

IBM 3590-A14 TotalStorage Enterprise Tape Drive Frame

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IBM U.S. Product Life Cycle Dates

Type Model	Announced	Available	Marketing Withdrawn	Service Discontinued	Replaced By
3590-A14	1995/04/10	1996/10/25	-	-	-

Abstract

The IBM TotalStorage (TM) Enterprise Tape System 3590 provides high levels of capacity, performance, and reliability for IBM eServer iSeries (AS/400), IBM eServer pSeries (RS/6000), IBM eServer xSeries, IBM eServer zSeries (S/390), and a variety of non-IBM UNIX and Microsoft Windows** systems. It offers significant enhancements over previous IBM 3480, 3490, or 3490E tape drives and demonstrates IBM's continued leadership in storage solutions. The Enterprise Tape System 3590 includes tape drives and controllers that can be flexibly configured in a broad range of solutions that includes stand-alone frames or racks, or in automated library solutions to meet a broad set of customer requirements. The 3590 Tape Drives can be attached to a SCSI host interface or Fibre Channel interface of selected IBM and non-IBM midrange and open systems. The tape drives can also attach to ESCON and FICON channels on host systems through a 3590 controller.

Model Abstract 3590-A14

The IBM TotalStorage Enterprise Tape Drive Frame 3590 Model A14 is a frame box that can be used for non-library attachment of the IBM TotalStorage Enterprise Tape Drive 3590 to ES/9000, ES/3090, S/390, or zSeries systems. The Model A14 can contain one IBM TotalStorage Enterprise Tape Controller 3590 Model A60 (or up to two Model A50 Controllers) and up to four of the Enterprise Tape Drive 3590 Model B11, or up to four of the Enterprise Tape Drive 3590 Model E11.

Highlights

- Offers multiple attachment options, including Fibre Channel, Ultra SCSI, ESCON, and FICON
 - Includes large capacity cartridges, which can reduce the number of cartridges required and tape mounts
 - Provides an 10-cartridge random-access library with magazine for quicker loading and unattended operations
 - Extends the capacity and performance of automated tape libraries, such as the IBM TotalStorage Enterprise Automated Tape Library 3494
 - Can be configured in stand-alone frames or racks, or in automated library solutions including StorageTek Automated Cartridge Systems
 - Supported by the industry-leading IBM TotalStorage Virtual Tape Server
 - Provides significant improvement in reliability
 - Reduces floor space required
 - Can reduce overall operations costs
 - Has become a 1/2" tape industry standard
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Description

The Enterprise Tape System 3590 demonstrates IBM's continued commitment to providing advanced tape solutions to meet the growing demands of the enterprise. The 3590 is for attachment to the pSeries, RS/6000, RS/6000 SP, iSeries, AS/400, ES/3090, ES/9000, S/390, zSeries, Hewlett Packard (HP), Sun, and Microsoft Windows systems. It provides new levels of function, performance, reliability, and cartridge capacity and is an extension to IBM's family of 3480, 3490, and 3490E high performance tape drives. The Model A14 Frame is designed to provide a frame box for attaching 3590 Tape Drives to ESCON and FICON channels. Up to four 3590 Model H11 (or E11, or B11) Tape Drives and one Model A60 Controller can be installed in the Model A14 for non-library attachment to ESCON and FICON channels on a ES/3090, ES/9000, S/390, or zSeries host system. The Model A14 can alternatively contain up to two Model A50 or A00 Controllers and up to four Model E11 Tape Drives (or up to four Model B11 Tape Drives) for attachment to ESCON channels on host systems. Refer to the descriptions of the 3590 Model B11, B1A, E11, H11, or A60 for further information on those models.

Model Description 3590-A14

The 3590 Model A14 frame is a frame box that is designed for mounting 3590 Model E11, B11, or B1A Tape Drives attached to 3590 Model A60 Controllers for connection to ESCON or FICON channels on ES/3090, ES/9000, S/390, or zSeries systems. The Model A60 can contain up to eight ESCON channel attachments, up to two FICON attachments, or an intermix of ESCON and FICON. The Model A14 can contain one Model A60 Controller and up to four Model H11 (or E11, or B11) Tape Drives. The Model A14 can alternatively contain up to two Model A50 or A00 Controllers and up to four Model E11 Tape Drives (or up to four Model B11 Tape Drives) for attachment to ESCON channels on host systems.

The Model A14 supports the attachment of an eleven color LED display from Texas Digital Systems that connects directly to the top of the A14 frame. This display is not marketed by IBM but may be obtained from Texas Digital Systems, Inc. (TDS) of College Station, Texas 77845 (409) 693-9378.

Product Positioning

The Enterprise Tape System 3590 is IBM's highest performance, large- capacity tape subsystem. It should be the tape drive of choice for any environment where very reliable, fast tape data rate or high capacity is needed. It offers significant enhancements in performance, capacity, and reliability over the IBM 3480, 3490, or 3490E tape drives. The IBM 3590 may relieve backup time constraints and provide the increased capacity needed to support today's growing disk backup requirements. With the larger capacity ACF, it can also provide unattended tape backup operation for larger amounts of data.

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

The 3590 also offers the greatest performance and capacity for use in the Enterprise Tape Library 3494. It can be intermixed in the 3494 with IBM 3490E tape drives to provide compatibility to read/write to current tape cartridges.

Model

Model Summary Matrix

Model	Description	Attaches to
-	-	-
A14	Frame box-rack	3590 Tape Drives for S/390, zSeries

Maximum

Not available.

Customer Setup (CSU)

No.

Devices Supported

The following devices can be installed in the Model A14:

- 3590 Model B11 Tape Drives
- 3590 Model B1A Tape Drives
- 3590 Model E11 Tape Drives
- 3590 Model H11 Tape Drives
- 3590 Model A00 Controller
- 3590 Model A50 Controller
- 3590 Model A60 Controller

Model Conversions

None.

Technical Description

The Enterprise Tape Drive Frame 3590 Model A14 is intended for attachment of 3590 Tape Drives via a 3590 controller to ESCON and FICON channels for use on ES/3090, ES/9000, S/390, or zSeries systems that require reliable, high performance tape support for backup restore, archive, and data interchange. The 3590 Model A14 frame is a frame box that is designed for mounting one 3590 Model A60 Controller and up to four 3590 Tape Drives. The Model A14 can alternatively contain up to two Model A50 or A00 Controllers and up to four Model E11 Tape Drives (or up to four Model B11 Tape Drives) for attachment to ESCON channels on host systems. The Model A14 can contain one of the following:

- One 3590 Model A60 Controller and either up to four 3590 Model H11, or up to four Model E11, or up to four Model B11 Tape Drives
- Up to four 3590 Model H11 (or E11, or B11) Tape Drives, for attachment to a Model A60 Controller in another Model A14 in a multiframe configuration
- Up to two Model A50 Controllers and up to four Model E11 tape drives
- Up to two 3590 Model A50 or A00 Controllers and up to four 3590 Model B11 Tape Drives

A 3590 Model A60 Controller can be installed in a single 3590 Model A14 Frame with either up to four 3590 SCSI attached tape drives or up to four 3590 Fibre Channel attached tape drives. A Model A60 in a Model A14 Frame with four 3590 SCSI tape drives can attach up to four additional 3590 SCSI tape drives in one additional Model A14 frame. Up to twelve 3590 Tape Drives with the Fibre Channel Attachment feature can be attached to a single Model A60 in a Model A14 environment. The first Model A14 frame would contain a Model A60 and an IBM 2109 Model S16 SAN Fibre Switch with four 3590 Tape Drives, and up to two additional Model A14 Frames with up to four 3590 Tape Drives each can be attached.

The Model A14 supports the attachment of an eleven color LED display from Texas Digital Systems that connects directly to the top of the A14 frame. This display is not marketed by IBM but may be obtained from Texas Digital Systems, Inc. (TDS) of College Station, Texas 77845 (409) 693-9378.

Physical Specifications

Model A14 Frame:

- Width: 724 mm (28.5 inches)
- Depth: 1099 mm (43.3 inches) (1)
- Height: 1,800 mm (70.9 inches)
- Weight: 227 kg (500 lb)

The above weight does not include the weights of the controllers or tape drives and associated cables.

(1) The ACF on the Model H11, E11 or B11 tape drive extends out in front of the A14 frame an additional 85 mm (3.3 inches).

Operating Environment

3590 Model A14:

- Temperature:
 - Powered on (no media in use) 10 to 43C (50 to 110F)
 - In Operation (media in use) 16 to 32C (60 to 90F)
- Relative Humidity: 20 to 80 (percent) non-condensing (limited by media)
- Wet Bulb: 23C (73.4F)
- Calorific value: 341 BTU/hour
- Electrical power: 0.1 KVA
- Leakage Current: 2.1 ma
- Operating Current: Nominal 200v/8.00 amps with four drives and a controller
- Inrush Current: 100 amps with four drives and a controller

Limitations

The 3590 Model A14 can contain up to four Model H11 (or E11, or B11) Tape Drives and one Model A60 Controller.

In a non-library environment, the 3590 Model A14 can contain up to two 3590 Model A50 or A00 Controllers (two Model A50s or one Model A50 and one Model A00) and up to four 3590 Model B11 Tape Drives, or up to two Model A50 Controllers and up to four Model E11 tape drives.

When attached to a 3495 Tape Library, the 3590 Model A14 must contain one 3590 Model A50 or A00 Controller and four Model B1A Tape Drives. The 3495 Tape Library does not support the use of 3590 Extended High Performance Cartridge Tape.

Hardware Requirements

Model A14 frame

The Model A14 is a frame for holding 3590 Tape Drives and the Model A60, A50, or A00 Controller. Up to two Model A50 or A00 Controllers and up to four 3590 Model B11 drives can be installed in a Model A14 for non-library connection to ESCON channels on ES/3090, ES/9000, or S/390 host systems. In this environment, you can have one or two Model A50 Controllers, one Model A00 Controller, or one Model A50 and one Model A00 Controller. If there are two controllers, there will be a maximum of two Model B11 Tape Drives attached to each controller. You can also install up to two Model A50 Controllers with up to four Model E11 tape drives.

Up to four 3590 SCSI attached tape drives and one Model A60 Controller can be installed in the Model A14 for non-library attachment to ESCON and FICON channels on ES/3090, ES/9000, S/390, or zSeries host systems. The Plant Install 3590 Model H11 SCSI Tape Drive feature (#9669) must be specified on the Model A14 for each SCSI attached 3590 Model H11 Tape Drive. The Plant Install Model E11 Tape in a Model A14 Frame feature (#9663) must be specified on the Model A14 for each SCSI attached 3590 Model E11 Tape Drive. The Plant Install Drive in A14 Frame feature (#9631) must be specified on the Model A14 for each SCSI attached 3590 Model B11 Tape Drive.

Alternatively, up to four 3590 Tape Drives with the Fibre Channel Attachment feature (#3510 or #9510) and one Model A60 Controller can be installed in the Model A14. The Fibre Drive Attached Model A60 feature (#3464) must be on the Model A14 Frame if the Fibre Drive Attachment feature (#3463) is on the contained Model A60. The LC Fibre Drive Attached Model A60 feature (#3474) must be on the Model A14 Frame if the Fibre Drive Attachment feature (#3473) is on the contained Model A60. The Plant Install 3590 Model H11 Fibre Channel Tape Drive feature (#9670) must be specified on the Model A14 for each 3590 Model H11 Tape Drive with the Fibre Channel Attachment feature (#9510) installed in the Model A14 coming from the plant. The Plant Install Fibre Drive (#9511) must be specified on the Model A14 for each 3590 Model E11 Tape Drive with the Fibre Channel Attachment feature (#9510) installed in the Model A14 coming from the plant.

One 3590 Tape Drive Attached feature (#9059) must be specified on the 3590 Model A60 for each 3590 Tape Drive attached to the Model A60 in the Model A14 frame that contains the Model A60, to provide the SCSI or Fibre Channel cables between the tape drives and the Model A60. You cannot mix the model attachment of 3590 H Model, E Model, and B Model Tape Drives on the same Model A60 Controller. You also cannot mix SCSI and Fibre Channel attached drives on the same Model A60 Controller. Refer to

the *IBM TotalStorage Enterprise Tape System 3590 Introduction and Planning Guide* (GA32-0329) for additional configuration information.

SCSI Multiframe Configuration: A Model A60 Controller in a Model A14 Frame with four 3590 Tape Drives with SCSI attachment can also attach up to four additional 3590 SCSI tape drives in one additional Model A14 Frame. The Multiframe SCSI A14 feature (#4060) must be specified on the Model A14 Frame containing the Model A60 Controller, and other Model A14 Frame must have the Multiframe SCSI Drives feature (#4062 or #9062). The 3590 Model A60 Controller must have the Multiframe SCSI A14 feature (#9060) and also one 3590 Drive Attached feature (#9059) for each 3590 Tape Drive in the Model A14 that contains the Model A60. All hardware and required cables between the drives and the Model A60 are included in these features. Because of SCSI cable length restrictions, the two Model A14 Frames must be installed adjacent to each other.

Fibre Channel Multiframe Configuration Up to twelve 3590 Tape Drives with the Fibre Channel Attachment feature (#3510 or #9510) can be attached to a single Model A60 in a Fibre Channel multiframe configuration. The first Model A14 Frame would contain the Model A60 Controller and the first four 3590 Tape Drives, and up to two additional Model A14 Frames with up to four 3590 Tape Drives each can be attached.

When the contained Model A60 has the LC Fibre Drive Attachment feature (#3473) installed, the LC Fibre Drive Attached Model A60 feature (#3474) must be on the Model A14 Frame containing the Model A60 Controller, and other Model A14 Frames must have the LC Multiframe Fibre Drives feature (#4074), to provide the proper Fiber Channel cables between the tape drives in those frames and the Model A60 Controller. If the contained Model A60 has the Fibre Drive Attachment feature (#3463) installed, the Fibre Drive Attached Model A60 feature (#3464) must be on the Model A14 Frame containing the Model A60 Controller, and other Model A14 Frames must have the Multiframe Fibre Drives feature (#4064), to provide the proper Fiber Channel cables between the tape drives in those frames and the Model A60 Controller. The cables from the tape drives to the Model A60 in the Model A14 Frame containing the Model A60 are provided by the quantity of feature #9059 in the Model A60. The maximum distance between Model A14 frames is seven meters.

Feature #9780 (Extended Media Support) must be added to the 3590 Model A14 to provide the subsystem support for 3590 Extended High Performance Cartridge Tape. If 3590 Extended High Performance Cartridge Tape is used in any 3590 Tape Drive installed in that 3590 Model A14 subsystem, then this feature must be on that 3590 Model A14 Frame also.

The Model A14 supports the attachment of an eleven color LED display from Texas Digital Systems that connects directly to the top of the A14 frame. This display is not marketed by IBM but may be obtained from Texas Digital Systems, Inc. (TDS) of College Station, Texas 77845 (409) 693-9378.

Software Requirements

Support for the 3590 Model B11, B1A, E11, or H11 Tape Drives in the Model A14 frame is provided in z/OS*, OS/390*, z/VM*, VM/ESA*, VSE/ESA*, and TPF* system operating environments via the 3590 A60 Controller. Refer to the 3590 Model A60 Sales Manual for more information.

Publications

The following publication is available immediately:

- IBM TotalStorage Enterprise Tape System 3590 Introduction and Planning Guide (GA32-0329)

The following publication is shipped with the product. Additional copies will be available at general availability.

- IBM TotalStorage Enterprise Tape System 3590 Operator Guide (GA32-0330)
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Features -- Specify/Special/Exchange

No Charge Specify Codes

Attached System Types

The following specify codes indicate the attached system types. They are used to determine how microcode updates will be distributed and may be changed at any time.

- #9000 Attached to ES/3090, ES/9000, S/390, or zSeries system

Power Cords

The appropriate Model A14 power cord is attached at the factory based on the order destination country code except for the following:

- #9986 6 ft. Chicago power cord Plant or field installable

Additional Specify Codes

(#9010) Attach to a 3495 Model B16

(For IBM US, No Longer Available as of April 24, 1998)

This specify code was never shipped.

(#9012) Install A14 in 3495

This specify code allows the factory build of a new Model A14 for installation in a 3495 Tape Library. This will provide a Model A14 with the proper front panel for the four 3590 Model B1A Tape Drives in the Model A14 and interface hardware to the 3495 Tape Library.

Maximum: One. Field Installation: No.

(#9062) Multiframe SCSI Drives - Plant Install

This feature provides the plant installation to support SCSI attachment of 3590 Tape Drives in one 3590 Model A14 Frame to a 3590 Model A60 Controller in a different Model A14 Frame. In a multiframe SCSI attachment, up to eight 3590 Tape Drives can be attached to the Model A60, four in each Model A14 Frame. It includes SCSI cables between the two Model A14 Frames and allows for the proper drive-to-drive cables to be included based on the number of drives installed in this frame. Because of SCSI cable length restrictions, the two Model A14 Frames must be installed adjacent to each other.

Maximum: One. Minimum: None. Plant Installation Only. Prerequisites:

- There must be at least one tape drive installed in the Model A14 Frame with this feature.
- Feature #4060 must be installed on the associated other Model A14 Frame containing the 3590 Model A60 Controller.
- This feature cannot be ordered with a controller feature #9658, #9667, or #9668.

(#9511) Factory Install Fibre Drive

This feature tells the factory to install one 3590 Model E11 Tape Drive with the Fibre Channel Attachment feature into a new 3590 Model A14 frame coming from the plant. The tape drive must have a corresponding feature #9510 (Fibre Channel Attachment - Plant Install), specified instead of feature #9663 (Plant Install Drive) for the plant to install the proper tape drive. The quantity of feature #9511 on the 3590 Model A14 frame order must equal the number of 3590 Model E11 Tape Drives with Fibre Channel Attachment that are being installed by the factory in that frame.

Maximum: Four. This feature is mutually exclusive with features #9630, #9631, and #9663. Field Installation: No.

(#9630) Field Merge B11 or E11 Drive in a Model A14 Frame

This specify code on the Model A14 allows the field merge of a 3590 Model B11 or E11 Tape Drive into a Model A14 coming from the plant. It notifies the factory to leave a mounting slot available for a field merge of the tape drive prior to completion of installation. All tape drives attached to a controller in a Model A14 must be the same model (i.e. either all E Model tape drives or all B Model tape drives). This feature cannot be installed on an A14 with features #9638, #9639, or #4638.

Maximum: Four. Field Installation: No. The maximum of features #9630 plus #9631 plus #9663 plus #4630 plus #4663 is four.

(#9631) Plant Install Drive in A14

This specify code allows the factory installation of a new Model B11 into a new Model A14 coming from the plant. This code must appear on both the Model B11 and A14 orders. This feature cannot be installed on an A14 with features #9638, #9639, or #4638.

Maximum: Four. Field installation: No. The maximum of features #9030 plus #9031 plus #4630 is four.

(#9637) Plant Install Model A00 controller in a Model A14 frame

(Withdrawn from marketing)

This specify code allows the factory installation of a new Model A00 controller into a new Model A14 frame from the plant. This code must appear on both the Model A00 and Model A14 orders.

Maximum: One. Field installation: No. The maximum or feature #4657 plus #9637 plus #9657 is two.

(#9638) Plant Install B1A Drive in A14

This specify code allows the factory installation of a new Model B1A into a new Model A14 coming from the plant. This code must appear on both the Model B1A and A14 orders. This feature cannot be installed on an A14 with features #9630, #9631, #9663, or #4630.

Maximum: Four. Field installation: No. The sum of features #9638, # 9639, and #4638 must be four.

(#9639) Field Merge B1A in A14

This specify code on the Model A14 allows the field merge of a Model B1A into a Model A14 coming from the plant. It notifies the factory to leave a mounting slot available for a field merge of the Model B1A drive prior to completion of installation. This feature cannot be installed on an A14 with features #9630, #9631, #9663, or #4630.

Maximum: Four. Field installation: No. The sum of features #9638, # 9639, and #4638 must be four.

(#9657) Plant Install Model A50 controller in a Model A14 frame

(For IBM US, No Longer Available as of September 29, 2000)

This specify code allows the factory installation of a new Model A50 controller into a new Model A14 frame from the plant. This code must appear on both the Model A50 and Model A14 orders.

Maximum: Two, unless feature #9012 is specified and then the maximum is one. Field installation: No. The maximum of feature #4650 plus #4657 plus #9637 plus #9657 plus #9658 is two. This feature is mutually exclusive with features #4660, #9667, or #9668.

(#9658) Field Merge Model A50 Controller in a Model A14 Frame

This specify code allows the field merge of a customer supplied 3590 Model A50 Controller into a new 3590 Model A14 Frame coming from the plant. It notifies the factory to include the mounting hardware for the field merge of the Model A50 prior to completion of installation of the Model A14 Frame.

Maximum: Two. The maximum of feature #9658 plus #9657 plus #9637 plus #4650 plus #4657 is two. This feature is mutually exclusive with features #9062, #9667, #9668, or #4660. Field installation: No.

(#9663) Plant Install Model E11 Drive in a Model A14 Frame

This specify code allows the factory installation of a new 3590 Model E11 Tape Drive into a new Model A14 Frame coming from the plant. This code must appear on both the Model E11 and A14 orders. This feature cannot be installed on an A14 with features #9631, #9638, #9639, or #4638.

Maximum: Four. Field installation: No. The maximum of features #9630 plus #9663 plus #4630 is four.

(#9667) Plant Install Model A60 controller in a Model A14 frame

This specify code allows the factory merge of a new Model A60 controller into a new Model A14 frame from the plant. This code must appear on both the Model A60 and Model A14 orders.

Maximum: One. The maximum of features #9667 plus #9668 plus #4660 is one. This feature is mutually exclusive with features #9062, #9637, #9657, #9658, #4650, or #4657. Field installation: No.

(#9668) Field Merge 3590 Model A60 in a 3590 Model A14 Frame

This specify code allows the field merge of a new 3590 Model A60 Controller into an installed 3590 Model A14 Frame.

Maximum: One. The maximum of features #9667 plus #9668 plus #4660 is one. This feature is mutually exclusive with features #9062, #9637, #9657, #9658, #4650, or #4657. Field installation: No.

(#9669) Plant Install 3590 Model H11 SCSI Tape Drive

This specify code allows the factory installation of a new Model H11 Tape Drive without the Fiber Channel Attachment feature (#9510 or #3510) into a new Model A14 coming from the plant. This code must appear on both the Model H11 and A14 orders. This feature cannot be installed on an A14 with features #9630, #9631, #9638, #9639, #9663, or #9670.

Maximum: Four. The maximum of features #9669 plus #9672 plus #4669 plus #4672 is four.

Field installation: No.

(#9670) Plant Install 3590 Model H11 Fibre Channel Tape Drive

This specify code allows the factory installation of a new Model H11 Tape Drive with the Fiber Channel Attachment feature (#9510 or #3510) into a new Model A14 coming from the plant. This code must appear on both the Model H11 and A14 orders. This feature cannot be installed on an A14 with features #9630, #9631, #9638, #9639, #9663, or #9669.

Maximum: Four. The maximum of features #9670 plus #9672 plus #4669 plus #4672 is four.

Field installation: No.

(#9672) Field Merge 3590 Model H11 Tape Drive in a Model A14 Frame

This specify code on the Model A14 allows the field merge of a 3590 Model H11 Tape Drive into a Model A14 coming from the plant. It notifies the factory to leave a mounting slot available for a field merge of the tape drive prior to completion of installation. All tape drives attached to a controller in a Model A14 must be the same model (i.e. either all H Model tape drives, all E Model tape drives, or all B Model tape drives). This feature cannot be installed on an A14 with features #9630, #9631, #9638, #9639, or #9663.

Maximum: Four. The maximum of features #9669 plus #9670 plus #9672 plus #4669 plus #4672 is four.

Field installation: No.

(#9780) Extended Media Support

This feature must be installed on any 3590 Model A14, C12, or C14 tape subsystem if 3590 Extended High Performance Cartridge Tape is used in any 3590 Tape Drive in that subsystem. This feature provides the microcode updates and maintenance information for the Extended Media Support capability in that subsystem.

Maximum: One. Plant or Field installation.

Special Feature Codes -- Chargeable

(#3464) Fibre Drive Attached A60

This feature is required on the 3590 Model A14 Frame that contains a 3590 Model A60 Controller that supports attachment of 3590 Tape Drives with Fibre Channel Attachment (features #3510 or #9510). It includes the required mounting hardware and instructions for installing the IBM 2109 Model S16 SAN Fibre Channel Switch in the Model A14, including the associated Ethernet hub and cabling between the Model A60 and the hub and switch and drives in that Model A14. Up to twelve 3590 Tape Drives in three Model A14 Frames can be attached to the Model A60 Controller.

Maximum: One. Minimum: None. Plant or Field Installation. Prerequisites:

- This feature is mutually exclusive with Model A14 feature #4060 (Multiframe SCSI A14).
- Feature #3463 must be installed on the Model A60 Controller.
- All attaching 3590 Tape Drives must have either feature #3510 or #9510.
- An IBM 2109 Model S16 SAN Fibre Channel Switch must be installed in the rack or frame containing the Model A60 Controller.

Cables: Fibre Channel cables from the 3590 Tape Drives in other Model A14 Frames to the switch are supplied with features #9064 (Multiframe Fibre Drive - Plant) or #4064 (Multiframe Fibre Drive - Field) ordered on the other Model A14 Frames containing any additional 3590 Tape Drives.

(#3474) LC Fibre Drive Attached A60

This feature is required on the 3590 Model A14 Frame that contains a 3590 Model A60 Controller that supports attachment of 3590 Tape Drives with Fibre Channel Attachment (feature #3510 or #9510). It includes the required mounting hardware and instructions for installing the IBM 2109 SAN Fibre Channel Switch Model F16 in the Model A14, including the associated Ethernet hub and cabling between the Model A60 and the hub and switch and drives in that Model A14. Up to twelve 3590 Tape Drives in three Model A14 Frames can be attached to the Model A60 Controller.

Maximum: One. Minimum: None.

Plant or Field Installation.

Prerequisites:

- This feature is mutually exclusive with Model A14 feature #4060 (Multiframe SCSI A14) or #3464 (Fibre Drive Attached A60).
- Feature #3473 must be installed on the Model A60 Controller.
- All attaching 3590 Tape Drives must have either feature #3510 or #9510.
- An IBM 2109 SAN Fibre Channel Switch Model F16 must be installed in the rack or frame containing the Model A60 Controller.

Cables: Fibre Channel cables from the 3590 Tape Drives in other Model A14 Frames to the switch are supplied with feature or #4074 (LC Multiframe Fibre Drive - Field) ordered on the other Model A14 Frames containing any additional 3590 Tape Drives.

(#4060) Multiframe SCSI A14

This feature is required on the 3590 Model A14 Frame that contains a 3590 Model A60 Controller to support SCSI attachment of up to eight 3590 Tape Drives in two different Model A14 Frames. This feature provides the necessary hardware and instructions for attachment of up to four tape drives in another Model A14 Frame to the Model A60 Controller in this frame. Because of SCSI cable length restrictions, the two Model A14 Frames must be installed adjacent to each other.

Maximum: One. Minimum: None. Plant or Field Installation. Prerequisite: This feature is mutually exclusive with feature #3464 (Fibre Drive Attached A60).

(#4062) Multiframe SCSI Drives - Field Install

This feature provides the field installation to support SCSI attachment of 3590 Tape Drives in one 3590 Model A14 Frame to a 3590 Model A60 Controller in a different Model A14 Frame. In a multiframe SCSI attachment, up to eight 3590 Tape Drives can be attached to the Model A60, four in each Model A14 Frame. It includes SCSI cables between the two Model A14 Frames and allows for the proper drive-to-drive cables to be included based on the number of drives installed in this frame. Because of SCSI cable length restrictions, the two Model A14 Frames must be installed adjacent to each other. If another controller is installed in this Model A14 Frame, that controller will be non-functional.

Maximum: One. Minimum: None. Field Installation Only. Prerequisites:

- There must be at least one tape drive installed in the Model A14 Frame with this feature.
- Feature #4060 must be installed on the associated other Model A14 Frame containing the 3590 Model A60 Controller.
- This feature is mutually exclusive with feature #9062, feature #4060, or feature #4064 (Multiframe Fibre Drives).

(#4064) Multiframe Fibre Drives

This feature provides the hardware and installation instructions to support attachment of 3590 Tape Drives with Fibre Channel Attachment (features #3510 or #9510) in one 3590 Model A14 Frame to a 3590 Model A60 Controller in a different Model A14 Frame. In a multiframe fibre attachment, up to 12 3590 Tape Drives with Fibre Channel Attachment can be attached to the Model A60, four in each Model A14 Frame. This feature allows for a Fibre Channel cable from each tape drive to the 2109 switch in the Model A14 Frame with the Model A60 Controller to be included based on the number of drives installed in this frame. The distance between the two Model A14 frames in this multiframe fibre configuration must be no more than 7 meters (23 feet). If another controller is installed in this Model A14 Frame, that controller will be non-functional.

Maximum: One. Minimum: None. Plant or Field Installation. Prerequisites:

- There must be at least one tape drive installed in the Model A14 Frame with this feature.
- All the 3590 Tape Drives must have feature #3510 or #9510 (Fibre Channel Attachment).
- Feature #3464 must be installed on the associated other Model A14 Frame containing the 3590 Model A60 Controller.
- This feature is mutually exclusive with features #4062 or #9062 (Multiframe SCSI Drives).

(#4074) LC Multiframe Fibre Drives

This feature provides the hardware and installation instructions to support attachment of 3590 Tape Drives with Fibre Channel Attachment (features #3510 or #9510) in one 3590 Model A14 Frame to a 3590 Model A60 Controller in a different Model A14 Frame. In a multiframe fibre attachment, up to twelve 3590 Tape Drives with Fibre Channel Attachment can be attached to the Model A60, four in each Model A14 Frame. This feature allows for a Fibre Channel cable from each tape drive to the 2109 Model F16 Switch in the Model A14 Frame with the Model A60 Controller to be included based on the number of drives installed in this frame. The distance between the two Model A14 frames in this multiframe fibre configuration must be no more than 7 meters (23 feet). If another controller is installed in this Model A14 Frame, that controller will be non-functional.

Maximum: One. Minimum: None.

Plant or Field Installation.

Prerequisites:

- There must be at least one tape drive installed in the Model A14 Frame with this feature.

- All the 3590 Tape Drives must have feature #3510 or #9510 (Fibre Channel Attachment).
- Feature #3474 must be installed on the associated other Model A14 Frame containing the 3590 Model A60 Controller.
- This feature is mutually exclusive with features #4062, #9062 (Multiframe SCSI Drives), or #4064 (Multiframe Fibre Drives).

(#4630) Install Model B11 or E11 Drive in an Existing Model A14

This feature is required on a 3590 Model A14 to add a 3590 Model B11 or E11 Tape Drive to a currently installed Model A14 frame. All tape drives attached to a controller in a Model A14 must be the same model (i.e. either all E Model tape drives or all B Model tape drives). It provides the mounting hardware for the drive and proper cables to connect to the 3590 ESCON controller as determined by the number of feature #4630 plus #9630 plus #9631 plus #9663. This feature cannot be installed on an A14 with features #9638, #9639, or #4638.

Maximum: Three. Optional. The maximum of features #9630 plus # 9631 plus #9663 plus #4638 is four. Field installation only.

(#4638) Install Model B1A in an Existing Model A14

This feature is required on a 3590 Model A14 to add a Model B1A drive to a currently installed Model A14 frame. It provides the mounting hardware for the drive. This feature cannot be installed on an A14 with features #9630, #9631, or #4630.

Maximum: Four. The sum of features #9638, # 9639, and #4638 must be four. Field installation only.

(#4650) Replace Model A00 with a Model A50

This feature is required to provide the mounting changes to replace a 3590 Model A00 Controller with a Model A50 Controller in a currently installed Model A14 frame.

Maximum: Two. The maximum of features #4650 plus #4657 plus #9637 plus #9657 plus #9658 is two. This feature is mutually exclusive with features #4660, #9667, or #9668. Field installation only.

(#4657) Field Install Model A50 Controller in an Existing Model A14 Frame

This feature is required to provide the mounting hardware to add a Model A50 Controller to a currently installed Model A14 frame. This feature is not available if feature #9012 is installed.

Maximum: Two. The maximum of features #4650 plus #4657 plus #9637 plus #9657 plus #9658 is two. This feature is mutually exclusive with features #4660, #9667, or #9668. Field installation only.

(#4660) Replace Model A00 or A50 with a Model A60

This feature is required to provide the mounting changes to replace a 3590 Model A00 or A50 Controller with a Model A60 Controller in a currently installed Model A14 frame.

Maximum: One. The maximum of features #4660 plus #9667 plus #9668 is one. This feature is mutually exclusive with features #4650, #4657, #9637, #9657, or #9658. Field installation only.

(#4663) Replace Model B11 Tape Drive with a Model E11

This feature is required to provide the mounting changes to replace a 3590 Model B11 Tape Drive with a Model E11 Tape Drive in a currently installed Model A14 frame.

Maximum: Four. Optional. Field installation only.

(#4669) Replace Model B11 or E11 Tape Drive with a Model H11

This feature is required to provide the mounting changes to replace a 3590 Model B11 or E11 Tape Drive with a Model H11 Tape Drive in a currently installed Model A14 frame. All tape drives attached to a controller in a Model A14 must be the same model (i.e. either all H Model tape drives, all E Model tape drives, or all B Model tape drives).

Maximum: Four. Optional. Field installation only.

(#4672) Field Install Model H11 Drive in a Model A14

This feature is required on a 3590 Model A14 to add a 3590 Model H11 Tape Drive to a currently installed Model A14 frame. All tape drives attached to a controller in a Model A14 must be the same model (i.e. either all H Model tape drives, all E Model tape drives, or all B Model tape drives). It provides the mounting hardware for the drive and proper cables to connect to the 3590 Model A60 Controller. This feature cannot be installed on an A14 with features #9630, #9631, #9638, #9639, #9663, #4630, #4638, or #4663.

Maximum: Three. Optional. The maximum of features #9669 plus #9670 plus #9672 plus #4669 plus #4672 is four.

Field installation only.

(#4730) Remove Tape Drive from a Model A14

This feature is to remove a 3590 Model B1A, B11, E11, or H11 Tape Drive from a currently installed Model A14 frame for installation elsewhere. One of feature #4630, #4638, #4663, #4669, #4672, #9630, #9631, #9638, #9639, #9663, #9669, #9670, or #9672 must be removed when this feature is added.

Maximum: Four. Optional. Field installation only.

Feature Exchanges

None.

Accessories

None.

Customer Replacement Parts

None.

Machine Elements

None.

Supplies

None required with the machine order.

Diskettes

None.

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File Last Updated on September 30, 2002