New IBM Magstar 3590 Model A60 Dramatically Enhances Tape Drive Performance

Overview
You’ll receive benefits of better performance, improved reliability, and improved serviceability with IBM’s newest tape controller—and enhance your technology investment for future growth and performance improvements, too.

The Magstar® 3590 Model A60 Controller is the newest addition to IBM’s Magstar 3590 tape technology family, and is evidence of our commitment to protecting your investment in 3590 tape products.

With up to twice the performance of the 3590 Model A50, the Model A60 allows you to exploit the increased performance of the new Magstar 3590 Model E11 and E1A (E Model) Tape Drives. Its higher throughput and enhanced attachment flexibility allows you to attach up to four concurrent ESCON® hosts, twice what the Model A50 supported. The Model A60 can alternatively attach the Magstar 3590 Model B11 or B1A (B Model) Tape Drives.

Plus, we’ve added redundant power supplies with automatic failover capability to improve reliability and availability. These power supplies also include “hot swap” capability, so they can be replaced without incurring an outage.

The Model A60 enhances your long-term strategic planning capability, too. Whether as a stand-alone tape controller or a controller in a tape library, the Magstar 3590 Model A60 will be the technology base for future tape controller function in your environment.

Product Preview
Future features and capabilities of the Magstar 3590 Model A60 that provide more function for S/390® and open systems environments will include:
- FICON™ attachment support, with up to two FICON attachments
- Support for SCSI attachments from 0 to 4 ports
- Support for additional ESCON attachments up to 8 ports
- Intermix of ESCON, SCSI, and FICON attachments
- “Call Home” service support
- Attachment support of 3590 tape drives in adjacent 3494 Model Lxx and Dxx frames

Previews provide insight into IBM plans and direction. Specific availability dates, ordering information, and terms and conditions will be provided when the product is announced.

Key Prerequisites
The Magstar 3590 Model A60 attaches to ESCON channels on ES/3090™, ES/9000®, or S/390 systems. Appropriate levels of OS/390® (MVS/ESA™), DFSMS/MVS®, VM/ESA®, VSE/ESA, or TPF are required, which may vary depending on whether Magstar 3590 E Model or B Model Tape Drives are attached.

Planned Availability Date
August 27, 1999

At a Glance
IBM’s newest high-performance tape subsystem controller, the Magstar 3590 Model A60, gives you higher performance and reliability, while laying the groundwork for your company’s continued technological growth.

The new Magstar 3590 Model A60 Controller provides:
- Up to twice the performance of the Magstar 3590 Model A50 Controller
- Four ESCON host attachments, twice the number on the Model A50
- Greater return on investment through the ability to exploit the improved performance of the Magstar 3590 E Model Tape Drives
- Improved reliability and availability, through redundant power supplies with automatic failover and “hot swap” replacement

For ordering, contact:
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Reference: YE010

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Description

Continuing to build on the success of the Magstar 3590 and IBM Seascape architecture, IBM has dramatically enhanced the Magstar product family with the addition of the **Magstar 3590 Model A60 Controller** to respond to a wide range of customer requirements. Utilizing the IBM Seascape building block approach, the Model A60 can be flexibly configured with one or two dual-ported ESCON paths via adapter cards. There is room for growth, too. Expansion card slots enable you to scale up or down to address ever-changing business requirements with a customer-focused 3590 storage solution.

The Model A60 can coexist with its predecessors, the Model A50 and A00 Controllers. This protects your investment, and enables an easy migration path to upgrade to the performance levels provided by Model A60. The IBM Magstar 3590 Tape Subsystem demonstrates IBM’s continued commitment to providing advanced tape solutions to meet the growing demands of the enterprise.

**Model A60 Controller**

The 3590 Model A60 Controller provides a high-performance ESCON attachment of the Magstar 3590 Tape Subsystem to ES/3090, ES/9000, and S/390 host systems at up to 43 Km using ESCON directors. The 3590 Model A60 provides the following benefits:

- Provides up to two times the performance of the 3590 Model A50 Controller, which can enable a reduction in backup window processing
- Provides building block granularity with one or two dual-ported ESCON adapters, doubling the attachment capability of the Model A50
- Enables the exploitation of the higher performance of the Magstar 3590 E Model Tape Drives
- Includes an Ultra SCSI tape drive attachment with the ability to attach up to four Magstar 3590 E Model or B Model Tape Drives
- Incorporates redundant power supplies with automatic failover capability and the ability to “hot swap” one out without an outage, improving reliability and availability
- Operationally coexists with its predecessor control units (Model A50 or A00) to provide an easy migration path to Model A60 performance levels
- Flexibly offers the option of presenting attached 3590 tape drives as true 3590 devices, or emulated 3490E devices, enabling you to remain at 3490E software levels if you prefer to take advantage of Magstar 3590 benefits
- Enables ESCON host attachment of Magstar 3590 Tape Drives for automated operation with an IBM Magstar 3494 Tape Library
- Enables ESCON host attachment of Magstar 3590 Tape Drives inside a StorageTek Silo extending 3590 benefits to users of StorageTek automation
- Enables ESCON host attachment of Magstar 3590 Model Tape Drives in a 3590 Model A14 Frame or standard 19-inch rack for stand-alone non-automated use

One or two Dual ESCON Attachments (#3412) can be specified on the Model A60, with each feature providing attachment for two ESCON host channels. Each channel can have up to 32 logical channels and it supports multiple logical paths per MVS™ image. The ESCON adapter has an instantaneous data rate of 17 MB/sec. Performance varies with application and configuration used, but in general, the Model A60 can provide up to double the performance of what was achieved in the predecessor Model A50 Controller. The Magstar 3590 Model A60 provides configuration flexibility to tailor a 3590 solution to your specific requirements. The Model A60 can be featured to present attached 3590 tape drives as either native 3590 or emulated 3490E devices.

The Model A60 Controller has remote support capabilities. Features #2710 — #2712 enable quick diagnostics, problem determination and verification, and a means to upgrade 3590 microcode from remote sites via modem. IBM supplies the modem to enable remote support.

The Magstar 3590 Model A60 is a re-usable storage asset which can be placed in multiple 3590 storage solutions. The 3590 A14 Frame, with an integrated 3590 Model A60 Controller provides a frame attachment of up to four Magstar 3590 Tape Drives. It can be installed in a standard 19-inch rack with Magstar 3590 Tape Drives. However, because of the size of the 3590 Tape Drive ACF and the Model A60, only two 3590 Tape Drives and the Model A60 will fit in a 1.6 meter rack, such as the 9309 Model 002, 7014 Model S00, or 7015 Model R00 rack. For other racks, including 1.8 meter racks, you should determine if you have the appropriate EIA rack space available for up to four 3590 Tape Drives with the Model A60. The 3590 A60 can also be integrated in a 3494 Tape Library Model D14 Drive Unit frame to automate up to four 3590 Tape Drives. If you wish to leverage your StorageTek Automation investment, up to two Model A60 Controllers can be placed in a Model C10 frame to enable ESCON attachment of up to four Magstar 3590 Model B1A or E1A Tape Drives per controller. A 3494 can be configured with up to 15 3590 Model A60 Controllers and 60 Magstar 3590 Tape Drives.

The Model A60 provides the flexibility to facilitate the migration to 3590 benefits, such as the Magstar Virtual Tape Server. As performance and capacity requirements grow, you can add additional control units and/or adapter cards to connect multiple hosts through the control unit to Magstar 3590 Tape Drives.

**3590 Model C10 Silo Compatible Frame**

The IBM 3590 Model C10 Silo Compatible Frame can contain one or two Magstar 3590 Model A60 Controllers each connected to one to four Magstar 3590 Tape Drives in an associated 3590 Model C12 or C14 Silo Compatible Frame for attachment to a StorageTek Automated Cartridge System (ACS). It provides new levels of function, performance, reliability, and cartridge capacity to StorageTek ACS users. With the 3490E emulation capability, the 3590 Model A60 allows the operating system to communicate with the Magstar drives as if they were “3490E” tape drives. This enables you to attach Magstar tape drives without installing new system software or modifying StorageTek software. This subsystem will enable new levels of reliability and cartridge capacity compared to existing 18- or 36-track technology. Tapes written in 3590 media format and most software will use the full capacity of the tape. Magstar 3590 Tape Drives attached via a 3590 Model A60 Controller in the Model C10 Silo Compatible Frame may be used to migrate from 18- or 36-track technology in a StorageTek ACS to Magstar offering the following benefits:

- Create fewer tapes for archive files
- Store high capacity sequential application data sets
- Store data sets at a lower cost
• Substantially reduce the number of cartridges required for off-site data storage for disaster recovery
• Provide data interchange with other systems that use Magstar High Performance Tape Subsystem drives

The SCSI cables from the Magstar 3590 drives to the 3590 Model A60 Controller can be specified by a feature on the Model C12 or C14. The drives must also be defined to StorageTek library management Host Software Component (HSC). The drives can be defined as either one of StorageTek’s 36-track 3490E compatible device types, the 4490 (Silverton) or 9490 (TimberLine). The 3590 Model A60 Controller in the 3590 Model C10 will coexist in an ACS with StorageTek 18-track drive technology, either one of the two 36-track technologies (Silverton or TimberLine), and RedWood technology. When both Silverton and TimberLine drives are installed in the ACS complex, installing the Model A60 Controller in a 3590 Model C10 involves some additional implementation tasks.

Customers with existing StorageTek ACS libraries will be able to add 3590 tape drives attached to Model A60 Controllers in the IBM 3590 Model C10 to their current library. These drives can also replace existing drives in the ACS. The tape drives and A60 Controller can later be utilized in a 3494 Tape Library when you are ready to migrate to an IBM automation solution.

Applications such as server backup and restore, archive, storage management, and disaster recovery can be easily addressed with the IBM 3590. With the proliferation today of servers and subsequent backup requirements, the Model A60 enables the performance to reduce backup windows for these servers and Very Large Databases (VLDB), which hold key mission critical data essential to successful businesses.

Product Preview

Previewed product features and functions will further enhance the Magstar 3590 Model A60 Controller. Future features and capabilities will include:

• FICON attachment support
  Host system FICON attachment will be supported to provide addressing and attachment distance enhancements. The Model A60 will be able to include up to 2 FICON ports.

• Support for SCSI attachments from 0 to 4 ports
  Attachment to host system SCSI adapters will be supported. The Model A60 will be able to support up to 4 SCSI ports.

• Support for additional ESCON attachments up to 8 ports
  The maximum number of ESCON attachments will be increased from 4 attachments to a maximum of 8 ESCON attachments.

• Intermix of ESCON, SCSI, and FICON attachments
  The Model A60 will support intermix of ESCON, SCSI, and FICON attachments, so that the attached Magstar 3590 Tape Drives can be used by various types of host system attachments.

• “Call Home” service support
  The Model A60 will be able to use the Remote Support Attachment to initiate a call to IBM to report a problem or status information to provide faster service support.

• Attachment support of 3590 tape drives in adjacent 3494 Model Lxx and Dxx frames
  Support will be provided on the 3494 for 3590 Tape Drives in a 3494 Model Lxx frame to be attached to a 3590 Model A60 Controller in an adjacent 3494 Model D14 frame.

Previews provide insight into IBM plans and direction. Specific availability dates, ordering information, and terms and conditions will be provided when the product is announced.

Year 2000

This product does not have date dependencies and is, therefore, Year 2000 ready.

Euro Currency

This product is not impacted by euro currency.

Product Positioning

IBM provides the Magstar 3590 in a range of product offerings to meet a diverse set of customer requirements. IBM’s newest tape controller, the Magstar 3590 Model A60 Controller, was developed to exploit the higher performance of the new Magstar 3590 E Model Tape Drives and to provide the technology platform for future tape controller enhancements. The 3590 Model A60 has up to two times the sustainable data rate of the 3590 Model A50 Controller and will support more ESCON host attachments than the Model A50. The 3590 Model A60 Controller can be used in the following offerings:

• IBM 3494 Automated Library (in a 3494 Model D14)
• StorageTek Libraries (in a 3590 C10)
• Stand-alone (in a 3590 A14 and standard 19-inch rack)

Magstar 3590

The IBM Magstar 3590 Tape Subsystem, attached to the IBM 3590 Model A60 Controller, provides attachment of IBM’s highest performance, large capacity tape subsystem to ESCON channels. It should be the tape drive of choice in any ESCON environment on ES/390, ES/9000 or S/390 systems where a reliable, affordable fast tape data rate or high capacity is needed. The Magstar 3590 offers significant enhancements in performance, capacity, data integrity, reliability, and availability over IBM 3480, 3490, or 3490E tape drives. The Magstar 3590 may also relieve backup time and space constraints and provide the increased capacity needed to support today’s growing disk backup requirements.

Although the 3590 provides the capability of very high tape performance, other components of the system may limit the actual performance achieved.

Magstar 3590 in a 3494

The Magstar 3590 offers the greatest performance and capacity for use in the IBM 3494. One to four Magstar 3590 Model B1A Tape drives or one to four Magstar 3590 Model E1A Tape drives can be installed in each 3494 Model D14 with a 3590 Model A60 Controller. Magstar Virtual Tape Server managed Magstar 3590s, Magstar 3590 drives, Magstar 3590 Model A00, Magstar 3590 Model A50, Magstar 3590 Model A60, and 3490E drives and can all be intermixed within a Magstar 3494 Tape Library.
3590 Silo Compatible Tape Subsystem

The Magstar 3590 can be used with StorageTek 4410 and 9310 using Magstar 3590 Model B1A or E1A Tape Drives, a Magstar 3590 C12/C14 Frame, and 3590 Model A50 or A60 Controllers. One or two 3590 Model A60 Controllers in a 3590 Model C10 Silo Compatible Frame are attached to the 3590 Tape Drives in a 3590 Model C12 or C14 Silo Compatible Frame. The “3490E” emulation provided by the 3590 Model A50 or A60 can be used for attachment of the Magstar 3590 Tape Drives in a StorageTek automated library to ES/3090, ES/9000, or S/390 systems. This provides the Magstar benefits of increased capacity, reliability, and performance over 18/36-track technology in an affordable offering to StorageTek tape library users. The Magstar 3590 Silo Compatible Frame (Model C12 or C14) also offers a migration path to an IBM automation solution consisting of IBM automation, 3590 and 3490 drive technology, IBM DFSMS™, and where appropriate a Magstar Virtual Tape Server. Integration of Magstar 3590 drive technology in StorageTek libraries allows you to immediately benefit from Magstar 3590 technology, while planning a migration (at your own pace) to a total IBM solution.

Configuration flexibility has been enhanced to allow from one to four Magstar 3590 Tape Drives in a Model C12 or C14 frame. This provides, by feature option, the ability to configure the number of tape drives required to leverage your StorageTek ACS investment.

Moving Magstar 3590 to Different Storage Solutions

Magstar 3590 offers configuration flexibility and long range customer investment protection in its unique ability to be used, and re-used, in multiple storage solutions. Capitalizing on IBM’s Seascape architecture, Magstar 3590 Tape Drives are storage assets that can be moved from storage solution to storage solution. Through features and model conversions, Magstar 3590 Tape Drives can be transformed to fit into stand-alone subsystems (Model A14 or standard racks), StorageTek silos, or IBM 3494 automated solutions (including Magstar Virtual Tape Server). An initial investment in the Magstar 3590 Tape Drive, can now grow with your ever changing business requirements.

Reference Information

Refer to Hardware Announcement 199-099, dated April 20, 1999.

Trademarks

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**Publications**

The IBM Magstar® 3590 Tape Subsystem Introduction and Planning Guide (GA32-0329) will be updated to include the 3590 Model A60 Controller and will be available by August 1999.

The IBM Magstar 3590 Tape Subsystem Silo Compatible Frame Models C10, C12, and C14 Introduction, Planning, and User’s Guide (GA32-0366) will be updated to include the 3590 Model A60 Controller and is shipped with the 3590 Model C10, C12, or C14. Additional copies will be available with the planned availability of the Model C10.

Updates of the above publications are also available now at:


The IBM Magstar 3590 Tape Subsystem Operator’s Guide (GA32-0330) will be updated to include the Model A60 Controller and is shipped with the product. Additional copies will be available with the planned availability of that attachment.

The IBM Magstar 3590 Tape Subsystem Hardware Reference (GA32-0331) will be updated to include the Model A60 Controller and will be available after the planned availability.

The IBM Magstar 3494 Tape Library Introduction and Planning Guide (GA32-0279) will be updated to include the Model A60 Controller and is planned to be available in August 1999.

The System Library Subscription Service (SLSS) is available by order number only. Customers currently subscribing to SLSS will receive publication updates automatically.

**Displayable Softcopy Publications**

The product books are offered in displayable softcopy form. The displayable manuals are shipped on a CD-ROM as part of the Online Library Omnibus Edition Hardware Collection, publication SK2T-5843.

These displayable manuals can be used with the BookManager® READ licensed programs in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

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**Technical Information**

**Specified Operating Environment**

**Physical Specifications**

Model A60 Controller:

- EIA Units: 10 EIA Units
- Width: 483 mm (19.0 inches)

Model C10 Silo Compatible Frame:

- Width: 724 mm (28.5 inches)
- Depth: 1,036 mm (40.8 inches)
- Height: 1,800 mm (70.9 inches)
- Weight: 340 Kg (750 pounds)

The above weight is without any Model A60 Controller.

Operating Environment

Model A60 Controller:

- Temperature: 16° to 32°C (60° to 90°F) operating
- Relative Humidity: 20% to 80% non-condensing (limited by media)
- Wet Bulb: 23°C (73°F)
- Calorific value: 500 joules/sec (1700 Btu/hr) maximum configuration
- Voltage: 100-127 V AC or 200-240 V AC, 50-60 Hz auto-ranging
- Electrical power: 0.5 kVA maximum
- Capacity of Exhaust: 4 cubic meter/min (140 cfm)
- Noise Level: 6.8 Bels idle; 6.8 bels operating
- Leak Current: 3.5 Milliamperes
- Starting Current: 30 Amperes maximum (for 8 msec or less)

3590 Model C10 Silo Compatible Frame (with two A60s):

- Temperature: 16° to 32°C (60° to 90°F) operating
- Relative Humidity: 20% to 80% non-condensing
- Wet Bulb: 23°C (73°F) maximum
- Calorific value: 1000 joules/sec (3400 Btu/hr) maximum configuration
- Voltage: 100-127 V AC or 200-240 V AC, 50-60 Hz auto-ranging
- Electrical power: 1.0 kVA maximum
- Capacity of Exhaust: 8 cubic meter/min (280 cfm)
- Noise Level: 7.4 Bels idle; 7.4 bels operating
- Leak Current: 7 Milliamperes
- Starting Current: 60 Amperes maximum (for 8 msec or less)
Hardware Requirements

3590 Model A60

The 3590 Model A60 provides attachment of Magstar 3590 High Performance Tape Drives to ESCON channels on:

- S/390 Parallel Enterprise Servers
- S/390® Multiprise™ 2000
- ES/9000® Processors
- ES/3090™ Processors

Attachment to ESCON channels is also supported via the 9032/9033 ESCON Directors. An ESCON Director is required to make use of the Extended Distance Feature (XDF) of the ESCON channel. The multimode fiber optic cable connecting the Magstar 3590 Model A60 is limited to a maximum length of 3 km (1.86 miles). The combined XDF fiber optic cable length and multimode (LED) fiber optic cable length may not exceed 43 km (26.7 miles).

The number of ESCON adapters on the Magstar 3590 Model A60 is specified with feature number 3412 (Dual ESCON Attachment). Each #3412 attachment feature provides two ESCON channel attachments. A second #3412 can be specified to provide an additional two ESCON channel attachments. The Model A60 can be placed in a 3494 Tape Library, in a 3590 Model A14 ESCON channel attachments. The Model A60 can be specified with feature number 3412 (Dual ESCON Attachment). Each #3412 attachment feature provides two ESCON channel attachments. A second #3412 attachment feature can be specified to provide an additional two ESCON channel attachments. The Model A60 can be placed in a 3494 Tape Library, in a 3590 Model A14 Frame, in a standard 19-inch rack, or in a Model C10 Silo Compatible Frame for attachment to Magstar 3590 Tape Drives in a Model C12 or C14 Silo Compatible Frame.

For use with a 3494 library, up to four Magstar 3590 Model B1A or E1A Tape Drives and one Model A60 controller can be attached in a Magstar 3494 Model D14 Frame. Up to four Model B11 or E11 Tape Drives and one Model A60 Controller can be placed in a Model A14 for non-library attachment to an ES/3090, ES/9000, or S/390 system. It can be installed in a standard 19 inch rack with Magstar 3590 Tape Drives. However, because of the size of the 3590 Tape Drive ACF and the Model A60, only two 3590 Tape Drives and the Model A60 will fit in a 1.6 meter rack, such as the 9309 Model 002, 7014 Model S00, or 7015 Model R00 rack. For other racks, including 1.8 meter racks, you should determine if you have the appropriate EIA rack space available for up to four 3590 Tape Drives with the Model A60. One to four Magstar 3590 Model B1A or E1A Tape Drives can be installed in a Model C12 or C14 Silo Compatible Frame for attachment to one or two Model A60 Controllers in a Model C10 Silo Compatible Frame. The 3590 E Model Tape Drives cannot be intermixed on the same Model A60 controller with 3590 B Model Tape Drives.

When installed in a 3494 Tape Library, the IBM 3590 Model A60 Controller can be attached to the library manager in the 3494 Model L10, L12, or L14, through an RS422 connection similar to the 3590 Model A50 Controller (by specifying feature number 9061 on the 3494) or through the 3494 Attachment Concentrator (#5232) (by specifying feature number 9060). When connected through the Attachment Concentrator, the Model A60 Controller does not require a tape control unit connection on the library manager.

The 3590 Model A60 also provides 3490E emulation capability that enables attached Magstar 3590 Tape Drives to appear to the host system as “3490E” tape drives. The 3490E emulation can be used with Magstar 3590 Tape Drives attached to an A60 controller installed in a 3590 Model A14 stand-alone solution, both the Model C12 and C14 Silo compatible solutions, or in rack-mounted subsystem solutions.

The 3590 Model A60 attaches with ESCON cables to ESCON channels of ES/3090, ES/9000, S/390 systems. Two 30.5 meter (100 foot) ESCON cables are included with each feature number 3412 (Dual ESCON Attachment). If different ESCON cable lengths are needed, they must be ordered separately. Refer to the IBM Magstar 3590 Introduction and Planning Guide (GA32-0329) for ESCON cable planning information.

The appropriate SCSI cables required for attaching Magstar 3590 Tape Drives to a 3590 Model A60 Controller, in a rack, in a 3590 Model A14 Frame, or 3494 Library are included when feature number 9059 (3590 Drive Attached) is specified (the quantity of feature number 3059 must equal the number of tape drives attached to the A60). For rack installation, feature number 4641 must also be ordered on the Model A60. The Silo Drive SCSI Cables feature (#5098) is required on the Model C12 or C14 frame, and it includes SCSI cables for attachment of Magstar 3590 Tape Drives in a Model C12 or C14 frame to the Model A60. When the 3590 Model A60 is replacing a 3590 Model A00 or A50 Controller, or 3591 Model A01, this feature will provide the additional SCSI cables required in a four drive subsystem to be used with the existing SCSI and ESCON cables.

3590 Model C10

The 3590 Model C10 is a frame that can contain one or two Magstar 3590 Model A60 Controllers, which can be connected to Magstar 3590 Model B1A or E1A Tape Drives in an associated 3590 Model C12 or C14 Silo Compatible Frame attached to a StorageTek Automated Cartridge System (ACS). The SCSI bus on the Magstar 3590 Tape Drives attach with SCSI cables to the Magstar 3590 Model A60 Controller, which provides attachment to ESCON channels on ES/3090, ES/9000, or S/390 systems.

Both SCSI ports on a Magstar 3590 drive attached to a Model A60 Controller must be attached to the A60 and they cannot be attached to any other SCSI host system. The 3590 Model A60 attaches with ESCON cables to ESCON channels of the ES/3090, ES/9000, or S/390 system. Refer to the Magstar 3590 Introduction and Planning Guide (GA32-0329) for ESCON cable planning information.

An optional Power Sequencing feature (#5460) is available on the Models C12 and C14 to connect the power supplies in those frames with the power supply in Model C10. When installed, it will provide power sequencing to the drives and controllers in all connected frames.

Software Requirements: Software support for Magstar 3590 Tape Drives attached through the 3590 Model A60 Controller to ESCON channels on ES/3090, ES/9000, and S/390 systems is provided in OS/390® (MVS/ESA™), VM/ESA®, VSE/ESA, and TPF operating system environments. Up to four Magstar 3590 B Model Tape Drives, or up to four Magstar 3590 E Model Tape Drives, may be attached to the 3590 Model A60 Controller, and the subsystem will operate in either 3590 native mode or 3490E drive emulation mode. The 3590 Tape Drives are added to the host system’s I/O configuration as if they were device type 3590 or 3490E. The Magstar 3590 Tape Drives are supported through the 3590 Model A60 Controller on the following minimum operating systems levels.

OS/390 (MVS/ESA)

- 3590 B Model Tape Drive Support
Support for 3590 B Model Tape Drives is provided for the following software levels. With 3490E emulation, PTFs may be required by some applications to exploit the full media capacity. The D/T 3590 PSP bucket should be checked for details on required or recommended maintenance.

- MVS/ESA SP™ Version 5.1, or 5.2 (With JES3: JES3 Version 5.1.1, or 5.1.2 is required) plus SPEs or OS/390 Release 1
- DFSMS/MVS® Version 1.2.0 or 1.3.0 plus SPEs
- EREP Version 3.5 plus PTFs
- ADSM/MVS™ Release 2.1 plus PTFs
- DFSORT™ Release 13 plus PTFs
- DITTO/ESA Release 2

3590 E Model Tape Drive Support

Support for 3590 E Model Tape Drives is provided in PTFs for the following software levels (earlier levels are not supported, and later releases will include support). These minimum software levels are required to support the 3590 E Model Tape Drives in either 3590 native mode or 3490E emulation mode.

- OS/390 Release 1 Version 3, and Release 2 Versions 4, 5, 6, and 7 (OS/390 includes support for JES3) plus SPEs
- DFSMS/MVS 1.3.0, 1.4.0, and 1.5.0 plus SPEs (E Model PTFs for DFSMS™ are planned to be available on July 23, 1999, for Release 1.4.0; in August 1999, for Release 1.3.0; in September 1999, for Release 1.5.0. Check the PSP bucket for availability.)
- EREP Version 3.5
- ADSM/MVS Release 2.1 plus PTFs
- DFSORT R13 and R14 plus PTFs
- DITTO/ESA Release 2

Support for the 3590 E Model Tape Drives provides controls to allow intermixing 3590 E Model and B Model subsystems in an SMS-managed 3494 Tape Library. Allocations provide a desired drive type that is managed through a data class attribute for the 256-track recording format. Downward read compatibility of 128-track-recorded tapes on 256-track 3590 E Model Tape Drives is exploited in libraries with both 128-track and 256-track subsystems. Shared common media pools are used for both 3590 B and E Models. In a 3494 library, the 3590 E Model drives are set up as type 3590 (not type 3490E). The 3590 E Model software enhancements are required even if you are not intermixing B Model and E Model subsystems in the 3494 library.

For 3590 E Model or B Model Tape Drives not inside 3494 libraries (non-library drives or drives located in silo-compatible frames), the software support cannot manage allocation among multiple drive models that use the same emulation type (for example, 3590 E Model and B Model Tape Drives that are both defined in the I/O configuration as device type 3590). Allocation for different drive models having the same device type must be managed through local procedures or software products, such as Basic Tape Library Support (BTLS) or StorageTek’s Host Software Component (HSC). Although the 3590 E Model device support PTFs do not manage allocation issues for mixed B and E Models outside libraries, this maintenance should be applied to realize capacity exploitation benefits with applications such as HSM, OAM Object support, and DFSORT and to enable EREP reporting by true device type or model.

**VM/ESA and VSE/ESA**

When attached in 3490E emulation mode, the appropriate release levels of operating systems and application programs with 3490E device support are required. No new or enhanced software is required to support the Magstar 3590 E Model Tape Drives above and beyond the software required for the 3590 B Models. The following minimum software levels are required to support Magstar 3590 B Model or E Model Tape Drives in 3590 native mode:

**VM/ESA:**

- VM/ESA Version 2.2
- EREP Version 3.5 plus PTFs
- ADSM/VM Release 2.1 plus PTFs
- DITTO/ESA Release 2

**VSE/ESA:**

- VSE/ESA Version 2.2
- EREP Version 3.5 plus PTFs
- DITTO/ESA Release 2

**Transaction Processing Facility (TPF)**

Support for Magstar 3590 B Model Tape Drives is provided in the following minimum software level:

- TPF Version 4.1 plus PTFs

**Note:** OS/390, VM, and VSE system software and service updates are distributed on 3480/3490 format tape cartridges. In situations where Magstar 3590 Tape Drives are sold into new accounts, it will be necessary to ensure the installation has at least one system-attached 3490 tape drive to read the system installation tapes.

**Compatibility:** The Magstar 3590 Model A60 Controller is compatible with the Magstar 3590 Model A50 or A00 Controller.

**Limitations**

- One 3590 Model A60 Controller can be installed in a 3494 Model D14 Drive Unit frame, but it cannot be installed in a 3494 Model L14 Control Unit frame.
- One 3590 Model A60 Controller can be installed in a Model A14 Frame for stand-alone use, but it cannot be installed in a Model A14 Frame that is attached to a 3495 Tape Library.
- One or two 3590 Model A60 Controllers can be installed in a Model C10 Silo Compatible Frame. The Model C10 can be located up to 15 meters (49 feet) away from the Model C12 or C14 containing the associated 3590 Tape Drives.
- Up to four Magstar 3590 drives in a Model A14 Frame or 3494 Library frame may be attached to the Model A60 in that frame.
- Magstar 3590 Model E11 or E1A Tape Drives cannot be attached to the same 3590 Model A60 Controller with Magstar 3590 Model B11 or B1A Tape Drives.
- Because of the size of the 3590 Tape Drive ACF and the Model A60, only two 3590 Tape Drives and the Model A60 will fit in a 3309 Model 002, 7014 Model S00, or 7015 Model R00 rack.
Planning Information

Customer Responsibilities: Physical planning is a customer responsibility. The 3590 Model E11 or E1A Tape Drives may require subsystem microcode updates by the IBM service representative for the proper installation and operation on the 3590 Model A60 Controller. Review this 3590 maintenance information with your IBM representative to insure that these requirements are incorporated into your installation planning. Detailed physical planning information for the Magstar 3590 Tape Drives is in the IBM Magstar 3590 Tape Subsystem Introduction and Planning Guide (GA32-0329).

Cable Orders: The 3590 Model A60 attaches with ESCON cables to ESCON channels of ES/3090, ES/9000, or S/390 systems. Two 30.5 meter (100 foot) ESCON cables are included with each feature number 3412 (Dual ESCON Attachment). If different ESCON cable lengths are needed, they must be ordered separately. Refer to the IBM Magstar 3590 Introduction and Planning Guide (GA32-0329) for ESCON cable planning information.

The appropriate SCSI cables required for attaching Magstar 3590 Tape Drives to a 3590 Model A60 Controller in a rack, in a 3590 Model A14 Frame, or 3494 Library are included when feature number 9059 (3590 Drive Attached) is specified (the quantity of feature number 9059 must equal the number of tape drives attached to the A60). For rack installation, feature number 4641 must also be ordered on the Model A60. SCSI cables for attachment of Magstar 3590 Tape Drives in a Model C12 or C14 frame to the Model A60 should be ordered with feature number 5098 (Silo Drive SCSI Cables) on the Model C12 or C14. When the 3590 Model A60 is replacing a 3590 Model A00 or A50 Controller, or 3591 Model A01, this feature will provide the additional SCSI cables required in a four drive subsystem to be used with the existing SCSI and ESCON cables.

Direct Customer Support: Eligible customers can obtain installation and usage assistance through ASK Support. To obtain information on customer eligibility and registration procedures, refer to HONE SUPPORTINFO, using the search word 3590 or IBMLink™ ASKQ.

Supplies: None required with the machine order.

Security, Auditability, and Control

This product uses the security and auditability features of host hardware, host software, and/or application software to which it is attached.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and Conditions

This product is available for purchase under the terms of the IBM Customer Agreement.

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may have been previously installed.

Regardless, IBM warranty terms apply.
## Product Charges

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<th>Model</th>
<th>Feature Number</th>
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NC = No Charge  
MMC = Minimum Maintenance Charge  
MES Removal: Yes, on all features, at no charge.
## ESA Maintenance Charges

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### Description

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