IBM Systems and Technology Group

IBM TotalStorage Product Guide

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.

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, SGI IRIX
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	FlashCopy, Metro Mirror, Global Mirror, Global Copy	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, as target for z/OS Global Mirror
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.

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	Single: FlashCopy Dual base: FlashCopy, VolumeCopy Turbo option: FlashCopy, VolumeCopy, Enhanced Remote Mirroring	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)	36.4GB, 67.2TB via EXP700/EXP710 (FC) 250GB, 56TB via EXP100 (Serial ATA)	36.4GB, 67.2TB via EXP700/EXP710	36.4GB, 67.2TB	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,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	250GB 7,200 rpm SATA disk drives
Certifications	Microsoft RAID, Cluster, NetWare Cluster, HACMP, VERITAS Clustering[4]	Microsoft RAID, Cluster and Data Center, HACMP, NetWare Cluster, VERITAS Clustering	Microsoft RAID, Cluster and Data Center, HACMP, VERITAS 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	1700-1RS, 1700-2RD	1701-1RL, 1701-1RS, 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 , 12TB with 2 EXP400 Expansion Units	36GB, 4.2TB	32GB, 2TB	72.8GB, 14TB
Drive interface	Ultra320 SCSI	Ultra320 SCSI	Ultra 320 SCSI	SSA
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	18.2GB, 36.4GB, 72.8GB and 145.6GB 10,000 rpm disk drives; 36.4GB and 72.8GB 15,000 rpm disk drives
Clustering Support	Microsoft Windows MSCS*	Microsoft Windows MSCS*	HACMP	Microsoft RAID, Cluster, HACMP

* Platform support available in future.

Selecting a solution

	ESS	DS8300	DS8100	DS6800	DS4500
Local copy within controller					
Remote Copy (>10 km)					
Centralized management					
Storage area network					
Concurrent heterogeneous servers (UNIX and Intel)					
Concurrent microcode install					
Intermix disk capacities					
Multiple RAID options					
Controller-based call-home		Through DS Storage Manager Server	Through DS Storage Manager Server	Through DS Storage Manager Server	
Rack mount					
Virtualization					
Virtualization through SAN Volume Controller					

* 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						requires 7140 or 2108-S20	
Remote Copy (>10 km)	*	Turbo option only					
Centralized management							
Storage area network					iSCSI		
Concurrent heterogeneous servers (UNIX and Intel)				Intel only	Intel only		
Concurrent microcode install							
Intermix disk capacities							
Multiple RAID options							requires adapter
Controller-based call-home							
Rack mount							
Virtualization							
Virtualization through SAN Volume Controller							

* 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 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 • 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 • 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 FlashCopy as well as Global and Metro Mirroring functions • 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 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 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 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, Linux and Netware • 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
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				FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows 2000	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows Server 2003	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
NetWare	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Linux[1]	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
AIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
VMWare	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	
Dynix	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror				
HP-UX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Solaris	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
IRIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror				*
Tru64 UNIX	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	*
OpenVMS	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	
z/OS, OS/390	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror z/OS Global Mirror (XRC)	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, as target for z/OS Global Mirror	
i5/OS	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/ Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, Metro Mirror, Global Mirror, Global Copy	

* 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[2]	DS4300[3]	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

** Platform support available in future

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

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	276 MBps 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 (2 Gbps) 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

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

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

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

MB, GB and TB equal 1,000,000, 1,000,000,000 and 1,000,000,000,000 bytes, respectively, where referring to storage capacity. Actual storage capacity will vary based upon many factors and may be less than stated. Some numbers given for storage capacities give capacity in native mode followed by capacity using data compression technology.

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