switched Fabric	N/A	Direct, FC-AL, Switched Fabric	N/A
Copy services	FlashCopy	FlashCopy	N/A	FlashCopy option, Enhanced Remote Mirroring	N/A
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 controllers, concurrent microcode update capability, dual-pathing driver	
Controller	Dual active 1GB iSCSI RAID Controllers	Dual Active 2GB FC RAID Controllers	Adapters in server	Single/dual 2GB RAID controller	
Cache (min, max)	256MB Battery Back-up	256MB Battery Back-up	N/A	256MB, 512MB	N/A
RAID support	0, 1, 5, 10, 50	0, 1, 5, 10, 50	0, 1, 5 (using server-based adapters)	0, 1, 3, 5, 10	N/A
Capacity (min, max)	36GB, 4.2TB	36GB, 12TB with 2 EXP400 Expansion Units	32GB, 2TB	250GB, Dual controller supports 28TB with seven Expansion Units Single controller supports 3.5TB	7204-573; 73GB 7204-646; 146GB
Drive interface	Ultra320 SCSI	Ultra320 SCSI	Ultra 320 SCSI	2Gb FC-AL	Ultra SCSI
Drive support	73GB, 146GB, 300GB 10,000 rpm disk drives; 36GB, 73GB, 146GB 15,000 rpm disk drives	73GB, 146GB, 300GB 10,000 rpm disk drives; 36GB, 73GB, 146GB 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	250GB 7,200 rpm SATA disk drives	Single Drive 7204-573; 73GB 7204-646; 146GB
Clustering Support	Microsoft Windows MSCS	Microsoft Windows MSCS	HACMP	Microsoft Clustering Services, IBM SAN Volume Controller 2.1.0	N/A

Midrange Disk Systems

	DS4300	DS4500	DS4800
Product	DS4300 (formerly FAStT600 Storage Server)	DS4500 (formerly FAStT900 Storage Server)	DS4800
Machine/model	1722-60U/6LU	1742-90U	1815-82A/84A
Platform support[1]	pSeries, xSeries, Windows 2000 Server w/SP4 & Adv. Server, Novell NetWare 6.0 w/SP4, NetWare 6.5 w/SP2, Red Hat Enterprise Linux 3.0, 4.0, SUSE LINUX Enterprise Server 8, 9, VMware ESX 2.5.1, AIX 5.1/5.2, 5.3, HP UX 11/11i, Solaris 7/8/9	pSeries, select RS/6000 servers, xSeries, select Netfinity servers, select Sun and HP UNIX servers and other Intel processor-based servers, Windows 2000 Server w/SP4 & Adv. Server, Novell NetWare 6.0 w/SP4, NetWare 6.5 w/SP2, Red Hat Enterprise Linux 3.0, 4.0, SUSE LINUX Enterprise Server 8, 9, VMware ESX 2.5.1, AIX 5.1/5.2, 5.3, HP UX 11/11i, Solaris 7/8/9	pSeries, xSeries, Windows Server™ 2003, Windows 2000 Server & Adv.Server, Novell NetWare 6.0 w/SP4 and 6.5 w/SP2, Red Hat Enterprise Linux 3.0, SUSE LINUX Enterprise Server 8/9, VMware ESX 2.5.1, AIX 5.1/5.2/5.3, HP UX 11/11i, Solaris 7/8/9
Host connectivity	Fibre Channel	Fibre Channel	Fibre Channel
SAN support	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric
Copy services	Single: FlashCopy Dual base: FlashCopy, VolumeCopy Turbo option: FlashCopy, VolumeCopy, Enhanced Remote Mirroring	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, FlashCopy, VolumeCopy
Availability features	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	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual-pathing driver
Controller	Single/dual active 2GB RAID controllers; optional turbo feature	Dual active 2GB RAID controllers	Dual active 4Gb RAID controllers
Cache (min, max)	256, 256 (single), 512MB, 512MB (base) 2GB, 2GB (turbo option)	2GB, 2GB	4GB, 4GB (82A) 8GB, 8GB (84A) 16GB, 16GB (88A)
RAID support	0, 1, 3, 5, 10	0, 1, 3, 5, 10	0, 1, 3, 5, 10
Capacity (min, max)	36.4GB, 33.6TB via EXP700/EXP710 (FC) 250GB, 56TB via EXP100 (Serial ATA)	36.4GB, 67.2TB via EXP700/EXP710 (FC) 250GB, 56TB via EXP100 (Serial ATA)	36.4GB, 67.2TB via EXP700/EXP710 (FC) 250GB, 56TB via EXP100 (Serial ATA)
Drive interface	2Gb FC-AL	2Gb FC-AL	4Gb Switched
Drive support	36.4GB, 73.4GB,146.8GB and 300GB 10,000 rpm; 18.2GB, 36.4GB, 73.4GB and 146.8GB 15,000 rpm	36.4GB, 73.4GB,146.8GB and 300GB 10,000 rpm; 18.2GB, 36.4GB, 73.4GB and 146.8GB 15,000 rpm	36.4GB, 73.4GB,146.8GB and 300GB 10,000 rpm; 18.2GB, 36.4GB, 73.4GB and 146.8GB 15,000 rpm
Certifications	Microsoft RAID, Cluster and Data Center, HACMP, VERITAS Clustering	Microsoft RAID, Cluster, NetWare Cluster, HACMP, VERITAS Clustering[4]	Microsoft RAID, Cluster, NetWare Cluster, HACMP, VERITAS Clustering[4]

Enterprise Disk Systems

	DS6800	DS8100	DS8300	ESS 750	ESS 800
Product	IBM TotalStorage DS6800	IBM TotalStorage DS8000 Series	IBM TotalStorage DS8000 Series	Enterprise Storage Server	Enterprise Storage Server®
Machine/model	1750/511	2107/921	2107/922/9A2	2105/750	2105/750
Platform support[1]	xSeries, iSeries, pSeries, RS6000, System z9, 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, System z9, 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, System z9, 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, AS/400, pSeries, RS/6000, System z9, 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, System z9, 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
Host connectivity	1Gb and 2Gb Fibre Channel/FICON	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, ESCON, SCSI
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, as target for z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy®, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror
Availability features	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	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
Controller	Dual active/active	Dual active/active	Dual active/active	SMB dual active	SMB dual active; optional turbo feature
Cache (min, max)	4GB	16/128GB	32/256GB	8GB, 16GB	8GB, 64GB
RAID support	5, 10	5, 10	5, 10	5, 10	5, 10
Capacity (min, max)	292GB, 38.4TB	1.1TB, 115TB	1.1TB, 192TB	1.1TB, 4.6TB	582GB, 55.9TB (physical capacity)
Drive interface	2Gb Fibre Channel	2Gb Fibre Channel	2Gb Fibre Channel	SSA	SSA
Drive support	73GB 15K, 146GB 10K, 300GB 10K, 146GB 15K	73GB 15K, 146GB 10K, 300GB 10K	73GB 15K, 146GB10K, 300GB 10K	72.8GB, 145.6GB (10,000rpm)	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
Certifications				Microsoft RAID, Cluster and Data Center, GDPS, HACMP, NetWare, Linux	Microsoft™ RAID, Cluster and Data Center, GDPS, HACMP™, NetWare, Linux

Selecting a solution

	DS4800	DS6800	DS8100	DS8300	ESS
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	Yes	Through DS Storage Manager Server	Through DS Storage Manager Server	Through DS Storage Manager Server	Yes
Rack mount	Yes	Yes	Yes	Yes	Yes
Virtualization	No	No	No	Yes	No
Virtualization through SAN Volume Controller	Yes	Yes	Yes	Yes	Yes

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

Selecting a solution (continued)

	DS300	DS400	DS4100	DS4300	DS4500	EXP Plus 320
Local copy within controller	Yes	Yes	Yes	Yes	Yes	No
Remote Copy (>10 km)	No	No	No	Turbo option only	*	No
Centralized management	Yes	Yes	Yes	Yes	Yes	No
Storage area network	iSCSI	Yes	Yes	Yes	Yes	No
Concurrent heterogeneous servers (UNIX and Intel)	Intel only	Intel only	Yes	Yes	Yes	No
Concurrent microcode install	No	No	Yes	Yes	Yes	No
Intermix disk capacities	No	No	Yes	Yes	Yes	No
Multiple RAID options	Yes	Yes	Yes	Yes	Yes	requires adapter
Controller-based call-home	No	No	Yes	Yes	Yes	No
Rack mount	Yes	Yes	Yes	Yes	Yes	Yes
Virtualization	No	No	No	No	No	No
Virtualization through SAN Volume Controller	No	No	Yes	Yes	Yes	No

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

Product	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 System z9 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 System z9 servers • Top notch storage consolidation system with Storage System LPAR capability • Offers FlashCopy and Global and Metro Mirroring functions • 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 System z9 servers. • Offers FlashCopy and Global and Metro Mirroring functions • 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 System z9 servers • Features FlashCopy as well as Global and Metro Mirroring functions • Designed for easy installation and serviceability and includes a 4-year warranty
DS4800	• Provides SAN-ready flexible disk storage system for UNIX and Intel processor-based environments • Offers high-performance, full fiber solution with 4Gb 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
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
DS4300	• Provides four 2Gb FC host ports to support multipath failover for directly attached UNIX and Intel processor-based servers • Designed to deliver high performance of up to 768 MBps throughput with turbo option • Supports up to 112 fibre disk drives or 33.6TB 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 and Linux • Features easy-to-use IBM ServeRAID manager • Feature reliable Ultra320 SCSI drives • Dual model designed to scale to 12TB 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 and Linux • Features easy-to-use IBM ServeRAID manager and reliable Ultra320 SCSI drives • Designed to scale to 4.2TB 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

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

	DS4800	DS6800	DS8100	DS8300	ESS 750/800
Windows NT	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror				FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Windows 2000	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Windows Server 2003	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
NetWare	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Linux[1]	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
AIX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
VMWare	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Dynix					FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
HP-UX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Solaris	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
IRIX	*				FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
Tru64 UNIX	*	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
OpenVMS		FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror
z/OS, OS/390		FlashCopy, Metro Mirror, Global Mirror, Global Copy, as target for z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror z/OS Global Mirror (XRC)
i5/OS		FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror

* 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)

	DS300/DS400	DS4100	DS4300[3]	DS4500
Windows NT		FlashCopy, FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows 2000	FlashCopy	FlashCopy, FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows Server 2003	FlashCopy	FlashCopy, FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
NetWare		FlashCopy, FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Linux[1]	FlashCopy	FlashCopy, FlashCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
AIX		FlashCopy, FlashCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
VMWare				
Dynix				
HP-UX		FlashCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Solaris		FlashCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
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: 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.

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

■ Yes □ No

IP Attached Storage Products

	IBM TotalStorage N3700	IBM TotalStorage DR550
Model	2863-A10 – Single Controller 2863-A20 – Dual Controller	
Highlights	• Installation—Offers installation tools designed to help simplify installation and setup • Increased access—Allows heterogeneous access to IP attached storage • Flexibility—Enables cross-platform file sharing for Microsoft Windows, UNIX and Linux environments that can help reduce network complexity and expense, and allow data to be shared across the organization • IP SAN – Supports iSCSI protocols for IP SAN attachment to a multitude of host servers including Microsoft Windows, UNIX and Linux systems • Scalability—Supports nondisruptive capacity increases up to 16TB of physical storage • Manageability—Includes integrated system diagnostics and management tools, which are designed to help minimize downtime • Redundancy—Offers redundant fans, power supplies, disk drive, and clustered controllers • Copy services—Provides extensive on-board and out-board disaster recovery data protection features	• Operational Efficiency—Designed to help businesses meet the growing challenge of managing and securing retention managed data and other critical information assets over extended periods of time • Integrated offering—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 • Automation—Designed to offer automatic provisioning, migration, expiration and archiving capabilities • Scalability—Supports nondisruptive enterprise scalability of up to 56TB physical capacity and supports petabytes of storage with attached tape • Policy-based—Offers a comprehensive suite of software tools for policy- and event-based data management • High Availability—Option designed to avoid single points of failure • Native support for LTO Gen 3 WORM Tape • Flexibility—Application program interface (API) client program makes it easy to integrate ISV Content Management applications • Synchronous Replication—Supports Metro Mirroring allowing two real-time synchronized copies of the data to be maintained on DR550s in separate locations. • Disaster Recovery support—DR550 protects customer data during disasters. The DR550 solution allows businesses to use tape libraries with advanced LTO Gen 3 tape drives with WORM capabilities to provide efficient and cost effective replication of data objects. • Operating in conjunction with an enterprise content-management product like IBM DB2 Content Manager for Message Monitoring and Retention (CM MMR) helps enable centralized management through a single interface to support storage allocation and address application demands.
Scalability	Up to 16TB of physical storage	Single engine: 3.5 and 7TB, Dual engine: 3.5, 7, 14, 28 and 56TB of physical storage, up to petabytes with attached tape storage
Nodes	Single- or dual-storage controller configurations Dual-controller configuration offers active/active clustering	Single- or dual-engine configurations Dual-engine configuration offers failover protection
Processors	Based On Broadcom® MIPS-based architecture	One 1.5GHz POWER5™ processor per server
Network protocol support	NFS v2, v3, v4 (UNIX and Linux), CIFS (Windows), iSCSI, HTTP, FTP, NDMP, SNMP	IBM System Storage Archive Manager application programming interface (API)
Operating system	Data ONTAP™ 7.1	AIX 5.2 ML4
Performance	13,620 I/Os per sec NFS v3	Performance testing results: www-03.ibm.com/servers/storage/disk/dr/performance.html
PCI slots available	N/A	N/A
Network connectivity	Two (10/100/1000) Ethernet ports per controller Two Fibre Channel ports for attachment to tape backup and expansion unit	2 port Gigabit Copper or Fibre Ethernet (upgrades available)
ECC SDRAM memory (max)	1GB single controller 2GB dual controller	1GB per node
Data protection	RAID-4, RAID-DP (double disk failure protection) On-board data protection using Snapshot™ to create copies and SnapRestore® to restore backup copies of snapped data.Out-board remote mirroring over IP networks to provide copies of data at remote disaster recovery sites*	Mirrored OS, RAID-5 for user data Data Encryption for enhanced security for disk and tape via 128-bit AES or 56-bit DES encryption technology. Encryption keys can be managed by the application or by the DR550
Redundancy/high availability	Redundant, hot swappable disk bays, power supplies, fans and controllers	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	RAID-4, RAID-DP (double disk failure protection)	RAID-5
Systems management	FilerView™, SecureAdmin™, SNMP	SMIT, DS4000 Storage Manager GUI, SNMP
Storage management	Industry standard NDMP protocols	IBM Tivoli Storage Manager client and storage agent

*   Please visit **ibm.com**/totalstorage/nas for additional N3700 performance information.

**   Please visit **ibm.com**/totalstorage/dr550 for current DR550 performance results.

†   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	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	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	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	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 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.

IBM