

High-performance, high-reliability tape storage with attachment support for Ultra SCSI and Fibre Channel servers



Magstar 3590 Tape Subsystem for midrange and open systems

Highlights

Attaches to IBM AS/400*, RS/6000*, NUMA-Q, Hewlett-Packard, Sun Microsystems, and other SCSI systems; Intel-based systems running Windows NT** and Windows 2000**; and IBM S/390* systems**

Offers the choice of an Ultra SCSI interface for a maximum instantaneous data rate of up to 42 MB/sec or native Fibre Channel attachment for a maximum instantaneous data rate of up to 100 MB/sec

Features an uncompressed drive data rate of up to 14 MB/sec to dramatically reduce backup and recovery times

Includes a 10-cartridge Automated Cartridge Facility (ACF) that functions as a mini-library with random access to up to 1.2 TB of data (3:1 compression) for the Magstar* 3590 Model B11 and E11

Uses Magstar 3590 Model E extended length tape cartridges that can contain up to 120 GB of data (3:1 compression)

Overview

The Magstar 3590 Tape Subsystem consists of a family of powerful integrated storage solutions that provide the highest levels of capacity, performance, and data reliability for standalone and automated systems. Now, the Magstar 3590 Model E Tape Drive provides direct attachment to the growing number of open systems that support native Fibre Channel connection.

Exceptional performance

The Magstar 3590 Tape Subsystem provides industry-leading performance with a native drive data rate of up to 14 MB/sec. Using the LZ1 compression algorithm, sustained data rates of up to 34 MB/sec are possible with Ultra SCSI attachment.

With the native Fibre Channel connection, Magstar 3590 E Models are capable of reaching maximum instantaneous data rates of 100 MB/sec and sustained data rates of 42 MB/sec.

High-capacity media

Using Extended High Performance Cartridge Tape, a Magstar 3590 Model E Tape Drive with extended length support can store up to 40 GB (120 GB with 3:1 compression) on a single cartridge. A Magstar 3590 Model B can store up to 20 GB of data (60 GB with 3:1 compression)



Frame-mounted Magstar 3590 Model E11s

on a cartridge. The result is less tape cartridge handling, improved automation slot utilization, and a reduction in floor space requirements.

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. The Magstar 3494 Tape Library with Magstar 3590 drives provides access to as much as 748 TB (with 3:1 compression).

Improved integrity and reliability

The Magstar 3590 Tape Drive is designed for mission-critical data storage. Improved Error Correction Code (ECC) and servo tracks written on each tape cartridge help ensure high data integrity. Resident diagnostics dynamically monitor drive and media performance to detect potential problems and aid in resolution.

In addition, the Magstar 3590 provides redundant data protection capabilities. Because data is systematically disbursed across the media as it is written and redundant parity checking bits are included, there is less chance of an information loss when a topical media error occurs.

Leading-edge technology

The Magstar 3590 Model E uses a bidirectional longitudinal serpentine recording technique and a fourth-generation magneto-resistive head that concurrently reads and writes 16 data tracks. This means that 256 tracks of data can be reliably written onto Magstar 3590 media. In addition, the electronics have been enhanced with a new digital channel technology that further increases data integrity.

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 technology. Media investments are also protected, because the new E Model drives can both read (128 track) and write (256 track) to existing cartridges. In addition, IBM continues to market Magstar 3590 B Models as well as the newer E Models.

Support for the new Magstar 3590 Extended High Performance Cartridge Tape, which doubles storage capacity, is available on both the 3590 B and E models. All new Magstar 3590 Tape Drives feature this support, while existing drives can be field-upgraded.

The E Models can be upgraded to provide Fibre Channel support.

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 needed for tape drives, tape libraries, and tape cartridge storage.

The resulting savings from reduced tape hardware and media requirements can help justify an investment in data automation. Over time, the lower cost of a Magstar 3590 Tape Drive implementation enables more data to be automated.

A reusable storage asset, the Magstar 3590 protects existing investments and can be used as the foundation for a broad array of storage solutions. The Magstar 3590 also provides the capability to share tape drives through two Ultra SCSI or Fibre Channel ports.

Ease of use

The Magstar 3590 Models B11 and E11 incorporate a standard 10-slot ACF for high-capacity, standalone unattended operation. The ACF can be used in random access mode as a mini-library. Cartridges are loaded into and unloaded from the ACF in a convenient, portable 10-cartridge magazine.

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

The Magstar 3590 Models E11 and E1A now provide native Fibre Channel attachment for drives used in standalone configurations, with the Magstar 3494 Tape Library, or with a StorageTek Automated Cartridge System (ACS).

Fibre Channel servers can be supported at distances of up to 500 meters from the Magstar 3590 Tape Drive or up to 10 km with the IBM 2109 Switch or 2103 Hub.

Service

The 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 several configurations for Ultra SCSI and Fibre Channel attachment:

- The Magstar 3590 Models B11 and E11 are rack-mounted and incorporate a 10-cartridge ACF for high-capacity unattended operation. The Models B11 and E11 can be converted to Models B1A or E1A.
- The Magstar 3590 Models B1A and E1A have no ACF 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.

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).

The Magstar 3590 Tape Subsystem at a glance

Model number	B11	B1A	C12	E11	E1A
Magstar 3590 characteristics					
LZ1 compression	Standard	Standard	na	Standard	Standard
Recording technique (interleaved serpentine longitudinal)	Standard	Standard	na	Standard	Standard
Number of tracks ¹	128	128	na ²	256	256
Cartridge capacity (with compression)	10 GB (30 GB) ³	10 GB (30 GB) ³	na ²	20 GB (60 GB) ³	20 GB (60 GB) ³
Extended length cartridge capacity (with compression)	20 GB (60 GB) ³	20 GB (60 GB) ³	na ²	40 GB (120 GB) ³	40 GB (120 GB) ³
10-cartridge magazine (with compression)	Up to 200 GB (600 GB) ³	na	na	Up to 400 GB (1.2 TB) ³	na
Total capacity	Up to 600 GB ³	na ⁴	na ²	Up to 1.2 TB ³	na ⁴
Performance					
Native drive data rate	9 MB/sec	9 MB/sec	na ²	14 MB/sec	14 MB/sec
Maximum sustained data rate with Ultra SCSI ³	27 MB/sec	27 MB/sec	na ²	34 MB/sec	34 MB/sec
Maximum sustained data rate with Fibre Channel ³	na	na	na ²	42 MB/sec	42 MB/sec
Burst data rate with Ultra SCSI ³	40 MB/sec	40 MB/sec	na ²	40 MB/sec	40 MB/sec
Burst data rate with Fibre Channel ³	na	na	na ²	100 MB/sec	100 MB/sec
High-speed search	5 meters/sec	5 meters/sec	na	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) ⁵	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 model of drive included

³ Depending on data content, with 3:1 LZ1 data compression

⁴ 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

⁵ Includes four B1A or E1A drives and associated cables



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Produced in the United States

6-00

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GB equals one billion bytes when referring to hard drive capacity; accessible capacity may be less.