



Meeting the storage needs of SMB with modular systems and storage solutions from IBM

Highlights

- ***Optimize SMB resources by reducing storage complexity and improving ease of use***
- ***Increase flexibility to expand storage capacity and boost performance***
- ***Realize cost efficiencies that can help stretch IT budgets***
- ***Leverage world-class support from IBM to help foster a competitive edge***

Small and mid-sized businesses (SMB) face the same data storage challenges as any large enterprise. The exponential growth in the volume of information to be stored today affects SMBs in the same way. SMBs, however, do not always have the same resources as larger businesses to accommodate the cost and complexity of adding to and maintaining storage solutions. The IT staff of an SMB is generally a small percentage of the SMB's overall staff. Therefore, IT personnel at an SMB must cover a broad spectrum of IT know-how but may or may not have the resources for in-depth knowledge of any one specialization—such as storage.

In addition, SMBs most often have less capital to invest in storage infrastructure than do their larger counterparts. So with less to spend, SMBs need to get more for their buying dollar. Facing these constraints of staff and finances, an SMB must find a storage solution that is cost effective and easy to implement and maintain, yet at the same time able to fulfill all of the storage requirements of the business to the same rigorous standards as those found in large enterprises.

When considering their storage needs, SMBs often consider ease of use, flexibility, cost efficiency and support. IBM offers SMBs a wide range of storage options that can help meet these four critical requirements using its Express Advantage™ offerings. Express Advantage solutions include a comprehensive line of hardware, software, services and financing solutions designed specifically to address the business challenges of the SMB marketplace. These solutions are easy to install and deploy, easy to manage, easy to buy, and are priced for mid-sized businesses.

This family of storage products includes IBM System Storage™ DS3000 series Express disk storage systems, IBM System Storage DS4700 Express disk storage system, IBM System Storage N series Express unified storage systems, IBM System Storage TS3100/3200 Express and TS2200/2300 series Express tape storage systems, and IBM System Storage SAN Express products.

Reducing complexity for ease of use

Ease of use is an important factor to consider when developing a storage solution because many SMBs simply do not have the human IT capital to spend on complex solutions. SMB IT teams have to deal with a wide range of IT issues, but may not have the luxury that large enterprises have to drill down into any one IT arena. IBM storage solutions are designed to simplify implementation and maintenance of the storage infrastructure. For example, the DS3000 series Express provides an Express Kit and a Quick Install Guide to direct an IT administrator through the process of installing and maintaining storage. The kit and the guide include easy-to-follow instructions that can help simplify the deployment process for the IT generalist.

Meeting changing needs with increased flexibility

To optimize IT investments, SMBs often look for a single solution that can meet changing requirements over the long term. IBM storage solutions enable many levels of flexibility:

- *Flexibility to add capacity in a modular, non-disruptive manner*
- *Flexibility to expand capabilities, such as by moving from direct-attached storage (DAS) to a storage area network (SAN)*

- *Flexibility to increase performance and efficiency, such as by adding a Serial Advanced Technology Attachment (SATA) drive layer to an existing Serial Attached SCSI (SAS) drive layer*

IBM's disk solutions, for example, provide scalability through the use of expansion enclosures in the base array, increased disk capacity by mixing SAS and SATA drives, and increased resource utilization through storage partitioning, which permits multiple servers to address the same pool of disk storage.

Optimizing IT budgets for SMB

Organizations face three main costs when deploying storage solutions: the cost of resources required to maintain storage, operational costs, and capital costs. IBM created Express Advantage to help meet the unique requirements of SMB customers, helping them stretch their IT dollars while addressing their storage requirements.

Enterprise-level support for the SMB

IBM can help SMBs meet the challenges of support through a variety of warranty and non-warranty service programs, including extended warranties for parts and labor. And with its global presence, IBM is able to provide service support just about anywhere in the world.

Through its System Storage Proven™ program, IBM offers SMBs the assurance of interoperability and access to a broad range of solutions in the area of service. IBM also provides

IBM Remote Support Manager (RSM) for Storage. This product works in conjunction with IBM Storage Manager software to detect events and send alerts, logs and status information to IBM for analysis, providing a sophisticated level of expertise to the SMB.

The IBM storage advantage

While SMBs differ in many ways from large enterprises, they need to be just as adept as large enterprises at storing the critical information that serves as the lifeblood of their business. IBM offers storage solutions that provide ease of use, flexibility, cost efficiency and support, giving SMBs the same storage advantages as their larger counterparts.

IBM systems and storage synergy

Specific IBM System Storage offerings are particularly well suited for use with modular IBM Systems hardware from IBM System x™ and IBM BladeCenter® products. Together, they create an effective combination that can provide excellent system and storage performance for the SMB. Standardizing on one platform can help SMBs reduce infrastructure complexity and make the most of their system and storage investments.

The table below shows the optimal matching of specific IBM System x and BladeCenter servers with DS3000 series disk storage systems.

	DS3200 Express	DS3300 Express	DS3400 Express	DS4700 Express
IBM System x3250	✓	✓	✓	
IBM System x3455	✓	✓	✓	✓
IBM System x3550	✓	✓	✓	✓
IBM System x3650	✓	✓	✓	✓
IBM System x3655	✓	✓	✓	✓
IBM System x3755	✓	✓	✓	✓
IBM System x3850	✓	✓	✓	✓
IBM System x3950	✓	✓	✓	✓
IBM BladeCenter HS21		✓	✓	✓
IBM BladeCenter LS21/41		✓	✓	✓
IBM BladeCenter JS21		✓	✓	✓

IBM System Storage Product Specifications

IBM System Storage DS3000 series Express disk storage systems

	IBM System Storage DS3200 Express	IBM System Storage DS3300 Express	IBM System Storage DS3400 Express
Machine/model	1726-21X,1726-22X 1726-21E Express 1726-22E Express 1726-22T Telco DC Power Model	1726-31X,1726-32X 1726-31E Express 1726-32E Express 1726-32T Telco DC Power Model	1726-41X,1726-42X 1726-41E Express 1726-42E Express,1726-42T Telco DC Power Model
Platform support¹	Microsoft® Windows® 2003, RedHat 3, RedHat 4, SUSE 9, SUSE 10, NetWare, VMware ESX Server 3.5.1, 3i.1	Windows 2003, RedHat 3, RedHat 4, SUSE 9, SUSE 10, NetWare	Windows 2003, RedHat 3, RedHat4, SUSE 9, SUSE10, NetWare, VMware ESX Server 3.5.1, 3i.1
Host connectivity	SAS	iSCSI	4 Gbps Fibre Channel
SAN support	NA	Switched, IP SAN	Direct, Switched Fabric
Copy services	IBM FlashCopy®, IBM VolumeCopy	IBM FlashCopy, IBM VolumeCopy	IBM FlashCopy, IBM VolumeCopy
Availability features	Fault-tolerant, RAID, redundant hot-swap power, hot-swap drives, dual controller, dual pathing drivers	Fault-tolerant, RAID, redundant hot-swap power, hot-swap drives, dual controller, dual pathing drivers	Fault-tolerant, RAID, redundant hot-swap power, hot-swap drives, dual controller, dual pathing drivers
Controller	Dual active 3 Gbps SAS RAID controllers	Dual active 1 Gbps iSCSI RAID controllers	Dual Active 4 GB FC RAID controllers
Cache (min, max)	512 MB, 2 GB battery backup	512 MB, 2 GB battery backup	512 MB, 2 GB battery backup
RAID support	0, 1, 3, 5, 10	0, 1, 3, 5, 10	0, 1, 3, 5, 10
Capacity (min, max)	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
Drive interface	3 Gbps SAS	3 Gbps SAS	3 Gbps SAS
Drive support	SAS: 73 GB, 146 GB, 300 GB 10,000 rpm disk drives; 36 GB, 73 GB, 146 GB, 300 GB 15,000 rpm disk drives SATA: 500 GB, 750 GB, 1 TB 7,200 rpm	SAS: 73 GB, 146 GB, 300 GB 10,000 rpm disk drives; 36 GB, 73 GB, 146 GB, 300 GB 15,000 rpm disk drives SATA: 500 GB, 750 GB, 1 TB 7,200 rpm	SAS: 73 GB, 146 GB, 300 GB 10,000 rpm disk drives; 36 GB, 73 GB, 146 GB, 300 GB 15,000 rpm disk drives SATA: 500 GB, 750 GB, 1 TB 7,200 rpm
	Microsoft Windows MSCS	Microsoft Windows MSCS	Microsoft Windows MSCS

IBM System Storage DS4700 Express disk storage system

IBM System Storage DS4700 Express

Machine/model	1814-72A/70A
Platform support¹	IBM System p™, System x, Windows Server 2003 w/SPI, 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 2.5.2, IBM AIX® 5.1, 5.2, 5.3, HP-UX 11i and 11.23, Solaris 8, 9, 10
Host connectivity	Fibre Channel
SAN support	Direct, FC-AL, Switched Fabric
Copy services	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
Controller	Dual active 4 Gbps RAID controllers
Cache (min, max)	2 GB, 4 GB (70A/72A)
RAID support	0, 1, 3, 5, 6, 10
Capacity (min, max)	73.4 GB, 112 TB with with 6 EXP810 Expansion Units
Drive interface	4 Gbps Switched
Drive support	2 Gbps, 73.4 GB, 146.8 GB and 300 GB 10,000 rpm; (FC) 73.4 GB, 146.8 GB 15,000 rpm; 4 Gbps 73.4 GB, 146.8 and 300 GB 15,000 rpm (FC) (Serial ATA) 250 GB, 400 GB, 500 GB, 750 GB, 1 TB 7200 rpm (SATA)
	Microsoft RAID, Cluster, NetWare Cluster, HACMP, VERITAS Clustering ²

IBM System Storage N series Express unified storage systems

	IBM System Storage N3300 Express	IBM System Storage N3600 Express
Model	2859-A10 (single) 2859-A20 (clustered)	2862-A10 (single) 2862-A20 (Clustered)
Maximum raw capacity	24.6 TB	69 TB
Integrated onboard I/O ports³	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
PCI expansion slots for additional FC HBAs or GbE NIC cards³	0	2
Performance³	146 MB/sec	181 MB/sec
NVRAM³	256 MB	512 MB
Random Access Memory³	2 GB	4 GB

IBM System Storage TS3100/3200 Express tape storage systems

	IBM System Storage TS3100 Express	IBM System Storage TS3200 Express
Product Name	3573	3573
Machine type (model)	L2U	L4U
Product strengths	Multiplatform support High performance Fully Automated Remote Management Supports HH and FH LTO tape drives	Multiplatform support High performance Fully Automated Remote Management Supports HH and FH LTO tape drives
Number of drives	1 or up to 2 HH LTO	1-2 or up to 4 HH LTO
Max number of cartridges	24	48
WORM/Encryption	yes/yes	yes/yes
Native capacity	Gen 3: 9.6 TB Gen 4: 19.2 TB	Gen 3: 19.2 TB Gen 4: 38.4 TB
Typical capacity⁴	Gen 3: 19.2 TB Gen 4: 38.4 TB	Gen 3: 38.4 TB Gen 4: 76.8.2 TB
Native performance	Up to 240 MBs	Up to 480 MBps
Interface	4 Gbps FC, 3 Gbps SAS, LVD SCSI	4 Gbps FC, 3 Gbps SAS, LVD SCSI
Platform support⁵	System p, System i, System x, Microsoft Windows, HP UX, Sun Solaris, Linux	System p, System i, System x, Microsoft Windows, HP UX, Sun Solaris, Linux
Application support⁶	A, B, C, D, E, F, G, H, J, L, M, N ⁷	A, B, C, D, E, F, G, H, J, L, M, N ⁷
Warranty period	3 year	3 year
Warranty type	CRU	CRU

IBM System Storage TS2200/2300 series Express tape storage systems

	IBM System Storage TS2230 Express	IBM System Storage TS2240 Express	IBM System Storage TS2340 Express
Product Name	3580	3580	3580
Machine type (model)	H3L, H3S	H4S	L43, S43
Product strengths	Multiplatform support Half-high form factor Lower entry point	Encryption capable Multiplatform support High capacity Half-high form factor	Encryption capable Multiplatform support High performance High capacity
Number of drives	1	1	1
Max number of cartridges	1	1	1
WORM/Encryption	yes/no	yes/yes	yes/no
Native capacity	400 GB	800 GB	800 GB
Typical capacity⁴	800 GB	1.6 TB	1.6 TB
Native performance	60 MBps	120 MBps	120 MBps
Interface	LVD SCSI, 3 Gbps SAS	3 Gbps SAS	3 Gbps SAS, LVD SCSI
Platform support⁵	System p, System i, System x, Microsoft Windows, HP UX, Sun Solaris, Linux	System p, System i, System x, Microsoft Windows, HP UX, Sun Solaris, Linux	System p, System i, System x, Microsoft Windows, HP UX, Sun Solaris, Linux
Application support⁶	A (others in plan) ⁷	A (others in plan) ⁷	A (others in plan) ⁷
Warranty period	3 year	3 years	3 years
Warranty type	CRU	CRU	CRU

IBM System Storage SAN Express products

	IBM System Storage SAN16B-2 Express	IBM System Storage SAN24B-4 Express	Cisco MDS 9124 Express for IBM System Storage
Product Number	200516B	2498-B24 and 249824E	2053-424 (AAS); 2417-C24 (Xccellerator); PN 241724C (HVEC)
Base fabric switch	IBM TotalStorage SAN16B-2 Express Model fabric switch with 16 ports, 8-ports activated (0 to 7), hardcopy install guide, CD-ROM (with manuals), service and wrap tools, rack 240 V PDU power cord and mount kit	IBM System Storage SAN24B-4 Express switch with 24 ports, 8 ports activated (0 to 7) and Brocade Fabric OS (FOS) 6.1.0 or later, hardcopy install guide, CD-ROM (with manuals), service and wrap tools, SFP extraction tool, 110 volt power cord for rack installation, rail kit, Advanced Zoning, Enhanced Group Management, Full Fabric (standard on 2498-B24, optional on 249824E), Web Tools	Cisco MDS 9124 with 8 ports activated, 8 shortwave SFP transceivers. Includes replaceable power supply and redundant cooling, Cisco Fabric Manager, Cisco Device Manager, Cisco CLI
Fibre Channel interface	E_Port, F_Port, FL_Port	E_Port, F_Port, FL_Port and M_Port	E_Port, F_Port, FL_Port
Optical transceivers	4, 2 and 1 Gbps short wave and long wave	Choice of 8 Gbps short wave (supports 8, 4 and 2 Gbps link speeds) and 4 Gbps short wave and long wave (supports 4, 2 and 1 Gbps link speeds) Small Form-Factor Pluggable (SFP)	4 Gbps shortwave SFPs 4 Gbps longwave 4 Km SFPs 4 Gbps longwave 10 Km SFPs
Fans and power supplies	Dual fans, one power supply	Dual fans, one power supply	Replaceable power supply and redundant cooling
Hot-swappable components	SFP optical transceivers	SFP optical transceivers	Power supplies, SFP optical transceivers
Servers supported[®]	<ul style="list-style-type: none"> • IBM System x • Other Intel® processor-based servers • IBM System p • IBM System i™ • Selected Sun and HP servers 	<ul style="list-style-type: none"> • IBM Power™ Systems, System i and selected IBM AS/400® servers, System p and selected IBM RS/6000® servers • System x, selected IBM Netfinity® servers and other Intel processor-based servers • Selected Sun and HP servers 	<ul style="list-style-type: none"> • IBM BladeCenter, IBM System x servers and selected Netfinity servers • Other Intel processor-based servers • IBM System p and selected RS/6000 servers • IBM System i servers • Selected Sun and HP servers

	IBM System Storage SAN16B-2 Express	IBM System Storage SAN24B-4 Express	Cisco MDS 9124 Express for IBM System Storage
Operating systems supported^a	<ul style="list-style-type: none"> • Microsoft Windows NT®, Windows 2000, Windows 2003 • Red Hat Linux, Red Hat Linux Advanced Server • SUSE Linux, SUSE Linux Enterprise Server (SLES) • United Linux • Novell NetWare 	<ul style="list-style-type: none"> • Microsoft Windows NT, Windows 2000, Windows 2003 • Red Hat Linux, Red Hat Linux Advanced Server • SUSE Linux, SUSE Linux Enterprise Server (SLES) • IBM AIX, HACMP, IBM i5/OS®, IBM OS/400® • Other selected operating systems 	<ul style="list-style-type: none"> • Microsoft Windows NT, Windows 2000, Windows 2003 • Red Hat Linux, Red Hat Linux Advanced Server • SUSE Linux, SUSE Linux Enterprise Server (SLES) • United Linux • Novell NetWare
Storage products supported^a	<ul style="list-style-type: none"> • IBM TotalStorage® DS8000™ and DS6000™ storage servers • IBM TotalStorage Enterprise Storage Server® systems • IBM TotalStorage DS4000™ servers • IBM TotalStorage 3580, 3588, 3590 and 3592 tape drives • IBM TotalStorage 3581 Tape Autoloader • IBM TotalStorage 3494, 3582, 3583 and 3584 tape libraries and 3584 High Availability • Frame Model HA1 • IBM TotalStorage SAN Volume Controller (SVC) • IBM TotalStorage SAN File System (SFS) • Other selected storage systems 	<ul style="list-style-type: none"> • IBM System Storage DS8000, DS6000 and DS4000 storage servers • IBM TotalStorage Enterprise Storage Server systems • IBM TotalStorage FAStT Family of storage servers • IBM System Storage N series NAS Filers and Gateways • IBM TotalStorage 3580, 3588, 3590, and 3592 tape drives • IBM TotalStorage 3494, 3582, 3583 and 3584 tape libraries • IBM TotalStorage 3581 Tape Autoloader • IBM TotalStorage 3584 High Availability Frame Model HA1 • IBM TotalStorage SAN Volume Controller • Other selected storage systems 	<ul style="list-style-type: none"> • IBM Storage System DS6000, DS8000 and Enterprise Storage Server • IBM TotalStorage Enterprise Storage Server Systems • IBM System Storage DS3000 and DS4000 Disk Systems • IBM System Storage TS1120 Tape Drive, IBM System Storage TS3100, TS3200, TS3310 and TS3500 Tape Libraries • IBM TotalStorage 3494 Tape Library • IBM System Storage SAN Volume Controller (SVC) & SAN File System (SFS)
Fibre optic cable	Fibre optic cables are required and are available in various lengths in single-mode and multi-mode formats	Fibre optic cables are required and are available in various lengths in single-mode and multi-mode formats	Fibre optic cables are required and are available in various lengths in single-mode and multi-mode formats
Warranty	1-year; Customer Replaceable Unit (CRU) Service and IBM On-site Repair; warranty service upgrades are available	1-year; Customer Replaceable Unit (CRU); warranty service upgrades are available	1-year; Customer Replaceable Unit (CRU); warranty service upgrades are available



For more information

To learn more about IBM storage solutions for SMB, contact your IBM representative or IBM Business Partner, or visit:

- ibm.com/storage
- ibm.com/storage/disk or
- ibm.com/storage/tape

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¹ Consult product information for details.

² Also, verification will be completed for HP Service Guard.

³ 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/nas.

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⁴ Typical compression for open system environments is 2:1 (user results may vary).

⁵ Also includes selected IBM xSeries®, IBM Netfinity®, IBM System i, IBM AS/400 and IBM System p servers.

⁶ Refer to ibm.com/storage/tape/compatibility for current application support.

⁷ The following vendors provide application support to the platforms defined above:
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.

⁸ Visit ibm.com/systems/storage/san/index.html for latest support details.

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