High-performance, high-reliability tape storage with double capacity "E" models and attachment support for SCSI and Ultra SCSI systems

Magstar 3590 Tape Subsystem for Midrange and Open Systems

Highlights

- *Magstar* 3590 attaches to selected systems: IBM AS/400*, RS/6000*, Hewlett-Packard, Sun Microsystems, and other SCSI systems; Intel-based systems running Windows NT**; and IBM S/390* systems.*
- *Magstar 3590 features superior tape technology, providing up to a 100-fold improvement in data integrity over 3480 tape systems.*
- *With the Ultra SCSI interface, Magstar 3590 can achieve a maximum instantaneous data rate of 40 MB/sec.*
- *Magstar 3590 E models' uncompressed drive data rate of up to 14 MB/sec dramatically reduces backup and recovery times.*
- *Magstar 3590's 5 meters/sec high-speed search provides rapid access to data.*
- *Magstar 3590's 10-cartridge Automatic Tape Library (ATL) functions as a low-cost mini-library with random access to up to 600 GB of data (compressed).*
- *Magstar 3590 E model cartridges can contain up to 60 GB of data (compressed).*
- *Magstar 3590 tape subsystems enable drive sharing through two Ultra SCSI ports.*
- *Magstar 3590 helps protect existing storage investments.*

Exceptional performance

Magstar 3590 has leading-edge streaming and start/stop performance. This is important since most applications operate in start/stop mode. Magstar 3590 provides a maximum uncompressed data transfer rate of up to 14 MB/sec. The maximum instantaneous data rate is 40 MB/sec on an Ultra SCSI interface.

High capacity

Magstar 3590 cartridges have a capacity of up to 20 GB (100 times more capacity than 3480 cartridges). Up to 60 GB can be stored by using the LZ1 compression technique.

Magstar 3590 metal particle tape media is housed in a cartridge with the same physical size as 3490 cartridges, enabling coexistence in an IBM Magstar 3494 Tape Library together with current media. The Magstar 3494 Tape Library with Magstar 3590 drives provides access to as much as 374 TB (compressed at 3:1).

Improved reliability and integrity

The Magstar 3590 tape drive is designed for up to a 100-fold increase in data integrity over the 3480. Improved Error Correction Code (ECC) and servo tracks written on tape help provide data integrity. Resident diagnostics monitor operations to detect potential problems and aid in fast resolution.

Two rack-mounted Magstar 3590 E11s

Magstar 3590 uses a bi-directional longitudinal serpentine recording technique and a fourth-generation magnetoresistive head that reads and writes 16 data tracks at a time.

Investment protection

Existing Magstar Model B11 and B1A Tape Drives (B Models) can be field-upgraded to the new E Models, which helps protect existing investments in Magstar 3590 tape drives. Media investments are also protected, because

the new E Model drives can both read (128 track) and write (256 track) to existing cartridges. IBM will continue to offer Magstar 3590 B Models with the recently enhanced Ultra SCSI support along with the new E models.

Cost effectiveness

High-capacity media along with high-performance drives mean that less equipment and fewer cartridges and tape mounts are required. This translates into less floor space for tape cartridge storage, tape drives, and tape libraries. Maintenance costs are also lower than those for previous-generation 3480/3490 type drives.

A reusable storage asset, the Magstar 3590 protects existing investments and can be used as the foundation for a broad array of storage solutions. Magstar 3590 tape drives are a key component of the IBM Seascape* architecture, which enables flexible movement between storage solutions.

Ease of use

The Magstar 3590 Tape Subsystem incorporates a standard 10-slot ATL for high-capacity, stand-alone unattended operation. The ATL can be used in random access mode as a mini-library. Cartridges are loaded into and unloaded from the ATL in a convenient, portable 10-cartridge magazine.

Magstar 3590 also features an operator/service display showing device status, activities, error conditions, and messages.

Service

Magstar 3590 does not require scheduled preventive maintenance. IBM customer engineers use a built-in subsystem panel to perform service functions.

Magstar 3590 models

The Magstar 3590 is available in five models for SCSI and Ultra SCSI attachment:

- The Magstar 3590 Models B11 and E11 are rack-mounted and incorporate a 10-cartridge ATL for high-capacity unattended operation. The Models B11 and E11 can be modified to Models B1A or E1A.
- The Magstar 3590 Models B1A and E1A have no ATL and are designed to be incorporated into the Magstar 3494 tape library.
- The Magstar Model C12 frame with one to four Model B1A or E1A tape drives provides attachment to the StorageTek 4410 and 9310 ACS.

Storage management software

ADSTAR* Distributed Storage Manager (ADSM) is a client/server storage management product that uses the full capacity of the Magstar 3590 and supports the Magstar 3590's ATL in random access mode.

Year 2000

This product does not have date dependencies and is, therefore, Year 2000 ready when used in accordance with its associated documentation. It is capable

Attachment hardware and software requirements for B1A and B11 models

	Hardware	***Operating systems***
IBM AS/400	AS/400 Dxx and later models except the X02 and P03 that use the AS/400 Magnetic Media Subsystem Controller (FC 6501). Can also attach to the AS/400 Magnetic Media Controller (FC 6534) or the PCI Extended Tape Controller (FC 2729).	OS/400 3.2, 3.7, 4.1 and higher with PTFs
IBM RS/6000 and SP	RS/6000 and SP processors that support SCSI-2 Differential High-Performance External I/O Controller (FC 2420), Enhanced SCSI-2 Differential F/W Adapter A (FC 2412), SCSI-2 Differential F/W Adapter A (FC 2416), PCI SCSI-2 Differential F/W Adapter (FC 2409), PCI SCSI-2 F/W Differential Adapter (FC 6209), and PCI Differential Ultra SCSI Adapter (FC 6207)	AIX 4.1 and higher
Sun Microsystems	Sun SPARC and Ultra/Enterprise Architecture workstations and servers that support: - SBus Diff. F/W Intell. SCSI-2 Host Adapter - SBus Ultra Diff. F/W Intell. SCSI-2 Host Adapter - Dual-Channel Diff. Ultra SCSI Host Adapter (PCI)	 Solaris 2.4, 2.5.1, 2.6 Solaris 2.5.1, 2.6 Solaris 2.5.1, 2.6
Hewlett-Packard	HP 9000 Series 800 T/K business servers that support the HP-PB Fast/Wide Differential 28696A Adapter	HP-UX 10.0x through HP-UX 10.3x
Windows NT	Intel 486DX or Pentium processors that support the Adaptec AHA-2944 PCI Differential Ultra SCSI adapter	Microsoft Windows NT Server Version 4 with Service Pack 3 or Service Pack 4

Attachment hardware and software requirements for E1A and E11 models

	Hardware	***Operating systems***
IBM AS/400	AS/400 systems capable of running OS/400 4.1 and later systems can attach to the AS/400 Magnetic System Controller (FC 6501). They can also attach to the AS/400 Magnetic Media Controller (FC 6534) or the PCI Extended Tape Controller (FC 2729).	OS/400 4.1 and higher with PTFs
IBM RS/6000 and SP	RS/6000 and SP processors that support Enhanced SCSI-2 Differential F/W Adapter A (FC 2412), SCSI-2 Differential F/W Adapter A (FC 2416), PCI SCSI-2 F/W Differential Adapter (FC 6209), and PCI Differential Ultra SCSI Adapter (FC 6207)	AIX 4.1.1 and higher
Sun Microsystems	Sun SPARC and Ultra/Enterprise Architecture workstations and servers that support: - SBus Diff. F/W Intell. SCSI-2 Host Adapter - SBus Ultra Diff. F/W Intell. SCSI-2 Host Adapter - Dual-Channel Diff. Ultra SCSI Host Adapter (PCI)	 Solaris 2.5.1, 2.6 Solaris 2.5.1, 2.6 Solaris 2.5.1, 2.6
Windows NT	Intel 486DX or Pentium processors that support the Adaptec AHA-2944 PCI Differential Ultra SCSI adapter	Microsoft Windows NT Server Version 4 with Service Pack 3 or Service Pack 4

The Magstar 3590 Tape Subsystem at a glance

Model number	***B11***	***B1A***	***C12***	***E11***	***E1A***
Magstar 3590 characteristics					
LZ1 compression	Standard	Standard	Standard	Standard	Standard
Recording technique (interleaved serpentine longitudinal)	Standard	Standard	Standard	Standard	Standard
Number of tracks[1]	128	128	128 or 256	256	256
Cartridge capacity (with compression)	10 GB (30 GB)[2]	10 GB (30 GB)[2]	Up to 60 GB[2]	20 GB (60 GB)[2]	20 GB (60 GB)[2]
10-cartridge magazine (with compression)	100 GB (300 GB)[2]	na	na	200 GB (600 GB)[2]	na
Total capacity	Up to 300 GB[2]	na[3]	na[3]	Up to 600 GB[2]	na[3]
Performance					
Native drive data rate	9 MB/sec	9 MB/sec	9 or 14 MB/sec	14 MB/sec	14 MB/sec
Maximum sustained data rate[2]	27 MB/sec	27 MB/sec	27 or 34 MB/sec	34 MB/sec	34 MB/sec
Burst with Ultra SCSI data rate	40 MB/sec	40 MB/sec	40 MB/sec	40 MB/sec	40 MB/sec
High-speed search	5 meters/sec	5 meters/sec	5 meters/sec	5 meters/sec	5 meters/sec
Packaging					
Library, frame, or rack-mount	Rack	Library	Frame	Rack	Library
Dimensions					
Height	20.6" (522 mm)	10.5" (262 mm)	71.0" (1803 mm)	20.6" (522 mm)	10.5" (262 mm)
Width	9.1" (230 mm)	8.8" (221 mm)	28.5" (724 mm)	9.1" (230 mm)	8.8" (221 mm)
Depth	39.0" (988 mm)	29.8" (750 mm)	30.5" (975 mm)	39.0" (988 mm)	29.8" (750 mm)
Weight	109.0 lbs (49.5 kg)	63.0 lbs (28.6 kg)	880.0 lbs (400.0 kg)[4]	103.0 lbs (46.7 kg)	66.0 lbs (30.0 kg)
Operating environment					
Temperature with media in use 60° F to 90° F (16° C to 32° C)	Standard	Standard	Standard	Standard	Standard
Relative humidity (20% to 80%)	Standard	Standard	Standard	Standard	Standard
Wet bulb maximum (73.4° F; 23° C)	Standard	Standard	79° F; 26° C	78° F; 25° C	78° F; 25° C
Heat output (BTU/hr)	1024	1024	7830[4]	770	770
Power requirements (kVA)	0.300	0.300	1.200[4]	0.225	0.225

[1] B models use eight sets of 16 tracks; E models use 16 sets of 16 tracks
[2] Depending on data content, with 3:1 LZ1 data compression
[3] Depending on library model, since B1A and E1A reside in an IBM 3494 or in a C14 frame for the StorageTek 4410 or 9310 ACS
[4] Includes four B1A or E1A drives and associated cables

of correctly processing, providing, and/or receiving date data within and between the 20th and 21st centuries, provided that all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

For more information

For more information, contact your IBM representative or your IBM Business Partner. In the United States, you can also call IBM Direct: 1-800-IBM-CALL (1-800-426-2255).

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Produced in the United States
4-99

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Performance data contained in this document was obtained in a controlled environment based on the use of specific data. The results that may be obtained in other operating environments may vary significantly. Users of this document should verify the applicable data in their specific environment.

Photography depicts design models. Actual product may show slight variations.

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