

IBM System Storage Product Guide



Today, information has become the lifeline for business sustainability and competitive advantage. Companies of all sizes—companies like yours—are searching for practical ways to create business value—to get their arms around information, correlate insights and to confidently predict outcomes and take action.

For CIOs, the information era poses unique challenges: how to cost-effectively store, archive and retrieve a virtual explosion of new information, how to protect and secure that information, meet compliance requirements and make that information accessible for business insight, where and when it's needed.

Without a dynamic information infrastructure, you may be facing higher operational costs and greater exposure to business risks.

IBM offers Information Infrastructure solutions to help you efficiently manage information growth, support compliance, reduce storage and archiving costs and enable continuous access to information in support of business requirements.

Learn more about IBM Information Infrastructure, including the full range of data storage solutions and companion software and services offerings at: ibm.com/information_infrastructure.

What's New?

IBM has invested billions of dollars to enhance System Storage™ products and services to better meet the information infrastructure needs of businesses like yours. This Product Guide features several new products:

- IBM System Storage TS7650 ProtecTIER® Data Deduplication Appliance
- IBM XIV® Storage System IBM System Storage
- SAN Volume Controller Entry Edition

- IBM System Storage N6060 series
- IBM Self-encrypting Storage and Key Management Solution (TKLM + LTO bundle)
- IBM Virtual Tape for Mainframe (VTFM)

The following products featured in this guide have been significantly enhanced:

- IBM System Storage DS8000® R4.2 Disk System with new options for drive-level disk encryption, Solid State storage, and 1 TB SATA drives
- IBM System Storage DS3000 Express
- IBM Comprehensive Data Protection Solution (TSM Fastback bundle)

Entry-level Disk Systems



	System x and IBM BladeCenter® Direct Attach or SAN Solutions				System p Only Direct Attach Solutions
	EXP3000	DS3200	DS3300	DS3400	EXP24
Product	EXP3000	DS3200	DS3300	DS3400	EXP24
Machine/model	1727-01X, 1727-02T Telco DC Power Model	1726-21X, 1726-22X, 1726-22T Telco DC Power Model	1726-31X, 1726-32X, 1726-32T Telco DC Power Model	1726-41X, 1726-42X, 1726-42T Telco DC Power Model	7031-D24—Rack version 7021-T24—Tower version
Platform support¹	Windows 2003, RedHat 3, RedHat 4, SUSE 9	Windows 2003, RedHat 4, RedHat 5, SUSE 9, SUSE 10, NetWare, VMware 3.5/3i	Windows 2003, RedHat 4, RedHat 5, SUSE 9, SUSE 10	Windows 2003, RedHat 4, RedHat 5, SUSE 9, SUSE 10, NetWare, VMware 2.5.4, VMware 3.0.1, VMware 3.0.2, VMware 3.5/3i, AIX 5.2, AIX 5.3	AIX 5L 5.2 AIX 5L 5.3 RedHat 3 RedHat 4 RedHat 5 SUSE 9 SUSE 10
Host connectivity	SAS	SAS	iSCSI	4 Gbps Fibre Channel	SCSI
SAN support	N/A	N/A	Switched, IP SAN	Direct, Switched Fabric	N/A
Copy services	N/A	IBM FlashCopy®, IBM VolumeCopy	IBM FlashCopy, IBM VolumeCopy	IBM FlashCopy, IBM VolumeCopy	N/A
Availability features	Fault-tolerant RAID, Redundant Hot-swap power, Hot-swap drives, Dual pathing drives	Fault-tolerant, RAID, Redundant Hot-swap power, Hot-swap drives, Dual controller, dual pathing drives	Fault-tolerant, RAID, Redundant Hot-swap power, Hot-swap drives, Dual controller, dual pathing drives	Fault-tolerant, RAID, Redundant Hot-swap power, Hot-swap drives, Dual controller, dual pathing drives	Fault-tolerant RAID, Redundant Hot-swap power, Hot-swap drives
Controller	MegaRAID 8480	Dual active 3 Gbps SAS RAID Controllers	Dual active 1 Gbps iSCSI RAID Controllers	Dual Active 4 GB FC RAID Controllers	System p FC 5741 & 5742 SCSI Repeaters
Cache (min, max)	256 MB battery backup	512 MB, 2 GB battery backup	512 MB, 2 GB battery backup	512 MB, 2 GB battery backup	N/A
RAID support	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 10
Capacity (min, max)	146 GB, 12 TB in a single EXP3000 Expansion Units	146 GB, 48 TB with 3 EXP3000 Expansion Units	146 GB, 48 TB with 3 EXP3000 Expansion Units	146 GB, 48 TB with 3 EXP3000 Expansion Units	73 GB, 7.2 TB
Drive interface	3 Gbps SAS, 3 Gbps SATA II	3 Gbps SAS	3 Gbps SAS	3 Gbps SAS	Ultra320 SCSI
Drive support	SAS: 73 GB, 146 GB, 300 GB 15,000 rpm disk drives; 450 GB, 500 GB, 750 GB, 1 TB SATA II 7,200 rpm	SAS: 73 GB, 146 GB, 300 GB 15,000 rpm disk drives, SATA: 450 GB, 500 GB, 750 GB, 1 TB SATA II 7,200 rpm	SAS: 73 GB, 146 GB, 300 GB 15,000 rpm disk drives, SATA: 450 GB, 500 GB, 750 GB, 1 TB 7,200 rpm	SAS: 73 GB, 146 GB, 300 GB 15,000 rpm disk drives, SATA: 450 GB, 500 GB, 750 GB, 1 TB 7,200 rpm	73 GB, 146 GB, 300 GB 10,000 rpm disk drives; 36 GB, 73 GB, 146 GB, 300 GB 15,000 rpm disk drives
Clustering Support	N/A	Microsoft Windows MSCS	Microsoft Windows MSCS	Microsoft Windows MSCS	HACMP™

Midrange Disk Systems



	DS4200 Express	DS4700 Express	DS4800	DS5000 series
Product	DS4200 Express Disk System	DS4700 Express Disk System	DS4800 Disk System	DS5100 and DS5300
Machine/model	1814-7VA/7VH	1814-72A/70A	1815-80A/82A	1818-51A,1818-53A
Platform support¹	Microsoft Windows Server® 2003 w/SP1, R2, and x64, Windows 2000 Server & Advanced Server w/SP4, Novell NetWare 6.5 w/SP5 Red Hat Enterprise Linux 3.8 Red Hat Enterprise Linux 4.4 SUSE Linux Enterprise Server 8 SP4 SUSE Linux Enterprise Server 9 SP3 VMware ESX 3.0/3.5/3i AIX 5.1, 5.2, 5.3, 6.1 HP-UX 11.0, 11i and 11.23 with PVLinks Solaris 8, 9, 10	System p, System x, System i w/ VIOS, Windows Server 2003 w/SP1, Windows 2000 Server & Advanced Server w/SP4, Novell NetWare 6.0 w/SP5 & 6.5 w/SP5, Red Hat Enterprise Linux 3.0 U7, Red Hat Enterprise Linux 4.0 U3 SUSE Linux Enterprise Server 8 SP4, SUSE Linux Enterprise Server 9 SP3, VMware ESX 3.0/3.5/3i, VMware ESX 2.5.2 AIX 5.1, 5.2, 5.3, 6.1 HP-UX 11i and 11.23, Solaris 8, 9, 10	System p, System x, System i w/ VIOS, Windows Server 2003 w/SP1, Windows 2000 Server & Advanced Server w/SP4, Novell NetWare 6.0 w/SP5 & 6.5 w/SP5, Red Hat Enterprise Linux 3.0 U7, Red Hat Enterprise Linux 4.0 U3 SUSE Linux Enterprise Server 8 SP4, SUSE Linux Enterprise Server 9 SP3, AIX 5.1, 5.2, 5.3, 6.1, VMware ESX 3.0/3.5/3i HP-UX 11i and 11.23, Solaris 8, 9, 10	System p, System x, Windows 2003, Windows 2008 w/ Hyper V, AIX 5.2,5.3 and 6.1, VMware 3.5, SLES 9 and 10, RHEL 4 and 5, HP-UX
Host connectivity	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel
SAN support	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric
Copy services	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, FlashCopy, VolumeCopy	Enhanced Remote Mirroring, FlashCopy, VolumeCopy
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, 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 4 GB RAID controller	Dual active 4 Gbps RAID controllers	Dual active 4 Gbps RAID controllers	Dual active 4 Gbps RAID controllers
Cache (min, max)	2 GB	2 GB, 4 GB (70A/72A)	4 GB, 4 GB (80A/82A) 8 GB, 8 GB 16 GB, 16 GB	8 GB total cache –DS5100, 8-16 GB –DS5300
RAID support	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 6, 10	0, 1, 3, 5, 10	0, 1, 3, 5, 6, 10
Capacity (min, max)	500 GB, supports 84 TB with six Expansion Units	36.4 GB, 33.6 TB via EXP810, EXP710 (FC), 84 TB via EXP810 (SATA), 44.8 TB via EXP100	36.4 GB, 67.2 TB via EXP810/EXP700/EXP710 (FC) 400 GB, 89.6 TB via EXP100 (SI ATA), 168 TB via EXP810 (SATA)	Legacy support for EXP810 587 GB min, up to 256 TB w/ 16 EXP5000
Drive interface	4 GB FC-AL	4 Gbps Switched	4 Gbps Switched	4 Gbps Switched
Drive support	500 GB EV-DDM, 750 GB EV-DDM, 1 TB EV-DDM 7,200 rpm SATA disk drives	4 Gbps 36.4 GB, 73.4 GB, 146.8 and 300 GB 15,000 rpm (FC) (Serial ATA) 450 GB, 750 GG, 1 TB 7,200 rpm (SATA)	4 Gbps 36.4 GB, 73.4 GB, 146.8 and 300 GB 15,000 rpm (FC) (Serial ATA) 450 GB, 750 GG, 1 TB 7,200 rpm (SATA)	750 GB/7.2K SATA DDM, 1000 GB/7.2K SATA DDM, 4 Gbps FC, 146.8 GB/15K DDM, 4 Gbps FC, 300 GB/ 15K DDM, 4 Gbps FC, 450 GB/15K DDM
Certifications	Microsoft Clustering Services, IBM SAN Volume Controller 3.1.0 and 4.1.0	Microsoft RAID, Cluster, NetWare Cluster, HACMP, Veritas Clustering ⁴	Microsoft RAID, Cluster, NetWare Cluster, HACMP, Veritas Clustering ⁴	Microsoft Clustering Services, IBM SAN Volume Controller 4.3, HACMP

High-end and Enterprise Disk Systems



	XIV	DS6800	DS8100	DS8300	ESS 800
Product	IBM XIV Storage System	IBM System Storage DS6800	IBM System Storage DS8000 Turbo	IBM System Storage DS8000 Turbo	ESS Model 800 Refurbished with Warranty
Machine/model	2810/A14	1750/522	2421, 2422, 2423, 2424/931	2421, 2422, 2423, 2424/932/9B2	2105/800
Platform support¹	System x, System p, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for Intel systems, Linux for System p, VMware, Apple Macintosh OSX	System x, System i, System p, System z, IBM i5/OS®, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for IBM System z, z/OS, IBM z/VM®, IBM VSE/ESA™, TPF, Linux for System i, Linux for System p, Linux for Intel systems, OpenVMS, TRU64, NetWare, VMware, Apple Macintosh OS X, Fujitsu PRIMEPOWER, SGI IRIX	System x, System i, System p, System z, i5/OS, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for System z, z/OS, z/VM, VSE/ESA, TPF, Linux for System i, Linux for System p, Linux for Intel systems, OpenVMS, TRU64, NetWare, VMware, Apple Macintosh OS X, Fujitsu PRIMEPOWER, SGI IRIX	System x, System i, System p, System z, i5/OS, OS/400, AIX, Solaris, HP-UX, Windows 2000, Windows Server 2003, Linux for System z, z/OS, z/VM, VSE/ESA, TPF, Linux for System i, Linux for System p, Linux for Intel systems, OpenVMS, TRU64, NetWare, VMware, Apple Macintosh OS X, Fujitsu PRIMEPOWER, SGI IRIX	System x, System i, System p, System z, i5/OS, OS/400, AIX, Solaris, HP-UX, Microsoft Windows NT®, Windows 2000, Windows Server 2003, NetWare, Linux for System z, z/OS, z/VM, OS/390®, VM/ESA®, VSE/ESA, TPF, Linux for Intel systems, Dynix, OpenVMS, Tru64, VMware, Fujitsu PRIMEPOWER, SGI Origin IRIX
Host connectivity	4 Gbps Fibre Channel, iSCSI	1 Gbps and 2 Gbps Fibre Channel/FICON	2 Gbps and 4 Gbps Fibre Channel, FICON, ESCON®	2 Gbps and 4 Gbps Fibre Channel, FICON, ESCON	1 Gbps and 2 Gbps Fibre Channel/FICON, ESCON, SCSI
SAN support	Direct, FC-AL, Switched Fabric, Ethernet	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric	Direct, FC-AL, Switched Fabric
Copy services	synchronous mirror, snapshot, thin provisioning	FlashCopy, Metro Mirror, Global Mirror, Global Copy, as target for z/OS Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror, Metro/Global Mirror(RPQ)
Availability features	Fault tolerant, N+1 Redundancy, hot-swappable parts, 3 Universal Power Supplies, non-disruptive hardware changes, non-disruptive software code load updates for fixes, multipathing device drivers as supported through OSs	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, multipathing 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, multipathing 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, multipathing device driver	Fault-tolerant, RAID, redundant power/cooling, hot-swap drives, dual controllers, concurrent microcode update capability, dual pathing driver
Controller	Multiple Active-Active	Dual active/active	Dual active/active	Dual active/active	SMB dual active; optional turbo feature
Cache (min, max)	48/120 GB	4 GB	16/128 GB	32/256 GB	8 GB, 64 GB
RAID support	Data mirroring	5, 10	5, 10	5, 10	5, 10
Capacity – raw (min, max)	72 TB 180 TB	292 GB, 64 TB	1.1 TB, 192 TB	1.1 TB, 512 TB	582 GB, 55.9 TB
Drive interface	SATA	2 Gbps Fibre Channel	2 Gbps Fibre Channel	2 Gbps Fibre Channel	SSA
Drive support	1000 GB	73 GB 15K, 146 GB 15K, 300 GB 15K, 500 GB FATA, 7.2K	73 GB 15K, 146 GB 15K, 300 GB 15K, 500 GB 7.2 FATA	73 GB 15K, 146 GB 15K, 300 GB 15K, 500 GB 7.5K FATA	36.4 GB, 72.8 GB and 145.6 GB 10,000 rpm disk drives 36.4 GB and 72.8 GB 15,000 rpm disk drives
Certifications	Oracle RAC, IBM Power HA for AIX, HP MC/ServiceGuard Microsoft Cluster Server, NetWare Cluster Services, Sun Solaris Cluster, SVC	Oracle OSCP Validation of Compatibility, HACMP, Solaris Ready, Veritas Cluster	Oracle OSCP Validation of Compatibility, HACMP, GDPS, Solaris Ready, Veritas Cluster	Oracle OSCP Validation of Compatibility, HACMP, GDPS, Solaris Ready, Veritas Cluster	Microsoft RAID, Cluster and Data Center, GDPS, HACMP, Solaris Ready

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 three-site cascading asynchronous replication; Global Copy is extended distance copying.

Selecting a solution

	DS4700 Express	DS4800/DS5000	DS6800	DS8100 Turbo	DS8300 Turbo	ESS	XIV
Local copy within controller	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote Copy (>10 km)*	Yes	Yes	Yes	Yes	Yes	Yes	No
Centralized management	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Storage area network	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Concurrent heterogeneous servers (UNIX and Intel)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Concurrent microcode install	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intermix disk capacities	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiple RAID options	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controller-based call-home	Yes	Yes	Through DS Storage Manager Server	Through DS Storage Manager Server	Through DS Storage Manager Server	Yes	Yes
Rack mount	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Virtualization through SAN Volume Controller	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* Remote Copy (>10 km) is via System Storage Proven vendors (CNT, Legato, NSI)
 ** CCL for fix install only

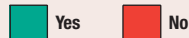


Selecting a solution (continued)

	EXP3000	DS3200	DS3300	DS3400	DS4200 Express	EXP24
Local copy within controller	No	Yes	Yes	Yes	Yes	No
Remote Copy (>10 km)*	No	No	No	No	Yes	No
Centralized management	No	Yes	Yes	Yes	Yes	Yes
Storage area network	No	No	Yes	Yes	Yes	No
Concurrent heterogeneous servers (UNIX and Intel)	Intel/AMD only	Intel/AMD only	Intel/AMD only	Intel/AMD/AIX	Yes	No
Concurrent microcode install	No	Yes	Yes	Yes	Yes	No
Intermix disk capacities	Yes	Yes	Yes	Yes	Yes	Yes
Multiple RAID options	Yes	Yes	Yes	Yes	Yes	Yes
Controller-based call-home	No	No	No	No	Yes	No
Rack mount	Yes	Yes	Yes	Yes	Yes	Yes
Virtualization through SAN Volume Controller	No	No	No	No	Yes	No

* Remote Copy (>10 km) is via System Storage Proven vendors (Legato, CNT, NSI)

Additional information on these IBM Disk Storage products is available on the Web at ibm.com/storage/disk



Product	Highlights
DS8300 Turbo	<ul style="list-style-type: none"> Outstanding enterprise class functionality with extraordinary performance and scalability up to 512 TB of physical capacity Host connectivity via 4 Gbps FC/FICON or ESCON interfaces to a wide variety of UNIX, Windows, Linux, System i systems, System p servers, System x servers and System z mainframes Top notch storage consolidation system with Storage System LPAR capability Offers FlashCopy, FlashCopy SE, Global and Metro Mirroring functions (2 site and 3 site) Call home and remote support as well as an Enterprise Choice 1-year, 2-year, 3-year or 4-year warranty
DS8100 Turbo	<ul style="list-style-type: none"> Outstanding enterprise class functionality and performance with scalability up to 192 TB of physical capacity Host connectivity via 4 Gbps FC/FICON or ESCON interfaces to wide variety of UNIX, Windows, Linux, System p servers, System x servers, System i systems and System z mainframes Offers FlashCopy, FlashCopy SE, Global and Metro Mirroring functions (2 site and 3 site) Call home and remote support as well as an Enterprise Choice 1-year, 2-year, 3-year or 4-year warranty
DS6800	<ul style="list-style-type: none"> 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, Linux, System p servers, System x servers, System i systems and System z mainframes Features FlashCopy as well as Global and Metro Mirroring functions Enterprise-class warranty, 24x7, same day IBM onsite response
Enterprise Storage Server® Model 800 Refurbished with Warranty	<ul style="list-style-type: none"> Affordable enterprise strength reliability and function for modular and mainframe servers Great second-tier storage option for backup, remote mirroring, test or archive needs Host connectivity via SCSI, FC/FICON, or ESCON interfaces to a wide variety of UNIX, Windows, System i systems and System z mainframes Features copy services for rapid backup and disaster recovery Full 3-year warranty on Refurbished with Warranty systems available worldwide
XIV Storage System	<ul style="list-style-type: none"> A revolutionary high-end disk system for UNIX and Intel processor-based environments designed to eliminate the complexity of tiered storage management Offers 4 Gbps FC and 1 Gbps iSCSI host connectivity and scales up to 180 TB of physical capacity Up to 16,000 instantaneous and highly space-efficient snapshots enable point-in-time copies of data Built-in thin provisioning that can help reduce direct and indirect costs Synchronous remote mirroring provides protection against primary site outages, disasters and site failures
DS5000	<ul style="list-style-type: none"> Provides SAN-ready flexible, efficient, scalable disk storage system for UNIX and Intel processor-based environments Offers high-performance, full fibre solution with up to 16 – 4 Gbps Fibre Channel host port connectivity and 8 Gbps FC and 10 Gbps iSCSI ready Supports business continuance with its optional high-availability software and advanced Enhanced Remote Mirroring function Helps protect customer data with its multi-RAID capability, including RAID 6, and hot-swappable redundant components
DS4800	<ul style="list-style-type: none"> Provides SAN-ready flexible disk storage system for UNIX and Intel processor-based environments Offers high-performance, full fibre solution with 4 Gbps 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
DS4700 Express	<ul style="list-style-type: none"> Provides SAN-ready flexible disk storage system for UNIX and Intel processor-based environments Offers high-performance, full fibre solution with 4 Gbps 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
DS4200 Express	<ul style="list-style-type: none"> An SATA-only solution designed to provide an economical alternative storage solution that supports data archiving, reference data and near-line storage applications Offers high-performance, full fibre solution with 4 Gbps 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

Disk Storage Systems (continued)

Product	Highlights
DS3400	<ul style="list-style-type: none"> Scalable to 12 terabytes (TB) of storage capacity with 1 TB hot-swappable Serial ATA (SATA) disks Expandable by attaching up to three EXP3000s, a total of 48 TB of storage capacity Flexible for use with IBM System x and BladeCenter servers
DS3300	<ul style="list-style-type: none"> 1 Gbps iSCSI interface technology Easy to deploy and manage with the DS3000 Storage Manager Scalable to 12 TB of storage capacity with 1 TB hot-swappable Serial ATA (SATA) disks Expandable by attaching up to three EXP3000s, a total of 48 TB of storage capacity
DS3200	<ul style="list-style-type: none"> 3 Gbps Serial Attached SCSI (SAS) interface technology Easy to deploy and manage with the DS3000 Storage Manager Scalable to 12 TB of storage capacity with 1 TB hot-swappable Serial ATA (SATA) disks
EXP3000	<ul style="list-style-type: none"> 3 Gbps SAS interface technology Support for up to 12 TB of storage in a single enclosure Support for up to 48 TB in a cascaded configuration with MegaRAID 8480 adapter Powerful and comprehensive management and configuration tools included
EXP24	<ul style="list-style-type: none"> Supports up to 7.2 TB of data Supports up to 24 U320 SCSI drives in four groups of six drives or two groups of 12 drives

Operating Systems and Copy Services Platform Coverage

	DS4800/DS5000	DS6800	DS8100 Turbo	DS8300 Turbo	ESS 800 Rww	XIV
Windows NT	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror				FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
Windows 2000	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
Windows Server 2003	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
NetWare	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
Linux ¹	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
AIX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
VMware	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
Dynix					FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
HP-UX	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
Solaris	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	snapshot, synchronous mirroring, thin provisioning
IRIX	*	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
Tru64 UNIX	*	FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
OpenVMS		FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
z/OS, OS/390, TPF		FlashCopy, Metro Mirror, Global Mirror, Global Copy, as target for z/OS Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, z/OS Global Mirror, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ), z/OS Global Mirror (XRC)	
i5/OS		FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror (RPQ)	
Apple Macintosh OSX		FlashCopy, Metro Mirror, Global Mirror, Global Copy	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror	FlashCopy, FlashCopy SE, Metro Mirror, Global Mirror, Global Copy, Metro/Global Mirror		snapshot, synchronous mirroring, thin provisioning

* 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



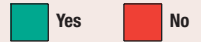
No

Operating Systems and Copy Services Platform Coverage/IBM System Storage N series – Unified Storage Systems (continued)

	EXP3000/MegaRAID	DS3200/DS3300/DS3400	DS4200 Express	DS4700 Express
Windows NT			FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows 2000			FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Windows Server 2003		FlashCopy, VolumeCopy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
NetWare		FlashCopy, VolumeCopy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Linux ¹		FlashCopy, VolumeCopy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
AIX		FlashCopy, VolumeCopy	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
VMware			FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Dynix				
HP-UX			FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror	FlashCopy, VolumeCopy, Metro Mirror, Global Copy and Global Mirror
Solaris			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 RPO 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 require turbo option.



N series Highlights

- **Unified storage architecture**—provides a single storage platform to support heterogeneous, multiprotocol storage requirements with the capability of simultaneously handling both Block I/O (with FCP or iSCSI protocol) and File I/O (with CIFS, NFS, HTTP, FTP protocols) application needs
- **Application-aware software**—SnapManager software provides host-based data management of N series storage for databases and business applications. Simplifies application-consistent policy-based automation for data protection and disaster recover. Snapshot copies and automates error-free data restores and enables application-aware disaster recovery
- **Thin Provisioning**—allows applications and users to get more space dynamically and non-disruptively without IT staff intervention
- **Ease of installation**—offers installation tools designed to help simplify installation and setup
- **Increased access**—allows heterogeneous access to IP attached storage and Fibre Channel attached storage subsystems
- **Operating system**—optimized and finely tuned for storing and sharing data assets, designing to enable greater efficiency within your organization and help lower total cost of ownership through improved efficiency and productivity
- **Flexibility**—enables cross-platform data access for Microsoft Windows, UNIX and Linux environments that can help reduce network complexity and expense, and allow data to be shared across the organization
- **Network Attached Storage (NAS)**—supports Network File System (NFS), Common Internet File System (CIFS) protocols for attachment to Microsoft Windows, UNIX and Linux systems

- **IP SAN**—supports Internet Small Computer System Interface (iSCSI) protocols for IP SAN attached to a multitude of host servers including Microsoft Windows, Linux, and UNIX systems
- **FC SAN**—supports Fibre Channel protocols (FCP) for accommodating attachment and participation in fibre channel SAN environments
- **Scalability**—supports non-disruptive capacity increases as well as thin-provisioning (dynamically allow the increase and decrease of user capacity assignments). Allows you to scale your storage infrastructure to keep pace with company growth
- **Designed to maintain availability** and productivity during upgrades
- **Manageability**—includes integrated system diagnostics and management tools, which are designed to help minimize downtime
- **Redundancy**—several redundancy and hot-swappable features provide the highest system availability characteristics
- **Copy Services**—provides extensive outboard services that help recover data in disaster recovery environments. SnapMirror provides one-to-one, one-to-many and many-to-one mirroring over Fibre Channel or IP infrastructures
- **NearStore (near-line) feature**—SATA drive technology enables online and quick access to archived and non-intensive transactional data
- **Advanced Single Instance Storage (A-SIS)**—provides block-level deduplication of data stored in NearStore volumes
- **Compliance and data retention**—software and hardware features that offer non-erasable and non-rewritable data protection to meet the industry's highest regulatory requirements for retaining company data assets

NOTES:

*Systems are based on dual clustered storage controllers. Divide all numbers by one-half if a single storage controller system is ordered. A single controller can be easily upgraded to a dual controller system as your computing needs increase. The dual controller is a fully redundant system and is designed to provide failover and failback capabilities.

The N series Interoperability Matrix can be found at the following Web site: ibm.com/storage/network/interophome.html

The following are trademarks or registered trademarks of NetApp Inc.: Data ONTAP, FlexCache, FlexScale, FlexVol, FilerView, Protection Manager, SecureAdmin, RAID-DP, SecureAdmin, FlexClone, MultiStore, SnapLock, LockVault, Snapshot, SnapDrive, SnapMirror, SnapMover, SnapRestore, SnapVault, SnapManager, SnapValidator, SyncMirror, FlexShare, NearStore, Virtual File Manager

IBM System Storage N series—Unified Storage Systems

All N series systems provide the following features:

Storage controllers/filers	Active/Active with automatic failover to secondary system
Fibre channel (FC) disk drive support	4-Gbps Fibre Channel: 300 GB, 10,000, 15,000 rpm ; 450GB, 15,000 rpm 2-Gbps Fibre Channel: 300 GB, 10,000, 15,000 rpm ; 450GB, 15,000 rpm
SATA disk drive support	SATA: 500 GB, 7,200 rpm; 750 GB, 7,200 rpm, 1 TB
SAS disk drive support (N3300 and N3600)	144 GB 15K, 450 GB 15K
Host connectivity & platform support	The N series systems support a multitude of host attachment capabilities via FCP, CIFS, NFS and iSCSI protocols. See product "N series Interoperability Matrix" for more information
Network protocol support	NFS V2/V3/V4 over UDP or TCP, PCNFSD V1/V2 for (PC) NFS client authentication, Microsoft CIFS, iSCSI, FCP, VLD, HTTP 1.0, HTTP 1.1 Virtual Host
Other protocol support	SNMP, NDMP, LDAP, NIS, DNS
Operating system	Data ONTAP®

Data protection	Double Parity RAID, Snapshot™, SnapRestore®, SnapMirror®, SyncMirror®, SnapVault®, Open System Snap Vault, MetroCluster, Protection Manager™
Redundancy/high availability	CompactFlash dual redundant hot-plug integrated cooling fans, hot-swappable auto-ranging power supplies, clustered filers, hot-swappable disk bays
Backup	External tape (SCSI or Fibre Channel)
RAID levels	RAID 4, RAID-DP™ (double parity)
System management/Storage management	FileView®, SecureAdmin™, SNMP, Operations Manager, Protection Manager, Industry-standard NDMP protocols
Standard software features	Snapshot™, FlexVol®, FlexShare™, Integrated Automatic RAID Manager, Fast Boot, NIS, DNS, SNMP, FileView, NDMP, LDAP, iSCSI, AutoSupport, SyncMirror, SnapMover®, FTP protocol feature, SecureAdmin, Disk Sanitization
Optional software features	CIFS protocol, Clustered Failover, Data ONTAP, Disk Sanitization, FCP protocol, FlexCache, FlexClone®, FlexShare, FlexScale, FlexVol, FTP protocol, HTTP protocol, iSCSI protocol, MetroCluster, MultiStore®, NDMP protocol, NearStore® (near-line), NFS protocol, Open Systems SnapVault (OSSV), Operations Manager Core & SRM License, Protection Manager, Provisioning Manager, RAID 4, RAID-DP, SecureAdmin, Single Mailbox Recovery for Exchange (SMBR), SnapDrive®, SnapLock® Enterprise, SnapManager® for Exchange, SnapManager for Oracle, SnapManager for SAP SnapManager for SQL Server®, SnapManager for Microsoft Office SharePoint® Server, SnapMirror, SnapMover, SnapRestore, Snapshot, SnapValidator™, SnapVault, SyncMirror, Virtual File Manager™ (VFM)



	N3000 Express series		N6000 series*			N7000 series	
	N3300 Express	N3600 Express	N6040	N6060	N6070	N7700	N7900
Model	2859-A10 (single) 2859-A20 (clustered)	2862-A10 (single) 2862-A20 (clustered)	2858-A10 (single) 2858-A20 (clustered)	2858-A12 (single) 2858-A22 (clustered)	2858-A10 (single) 2858-A20 (clustered)	2866-A11 (single) 2866-A21 (clustered)	2867-A11 (single) 2867-A21 (clustered)
Maximum raw capacity	68 TB	104 TB	420 TB	672 TB	840 TB	840 TB	1176 TB
Integrated Onboard I/O ports*	Up to four (4) 4 Gbps Fibre Channel ports Up to four (4) 1 GbE ports	Up to four (4) 4 Gbps Fibre Channel ports Up to four (4) 1 GbE ports	Eight 4 Gbps FC Four 1 Gbps Ethernet	Eight 4 Gbps FC Four 1 Gbps Ethernet	Eight 4 Gbps FC Four 1 Gbps Ethernet	Sixteen 4 Gbps FC Twelve 1 Gbps Ethernet	Sixteen 4 Gbps FC Twelve 1 Gbps Ethernet
PCI expansion slots for additional FC HBAs or GbE NIC cards*	0	2	8	8	8	16	16
NVRAM*	256 MB	512 MB	1 GB	4 GB	4 GB	1 GB	1 GB
Random Access Memory*	2 GB	4 GB	8 GB	16 GB	32 GB	32 GB	64 GB

* N6000 and N7000 series Gateways are available ordered through a gateway feature code (9551).

IBM System Storage N series—Unified Storage Systems/Data Archiving and Retention Systems



	DR550	DR550
Product	IBM System Storage DR550	IBM System Storage DR550
Machine/model	2233 DR1	2233 DR2
Platform support	All IBM systems platforms and other vendor platforms	All IBM systems platforms and other vendor platforms
Host connectivity	2 port Gigabit Copper or Fibre Ethernet (upgrades available)	2 port Gigabit Copper or Fibre Ethernet (upgrades available)
Software	IBM System Storage Archive Manager (SSAM)	IBM System Storage Archive Manager (SSAM)
Archiving application interface	SSAM application programming interface (API) v5.5.0 or DR550 File System Gateway	SSAM application programming interface (API) v5.5.0 or DR550 File System Gateway
Controller	Single System p5® POWER5+™	Single or Dual active/passive System p5 POWER5+
Operating system	IBM AIX, Version 5.3	IBM AIX, Version 5.3 Dual server includes IBM HACMP 5.3
Management interface	IBM Director 5.20.2	IBM Director 5.20.2
Systems supported	External Tape and Optical	External Tape and Optical
Backup sw	Included in SSAM	Included in SSAM
Backup hw	External tape	External tape
Copy services	NA	Metro or Global mirroring
Encryption	Disk or tape, 128-bit AES or 56-bit DES encryption technology	Disk or tape, 128-bit AES or 56-bit DES encryption technology
RAID support	5 and 6	5 and 6
Capacity (min, max)	.88 TB, 48.8 TB	8 TB, 224 TB
Drive support	1 TB SATA	1 TB SATA

DR550 Highlights

- An award-winning and industry-proven information archiving and retention offering with built-in lifecycle management capabilities to help organizations meet the growing challenges of efficiently managing, protecting and retaining data.
- Repository for all kinds of content (e-mail, database, documents, images, files, etc.)
- Provide non-erasable, non-rewritable archival storage; prevents deletion or alteration of data stored on the system
- Support multiple storage tiers for long-term archiving (disk, tape and optical) helping lower TCO
- Provide the facilities to migrate archive data from aging disk or tape subsystems to new ones
- Offer automatic provisioning, migration, expiration and archiving capabilities
- Offer scalability up to 224 TB raw physical capacity and supports petabytes of storage with attached tape and optical
- Offer chronological and event-based data retention
- Offer high-availability option to avoid single points of failure
- Provide security and protection through data encryption and data shredding options
- Support and integrate with broad set of IBM and non-IBM content management applications
- Protect customer data against disasters through Synchronous or Asynchronous Replication
- Award-winning: Data Protection Summit—Information Lifecycle Management (ILM)—Best of Show, 2007 and AIIM (The Enterprise Content Management Association)—Best in Show, 2005, 2006

IBM System Storage Multilevel Grid Access Manager Software (Grid Access Manager Software)

Function and Value	Highlights
<p>Grid Access Manager Software is built on an open, high-performance grid architecture that delivers data protection, information lifecycle management, simplified storage management and multi-site data access based on open standards.</p> <p>Grid Access Manager Software enables customers with single or multiple sites and with fixed content/reference data storage requirements to improve storage utilization and investment across sites by way of an enterprise-wide, fault-tolerant storage grid with real-time failover capabilities. Grid Access Manager Software can help protect enterprise data through automated replication, lifecycle management and digital signature functionality.</p>	<ul style="list-style-type: none"> • The potential benefits derived from these features can help deliver important cost savings and operational efficiencies, including: Simplified management and improved storage utilization, with excellent performance; Data protection and improved business continuity; Support for global access, multi-site operation.

Disk Storage Virtualization

Create a simpler storage environment and help increase the flexibility and efficiency of your storage infrastructure by introducing solutions based on IBM System Storage virtualization software.

Product	Function and Value	Highlights
<p>IBM System Storage SAN Volume Controller (SVC) and IBM System Storage SAN Volume Controller Entry Edition (SVC EE)</p>	<p>SAN Volume Controller is a disk storage virtualization system that is designed to help businesses reduce the costs associated with disk storage. SAN Volume Controller is designed to pool storage volumes from IBM and non-IBM storage systems into a reservoir of capacity for centralized management. SAN Volume Controller is also designed to hide the boundaries among disk systems, which helps simplify management and enables customers to focus on managing storage as a resource to meet business requirements and not as a set of boxes.</p>	<ul style="list-style-type: none"> • IBM has recently introduced SAN Volume Controller Entry Edition (SVC EE), which delivers uncompromised enterprise-class storage virtualization capabilities but in a new more affordable offering optimized to better meet the needs of mid-sized businesses. SVC EE configurations are typically priced 20-40% lower than comparable enterprise SVC configurations • SAN Volume Controller Entry Edition is designed to grow flexibly as customers' businesses grow. SVC EE supports configurations containing up to 60 disk drives. When using 1TB disk drives, that could be as much as 48 TB of usable capacity. If customer needs grow beyond 60 disk drives, SVC Entry Edition configurations can easily be converted without application disruption to the enterprise SAN Volume Controller offering, which supports configurations up to 8 PB in size. You can also add more redundant pairs of SVC Storage Engines to scale the SVC configuration to handle greater I/O loads. • SAN Volume Controller and SAN Volume Controller Entry Edition deliver cost savings and efficiency improvements in these ways: <ul style="list-style-type: none"> • Improved storage utilization: By pooling capacity, storage administrators can make better use of the storage capacity customers already have. Improvements of up to 30% in storage utilization have been seen in SVC customers. SVC's new Space-Efficient Virtual Disks function helps to improve storage utilization even more because it is designed to use physical storage capacity only when data is written to virtual disks instead of dedicating physical capacity to the entire defined virtual capacity. This capability is also referred to as "thin provisioning." • Reduced storage growth: In the same way, SVC helps reduce storage growth; customers have seen reductions in growth of up to 20%. • Simplified management: SVC provides a single interface for managing all types of supported storage. As a result, storage administration is made simpler and storage administrators can become more productive. Productivity improvements of up to 2x have been seen in SVC customers. The new Space-Efficient Virtual Disks function helps automate provisioning, allocating storage to virtual disks only as needed, and so helps further improve productivity by enabling administrators to focus on overall storage deployment and utilization, and longer-term strategic requirements, without being distracted by routine everyday storage provisioning. • Complements server virtualization: Many businesses are deploying server virtualization using products such as VMware Virtual Infrastructure. Server virtualization offers benefits such as improved utilization, faster and easier deployment, and simplified management. Storage virtualization with SVC delivers comparable benefits for storage and so enables customers to obtain maximum benefit from infrastructure virtualization. • Tiered storage: SAN Volume Controller makes it much easier to implement tiered storage, which enables a mix of different types of storage to be used, including lower cost storage helping to reduce overall costs. Because SVC also has cache, it can improve the performance of data stored on lower cost storage, enabling such storage to be used more widely in a data center, further reducing costs. • Common replication functions: SAN Volume Controller implements a common set of replication functions (IBM FlashCopy, Metro Mirror and Global Mirror) that can be applied to all supported storage. This ability can help enhance the value of lower cost storage that may have more basic functionality and helps improve choice when selecting storage, which can be limited by proprietary replication functions. The new Space-Efficient FlashCopy function helps to dramatically reduce the amount of storage needed for FlashCopy replicas. Savings of 75% or more can be expected. • Improved availability: SVC makes it possible to move data among supported disk systems without disruption to applications. As a result, common data center events such as moving data at lease expiration or rebalancing loads across disk systems no longer need cause costly outages. The new Virtual Disk Mirroring function also helps to protect against failure of disk systems or disruptive maintenance activities to disk systems.



ibm.com/storage

IBM Global Services for System Storage and Storage Networking

Data Storage Services from IBM can help you achieve 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

Financing that supports throughout the technology life cycle

IBM Global Financing can help you accelerate your acquisitions of the latest technology and services, and help make your IT and information infrastructure projects more affordable by providing competitive, customized financing of your storage, server, PC, software and services investments. In addition, IBM Global Financing can also enable you to reduce technology obsolescence risk and handle planning for disposal and replacement of your IT hardware assets. With single-source, customized, competitive financing of the entire life cycle of your IT equipment, it is easier to manage both the up-front investment and the ongoing operating costs.

From acquisition through daily use, buyback and disposal, our end-to-end offerings form the foundation of a cohesive technology management strategy, improve asset management and increase your flexibility in small and large IT projects.

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Recyclable, please recycle

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