

New IBM System Storage Tape Controller 3592 Model C07 enhances performance and connectivity

Table of contents

1 Overview	6 Publications
2 Key prerequisites	7 Technical information
2 Planned availability date	12 Terms and conditions
2 Description	15 Pricing
3 Product positioning	19 Order now
4 Product number	

At a glance

IBM® System Storage® Tape Controller Model C07 is the newest high-performance tape controller to offer increased performance and connectivity, while laying the foundation for continued technological growth. The new Tape Controller Model C07 offers:

- Support for up to four 4-Gbps FICON® attachments
- Attachment of the new TS1140 Tape Drive 3592 Model E07, 3592 model E06/EU6, or 3592 Model E05 Tape Drives
- Support for up to four 8-Gbps Fibre Channel attachments to tape drives or switches

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

The new **IBM System Storage Tape Controller Model C07** delivers performance and reliability for IBM System z® customers. Tape Controller Model C07 has up to four 4-Gbps FICON attachments. The Tape Controller Model C07 offers four 8-Gbps Fibre Channel adapters for attaching 3592 Tape Drives, and up to 16 of the IBM 3592 Tape Drives can be attached to a single Tape Controller Model C07. The controller can be installed in an IBM 3592 Tape Frame Model F05, IBM TS3500 (3584) Tape Library frames, and stand-alone racks.

The Tape Controller Model C07 can be ordered with integrated library management functionality. This replaces the need for a separate 3953-L05 Library Manager. For high availability, the first two Model C07 controllers that are connected to a common TS3500 logical library will both have the library management feature. This will allow library activity to continue during code loads and outages on any single controller. To reduce the need for software updates, the library management interface to the System z server will remain unchanged for this functionality.

The Tape Controller Model C07 has many of the reliability and availability characteristics that the prior TS1120 Tape Controller Model C06 offered, such as redundant power supplies with automatic failover and hot swap capabilities, redundant cooling, and support for the IBM TS3000 System Console (TSSC) mandatory attachment, previously known as the IBM TotalStorage Service Console (TSSC). The Tape Controller Model C07 also includes application performance and capacity enhancements that are available with the TS1120 Tape Controller Model C06, such as capacity scaling commands. The effect of capacity scaling is to

potentially reduce the average locate time to a random record (from load point) to as little as 30% of the normal locate time.

Key prerequisites

The new Tape Controller Model C07 can attach to FICON channels on selected System z servers with the appropriate levels of system software. An available fibre channel switch feature is required to attach more than four 3592 Tape Drives to the Tape Controller Model C07. Additional features may be required on the Tape Controller Model C07 or automation frames. Refer to the [Technical information](#) section for details.

Planned availability date

- November 11, 2011:
 - 3592 C07 features #0520, #5595, and #5891
 - 3592 F05 features #5891 and #5892
- September 9, 2011: All other features and machine type and models

Description

IBM System Storage Tape Controller Model C07 is a follow-on to the highly successful IBM TS1120 Tape Controller Model C06. It is designed for System z environments that require a high-performance tape solution. These environments include:

- High-speed data save operations where backup windows are critical and large amounts of data are archived to tape
- Large-scale automated tape environments where performance and reliability are required. These are primarily half-inch tape drive environments
- Large-scale mass data archive applications where massive amounts of data need to be quickly saved to tape for storage and later recalled. Examples include the seismic industry, data warehousing, and record management applications

Tape Controller Model C07 helps address the growing needs of both new and existing IBM tape customers across a wide range of environments. Advantages of the TS1140 Tape Drive Model E07 and TS1130 Tape Drive Model E06 with Tape Controller Model C07 compared to previous IBM tape offerings include:

- Higher performance to reduce the number of tape drives required
- Larger capacity to reduce the number of cartridges required and floor space needed
- High reliability to help improve operations

FICON attachment

The new Tape Controller Model C07 supports up to four 4-Gbps FICON attachments. Tape Controller Model C07 is designed to be directly attached to host systems up to 10 kilometers away, or up to 100 kilometers with a FICON/FC switch with appropriate repeaters.

In order to exploit the improved performance of the Tape Controller Model C07 and TS1140 Tape Drive Model E07, there must be a 4-Gbps or 8-Gbps Fibre Channel infrastructure. This includes drive attachment via the 8-Gbps Fibre Channel Switch feature, and 4-Gbps or 8-Gbps capability on the System z server or Fibre Channel Director.

Drive attachment

The Tape Controller Model C07 must be ordered with two dual-ported Fibre Channel adapters. Up to four 3592 Tape Drives may be directly attached to Tape Controller Model C07. Attaching more than four 3592 Tape Drives to Tape Controller Model C07 requires the use of a Fibre Channel switch. The switch may be ordered as a feature on the controller or the customer may supply the switch. Refer to [Technical information](#) for more specific switch requirements.

Capacity scaling

The 3592 Tape Drive attached to a Tape Controller Model C07 is designed to allow an application to issue a command to scale an individual tape cartridge to 20% of its possible capacity. The effect of capacity scaling is to potentially reduce the average locate time to a random record (from load point) to as little as 30% of the normal locate time.

For details on the application performance and capacity enhancements, including capacity scaling, refer to the *IBM System Storage 3592 Model E07 Tape Drive Information Center*

<http://publib.boulder.ibm.com/infocenter/jagdrive/cust/index.jsp>

Note: The actual throughput achieved is a function of many components, such as system processor, disk data rate, data block size, data compressibility, I/O attachments, SAN, and the system or application software being used. Although the TS1140 Tape Drive is capable of up to a 250 MB/sec native data rate, other components may limit the actual effective data rate.

TS3000 System Console

The TS3000 System Console provides enhanced remote support to improve availability and is required to support Tape Controller Model C07. The TS3000 System Console can remotely monitor each attached device to determine if it is working properly and report any error alerts for early detection of problems. Use of the TS3000 may expedite microcode updates, reduce service times, and enhance local service. Feature number 2732, is the TS3000 System Console and replaces feature number 2720, Master Console for Service. The TS3000 System Console (feature number 2732) replaces the Master Console for Service (feature number 2720). Console Expansion (feature number 2714) and Console Attachment (feature number 2715) provide the same functions with the TS3000 System Console that were provided with the Master Console for Service.

Product positioning

The IBM System Storage Tape Controller Model C07 with the IBM System Storage TS1140 Tape Drive Model E07 provides new levels of performance, cartridge capacity, and attachment capability for IBM System z customers.

The 3592 Model E07 Tape Drive with Tape Controller Model C07 is designed for high-performance computing environments where high reliability, capacity, and performance are important. They should be considered by:

- Current 3590 or 3592 customers in 3584, 3494, Oracle/StorageTek ACS, or stand-alone environments where:
 - Space allocated to tape cartridges needs to be reduced within automation solutions or offline storage
 - Backup windows are growing and there is a need for higher-performance tape drives to back up larger amounts of data in less time
- Customers in other large-scale tape environments, including:
 - High-speed data save operations where backup windows are critical and large amounts of data are archived to tape

- Large-scale automated tape environments where performance and reliability are required. These are primarily half-inch tape drive environments
- Large-scale mass data archive application where massive amounts of data need to be quickly saved to tape for storage and later recall. Examples include the seismic industry, data warehousing, and record management applications

Reference information

For more information, refer to the following hardware announcements:

- The IBM System Storage TS1140 Tape Drive Model E07, Hardware Announcement [111-087](#), dated May 09, 2011
- The IBM System Storage TS1130 Tape Drive Model E06/EU6, Hardware Announcement [108-493](#), dated July 15, 2008
- The IBM System Storage TS1130 Tape Drive Model E06/EU6 supported in Controllers and SubSystems, Hardware Announcement [108-494](#), dated July 15, 2008

For IBM statement on compliance with European Union Directive on Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (2002/95/EC) (RoHS), visit

<http://www.ibm.com/ibm/environment/products/rohs.shtml>

Product number

Description	Machine type	Model	Feature
Tape Controller Model c07	3592	c07	
Microcode Enhancement Field	3592	c07	0520*
Console Expansion	3592	c07	2714*
Console Attachment	3592	c07	2715*
TS3000 System Console	3592	c07	2732*
Internal Modem	3592	c07	2733*
Drive-to-Switch Cable / Rack	3592	c07	3062**
FICON Short-Wavelength Attachment	3592	c07	3441**
FICON Long Wavelength Attachment	3592	c07	3442**
FICON 10km Long Wavelength Attachment	3592	c07	3443**
Direct Connect Drives Field	3592	c07	3493*
Fibre Channel Switch Rack Mount Kit	3592	c07	3518
Redundant FC Rack Attach	3592	c07	3519
Logical Library option (provides 2x additional HDDs)	3592	c07	4444
1st Controller Installed in Base F05 Frame	3592	c07	4451
2nd Controller Installed in Base F05 Frame	3592	c07	4452
3rd Controller Installed in Base F05 Frame	3592	c07	4453
4th Controller Installed in Base F05 Frame	3592	c07	4454

1st Controller Installed in an Expansion F05 Frame or Customer supplied Rack	3592	C07	4461
2nd Controller Installed in an Expansion F05 Frame or Customer supplied Rack	3592	C07	4462
3rd Controller Installed in an Expansion F05 Frame or Customer supplied Rack	3592	C07	4463
4th Controller Installed in an Expansion F05 Frame or Customer supplied Rack	3592	C07	4464
Install Controller in Rack	3592	C07	4641*
8Gb Fibre Channel Switch	3592	C07	4875
Reinstall 4Gb FC Switch	3592	C07	4897**
Dual Port FC HBA	3592	C07	5241
CU Encryption Configuration / Field	3592	C07	5595**
QuadPort Ethernet Adapter	3592	C07	5597
Field Merge C07 in a 3952 F05 Frame (for TS3500 Attachment)	3592	C07	5891
Attached to System z	3592	C07	9000**
3592 Tape Drive Attached to C07/C06	3592	C07	9478**
Direct Connect Drives/Plant	3592	C07	9493**
CU Encryption Configuration / Plant	3592	C07	9595**
No Factory Cables	3592	C07	9700*
9-Micron LC/LC 31 Meter Fibre Cable	3592	C07	9752*
50-Micron LC/LC 31 Meter Fibre Cable	3592	C07	9762*
9-Micron LC/SC 31 Meter Fibre Cable	3592	C07	9793*
Plant install C07 in a 3952 F05 Frame (for TS3500 Attachment)	3592	C07	9890

Description	Machine type	Model	Feature
Attached to System z	3592	E07	9000**

Description	Machine type	Model	Feature
FC Switch Mount Kit for TS3500 Attachment	3952	F05	3518
Redundant FC Mounting for TS3500 Attachment	3952	F05	3519
8Gb Fibre Channel Switch	3952	F05	4875
Reinstall 4Gb FC Switch	3952	F05	4897
Ethernet Switch	3952	F05	5755
Plant Install 3592 C07	3952	F05	5890
Field Merge 3592 C07	3952	F05	5891
Field Install 3592 C07	3952	F05	5892
TS3500 Tape Library Attachment	3952	F05	7325
TS3500 Tape Library Attachment Expansion	3952	F05	7326
Outbound FC Switch	3952	F05	9816

Description	Machine type	Model	Feature
Control Unit BE Switch Mounting Hardware	3584	L23, D23	4876
Reinstall CU 8Gb BE Switches	3584	L23, D23	4877
CU Adj Frame Support for BE Switches	3584	L23, D23	4878

* This feature has been previously announced on other models.

** This feature has been previously announced on other models, but the description has changed.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

[BPAttachmentforAnnouncementLetter111-141](#)

Publications

The following publications are shipped with the tape subsystem:

Title	Order number
Read Me--one-page pointer to the Customer Information Center	46X7178

The IBM System Storage 3592-C07 Controller Customer Information Center are available at the Publications center portal

<http://publib.boulder.ibm.com/infocenter/etc/cust/index.jsp>

<http://publib.boulder.ibm.com/infocenter/etc/serv/index.jsp>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. Furthermore, a large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Services

Global Technology Services

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These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

- Width: 440 mm (17.32 in)
- Depth: 800 mm (31.5 in)
- Height: 331 mm (12.25 in)¹
- Weight: 67.6 kg (149 lb)

¹ When mounted in a rack, 7 EIA units of space is required.

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

Operating environment

Temperature:	5 to 35 degrees C (60 to 90 degrees F) operating
Relative humidity:	20% to 80% non-condensing (limited by media)
wet bulb temperature:	23 degrees C (73.4 degrees F)
Caloric value:	2.05 Btu/hr maximum configuration
Electrical power:	1680 watts
Leakage current:	1.2 ma
Inrush current:	100 amps at 115 V; 200 amps at 220 V
Operating current:	6.0 amps at 115 V; 3.0 amps at 220 V
Capacity of exhaust:	1.4 cubic meter/min (50 CFM)
Noise level:	7.4 bels idle; 7.4 bels operating

Hardware requirements

Tape Controller Model C07 is designed to be placed in a 3952 Tape Frame Model F05 or an industry standard 19-inch rack. It supports 3592 Tape Drives installed in a TS3500 Tape Library or a standard 19-inch rack, such as the IBM 7014 Model T00 or T42. The TS3500 Tape Library is also known as the 3584 Tape Library.

The Tape Controller Model C07 installed in a 3952 Tape Frame Model F05 must be located within 100 feet of the TotalStorage System Console (TSSC).

Tape Controller Model C07 is designed to attach to FICON channels on selected System z servers or through a FICON/FC switch with the appropriate levels of system software. The 3592 is supported with a variety of Fibre Channel switch offerings. For more details on the exact switch support for the 3592, refer to the 3592 Tape Controller switch interoperability matrix located at the following website

<http://www.ibm.com/support/techdocs/atmastr.nsf/webindex/FQ115356>

FICON attachment

The number of FICON long-wavelength adapters on the Tape Controller Model C07 is specified with feature code #3442, 4-Gbps FICON Long Wavelength Attachment with a total cable length not to exceed 4 km, and #3443 4-Gbps 10 km FICON Long Wavelength Attachment, with a total cable length not to exceed 10 km. The feature code FICON short-wavelength adapters on the 3592 Model C07 is specified with

feature number 3441, 4-Gbps FICON Short Wavelength Attachment. Each FICON attachment can connect up to 128 logical channels.

Drive attachment

Tape Controller Model C07 can attach up to sixteen 3592 Tape Drives with an automated solution, and up to twelve 3592 Tape Drives in a stand-alone rack. Up to four 3592 Tape Drives may be directly attached to Tape Controller Model C07. When attaching more than four 3592 Tape Drives, a Fibre Channel switch is required. A new switch may be ordered through the feature number 4875, 8 Gb Fibre Channel Switch, or an existing 4 Gb switch may be used. Feature number 4897 allows the customer to provide a 4 Gb Fibre Channel Switch feature (#3488) that was removed from a 3592 Controller Model C06, 3592 Controller Model J70 or 3953 Model F05 and reinstall it for attachment to this 3592 Controller Model C07. Two switches may be installed for redundancy. Intermix of the 4 Gb and 8 Gb Fibre Channel switches is **not** supported within the 3592 Tape Controller Model C07. The total cable length from the adapters to the drives or switch cannot exceed 150 meters at 4-Gbps.

The following features are required for attaching a tape drive to Tape Controller Model C07 in the various environments:

Controlling drives in a TS3500 Tape Library

To control 3592 Tape Drives in a TS3500 Tape Library (also known as the 3584 Tape Library), the Tape Controller Model C07 must be installed in a 3952 Model F05 frame, which is external to the TS3500 Tape Library and may be placed away from the TS3500 library.

- Tape Controller Model C07 (3592 Model C07)
 - Feature number 5241, two Fibre Channel Dual Port (FCP) adapters, is required on the 3592 Model C07 Tape Controller for attachment of 3592 Tape Drives
 - 3592 Tape Drive Attached to C07 feature number #9478 must be specified on each Tape Controller Model C07
 - Feature number 9890, Plant Install C07 in 3952 F05, must be specified for each 3592 Model C07 Controller to be factory installed into a 3952 Model F05 frame.
 - Feature number 5890 must appear on the 3952 Model F05 order
 - Feature number 9891, Field Install C07 in 3952 F05, must be specified for each 3592 Model C07 controller to be field installed or field merged into a 3952 Model F05 frame, one 3592 Model C07 Field Install 3592 C07 feature (#5892) or Field Merge 3592 C07 feature (#5891) must be ordered on the 3952 Model F05

Direct Connect Drives

Up to four 3592 Tape Drives may be connected direct to the Controller Model C07 without using a Fibre Channel switch.

- Specify feature number 3493, Direct Connect Drives/Field or feature number 9493, Direct Connect Drives/Plant on the 3592 Model C07
- When direct connecting drives to the Control Unit, cables can be ordered with the 3592 Tape Drives or supplied by the customer

Controlling drives in a Rack

To control 3592 Tape Drives in a customer supplied rack, the Tape Controller Model C07 must also be installed in a customer supplied rack. The customer supplied rack must be a standard 19-inch rack with a minimum height of 7 EIA for the first C07, 9 EIA for the second, 16 EIA for three C07's and 18 EIA for fourth Tape Controller Model C07. Additional room in the rack is needed for feature code 2730, 4875, and 5575. The maximum height is 36 EIA and the depth limitation between the rails is 715mm (28.149 inches). Tape Controller Model C07 can attach 3592 tape drives directly or via a Fibre Channel switch.

- Tape Controller Model C07 (3592 Model C07)

- Feature number 5241, two Fibre Channel Dual Port (FCP) adapters, is required on the 3592 Model C07 Tape Controller for attachment of 3592 Tape Drives
- Feature number 4641, Install Controller in Rack, must be specified on the Tape Controller Model C07
- Direct Connect Drives: Up to four 3592 Tape Drives may be connected directly to the Controller Model C07 without using a Fibre Channel switch
 - Specify feature number 9493 Direct Connect Drives/Plant or feature number 3493 Direct Connect Drives/Field on the 3592 Model C07
 - One feature number 3062 for each 3592 Tape Drive attaching to the Tape Controller Model C07 provides a cable from the drive to the controller when they are installed in the same frame; two of feature 3062 are recommended per drive

Cables

Host System Attachment Cables

4-Gbps FICON Long-Wavelength Attachment feature (#3442 and #3443): The FICON long wavelength adapter shipped with feature number 3442 (4-Gbps FICON 4K Long-Wavelength Attachment) or feature number 3443 (4-Gbps FICON 10 km Long-Wavelength Attachment) has an LC Duplex connector, and can connect to FICON long wavelength channels of System z servers utilizing a 9-micron single-mode fibre cable. If host attachment cables or jumper cables are desired, they can be specified with one of the following feature numbers:

- Feature number 9752 - 9 Micron LC/LC 31 meter Fibre Cable
- Feature number 9793 - 9 Micron LC/SC 31 meter Fibre Cable

4-Gbps FICON Short-Wavelength Attachment feature (#3441): The FICON short wavelength adapter shipped with feature number 3441 has an LC Duplex connector, and can connect to FICON short wavelength channels of System z servers utilizing a 50-micron multimode fibre cable. If host attachment cables or jumper cables are desired they can be specified with one of the following feature numbers:

- Feature number 9762 - 50 Micron LC/LC 31 meter Fibre Cable
- Feature number 9794 - 50 Micron LC/SC 31 meter Fibre Cable

Fibre Channel Switch Attachment: Fibre cables are required to connect tape drives to the Tape Controller Model C07, and more than four tape drives are connected via a Fibre Channel switch. Feature number 4875, 8 Gb Fibre Channel Switch requires 50-micron fibre cables with an LC duplex connector. These cables can be customer supplied or ordered with features on the Tape Controller Model C07, or tape drives where required.

Additional cables, fabric components, and cabling solutions: Conversion cables from SC Duplex to LC Duplex are available as features on the System z servers for customers currently using cables with SC Duplex connectors that now require attachment to fibre components with LC Duplex connections.

In many situations, the configuration and facility specifications may require different cable lengths or the installation of cables. Product Support Services offered by IBM Global Services can provide additional fiber optic components and fiber optic cabling solutions. IBM Site and Connectivity Services (IT Consulting and Implementation Services in the U.S.) provides structured, modular, fiber optic data center connectivity solutions as part of its Fiber Transport Services (FTS) offering. Pre-terminated fiber optic trunk cables in standard lengths up to 138 m (450 ft) and fiber optic jumper cables in lengths up to 61 m (200 ft) are available as part of the planning, fiber optic commodities, and installation activities performed by IBM personnel. Custom lengths and custom installation of fiber optic cables, both multimode and single mode, can also be provided as part of IBM Site and Connectivity Services' solutions. Contact your local IBM Services Sales Specialist for additional information on Fiber Transport Services or IBM Site

and Connectivity Services. In the United States, call 800-IBM-4YOU (426-4968). Additional information can be found at

<http://www.as.ibm.com/asus/connectivity.html>

Refer to the *IBM System Storage 3592-C07 Controller Customer Information Center*

<http://publib.boulder.ibm.com/infocenter/etc/cust/index.jsp>

Software requirements

Software support for the new 3592 Model E07 tape drive is available on System z servers through ESCON® or FICON channels. The 3592 Model E07 is supported with the new 3592 Model C07 Tape Controller (FICON) and with the 3592 Model C06 Tape Controller (ESCON or FICON).

z/OS®: Software support for the 3592 Model E07 is available on z/OS V1R11 and above with the appropriate PTFs. For the 3592 Model E07 support refer to enabling APAR OA33947. Also refer to the 3592 PSP bucket for the software maintenance that is required for the 3592 drives being used. There is no additional software maintenance for the Tape Controller Model C07; only the maintenance that is required for the 3592 drives being used. For additional information on the software support for the 3592 family of drives, refer to z/OS DFSMS Software Support for IBM System Storage TS1140, TS1130, and TS1120 Tape Drives (3592) - SC26-7514-05.

Note: For support of the 3592 Model E07 on z/OS V1R10, a request for price quotation (RPQ) must be requested and approved to support the attachment of the tape drive to z/OS V1R10. Purchase of the z/OS Lifecycle Extension will be required for z/OS V1R10 support of the 3592 Model E07. This Lifecycle extension must be in place for the duration of the support.

z/VSE®: Software support for the 3592 model E07 is planned for a later VSE release.

z/VM®: Support for the 3592 Model E07 is provided on z/VM 5.4.0 and higher with CP APAR VM64979 and its prerequisite service. In addition, tape library support for these drives is provided by DFSMS/VM FL221 with RMS APAR VM65005 and its prerequisite service. Attachment of these 3592 drives under the Tape Controller Model C07 does not require any additional Software Maintenance.

z/TPF: Software support for the 3592 Model E06 and the E07 is not currently available in z/TPF.

Linux™ on System z: Software support is available with the following Linux distributions and above:

- SUSE Linux Enterprise Server 9 (SLES 9)
- Red Hat Enterprise Linux 4

Tivoli® Storage Manager and other compatible software offerings provide storage and tape management software for the 3592. Supporting software and applications must be obtained separately from IBM, IBM Business Partners, or independent software vendors (ISVs). For a list of compatible software and additional information, refer to the 3592 ISV Matrix at the following website

<http://www-03.ibm.com/servers/storage/tape/compatibility/index.html>

IBM Tivoli Key Lifecycle Manager: For TS1140 encryption support, the IBM Tivoli Key Lifecycle Manager or the IBM Security Key Lifecycle Manager for z/OS is required. For the latest version of the IBM Tivoli Key Lifecycle Manager refer to

<http://www.ibm.com/software/tivoli/products/key-lifecycle-mgr/>

And for the IBM Security Key Lifecycle Manager for z/OS refer to

http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.tivoli.isklm.doc_11/ic-homepage.html

Compatibility

- The 3592 Tape Drives cannot read cartridges written by the 3590 or 3490 Tape Drives, and cartridges written by the 3592 Tape Drive cannot be read by the 3590 or 3490 Tape Drives. Even though the cartridges are similar in size, they contain different media, and thus are not interchangeable.
- TS1140 Tape Drives, TS1130 Tape Drives, and TS1120 Tape Drives can be attached to the same 3592 Tape Controller. However, when the 3592 tape controller is used in an automated or manual tape library with system-managed tape and z/OS, all 3592 devices under the same tape controller must be homogeneous.
- The TS1140 Tape Drive is read-and-write compatible with the 3592 TS1130 Tape Drive:
 - The TS1140 Tape Drive can read and append to JB/JX cartridges written by the 3592 TS1130 Tape Drive
 - The TS1140 Tape Drive can write JB/JX cartridges in a 3592 TS1130 format that can be read and appended to by the 3592 TS1130 Tape Drive

Limitations

- Intermixing 4 Gb and 8 Gb Fibre Channel Switches on a single TS1140 Tape Controller is not supported
- 3590 Tape Drives are not supported with the Tape Controller Model C07

Planning information

Customer responsibilities

Physical planning is a customer responsibility. Detailed physical planning information for the 3592-C07 controller is in the *IBM System Storage 3592-C07 Controller Customer Information Center*, available at the Publications center portal

<http://publib.boulder.ibm.com/infocenter/etc/cust/index.jsp>

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

FICON cables for host attachment to those interfaces are available with features on the Tape Controller Model C07.

A fiber optic cable is required for attaching a 3592 Tape Drive to a Tape Controller Model C07 or to a Fibre Channel switch. The cable can be customer supplied, or ordered with features on the Tape Controller Model C07 or 3592 TS1140 Tape Drive Model E07. The attaching fiber cable must be 50.0/125 micrometers for distances up to 150 meters at 4-Gbps.

Refer to the previous [Cables](#) section for a list of available cables. Also refer to the Fibre Channel cable information in the TS1140 Tape Controller Model C07 and TS1140 Tape Drive Model E07 Sales Manuals.

Supplies

For users: IBM TS1140 media supplies can be purchased through the dealers around the world.

For information about Priority Fulfillment Services distribution channels, call 1-888-IBM Media in the U.S. and Canada or visit

<http://www.ibm.com/storage/media>

For users and remarketers:

IBM TS1140 Tape Drive Model E07 supplies can be ordered directly through AAS using 3592 Advanced Tape Cartridges through machine type 3599.

IBM TS1140 Tape Drive Model E07 supplies can be also purchased through Priority Fulfillment Services and its distribution channel in North America, Latin America, and Asia Pacific. These 3592 Advanced Tape Cartridges supplies can be purchased through Forex Telegistics BV and its distribution channel in Europe, the Middle East, and Africa.

For information about Priority Fulfillment Services distribution channels, call 1-888-IBM Media in the US and Canada or visit

<http://www.ibm.com/storage/media>

Security, auditability, and control

This product uses the security and auditability features of host hardware, host software, and application software.

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

IBM Global Financing

Yes

Warranty period

The Tape Controller Model C07 (3592 C07): One year

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Service level is:

- 24 hours per day, 7 days a week, 4 hour average, same day response, IBM On-site Repair

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the Warranty services section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

Maintenance service options

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

- 24 hours per day, 7 days a week, 4 hour average response, same day
- 24 hours per day, 7 days a week, 2 hour average response, same day

Maintenance services

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information. The following service selections are available as maintenance options for your machine type.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Service levels are:

- 24 hours per day, 7 days a week, 4 hour average response, same day
- 24 hours per day, 7 days a week, 2 hour average response, same day

Warranty service upgrades

Usage plan machine

No

IBM hourly service rate classification

Three

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

Field-installable features

Yes

Model conversions

No

Machine installation

Installation is performed by IBM. IBM will install the machine in accordance with the IBM installation procedures for the machine. In the United States, contact IBM at 1-800-IBM-SERV (426-7378). In other countries, contact the local IBM office.

Detailed physical planning information for the Tape Controller Model C07 is in the *IBM System Storage 3592-C07 Controller Customer Information Center*, which is available at the Publications center portal

<http://publib.boulder.ibm.com/infocenter/etc/cust/index.jsp>

Graduated program license charges apply

No

Licensed machine code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement at

http://www.ibm.com/servers/eserver/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code.

You may also obtain updated code by contacting your IBM representative.

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Educational allowance

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 15% for the products in this announcement.

Pricing

Product charges

Description	Machine type Model	Feature number	Field install only	Plant install only
Tape Controller Model C07	3592 C07			
Microcode Enhancement Field		0520		
Console Expansion		2714	N	N
Console Attachment		2715	N	N
TS3000 System Console		2732	N	N
Internal Modem		2733	N	N
Drive-to-Switch Cable / Rack		3062		
FICON Short-wavelength Attachment		3441	N	N
FICON Long Wavelength Attachment		3442	N	N
FICON 10 km Long Wavelength Attachment		3443	N	N
Direct Connect Drives Field		3493		
Fibre Channel Switch Rack Mount Kit		3518	N	N
Redundant FC Rack Attach		3519	N	N
Logical Library option (provides 2x additional HDDs)		4444	N	N
1st Controller Installed in Base F05 Frame		4451	N	N
2nd Controller Installed in Base F05 Frame		4452	N	N
3rd Controller Installed in Base F05 Frame		4453	N	N
4th Controller Installed in Base F05 Frame		4454	N	N
1st Controller Installed in an Expansion F05 Frame or Customer supplied Rack		4461	N	N
2nd Controller Installed in an Expansion F05 Frame or Customer supplied Rack		4462	N	N
3rd Controller Installed in an Expansion F05 Frame or Customer supplied Rack		4463	N	N
4th Controller Installed in an Expansion F05 Frame or Customer supplied Rack		4464	N	N
Install Controller in Rack		4641	N	N
8Gb Fibre Channel Switch		4875	N	N
Reinstall 4Gb FC Switch		4897	N	N
Dual Port FC HBA		5241	N	N
QuadPort Ethernet Adapter		5597	N	N
Field Merge C07 in a 3952 F05 Frame		5891	Y	N
Attached to System z		9000	N	Y
3592 Tape Drive Attached to C07/C06		9478	N	Y
Direct Connect		9493	N	Y

Drives/Plant				
CU Encryption Configuration / Plant	9595	N	Y	
No Factory Cables	9700	N	Y	
9-Micron LC/LC 31 Meter Fibre Cable	9752	N	N	
50-Micron LC/LC 31 Meter Fibre Cable	9762	N	N	
9-Micron LC/SC 31 Meter Fibre Cable	9793	N	N	
Plant install C07 in a 3952 F05 Frame (for TS3500 Attachment)	9890	N	Y	

Description	Machine type Model	Feature number	Field install only	Plant install only
Attached to System z	3592 E07	9000	N	Y

Description	Machine type Model	Feature number	Field install only	Plant install only
FC Switch Mount Kit for TS3500 Attachment	3952 F05	3518	N	N
Redundant FC Mounting for TS3500 Attachment		3519	N	N
8Gb Fibre Channel Switch		4875	N	N
Reinstall 4Gb FC Switch		4897	N	N
Ethernet Switch		5755	N	N
Plant Install 3592 C07		5890	N	Y
Field Merge 3592 C07		5891	N	N
Field Install 3592 C07		5892	Y	N
TS3500 Tape Library Attachment		7325	N	Y
TS3500 Tape Library Attachment Expansion		7326	N	Y
Outbound FC Switch		9816	N	N

Description	Machine type Model	Feature number	Field install only	Plant install only
CU BE Switch Mounting H/W	3584 L23, D23	4876	N	N
Reinstall CU 8Gb BE Switches		4877	N	N
CU Adj Frame Support for BE Switches		4878	N	N

Description	Machine type Model	Feature number	MES Removal	MES Removal Charge
Tape Controller Model C07	3592 C07			
Microcode Enhancement Field		0520	N	
Console Expansion		2714	Y	N/C

Console Attachment	2715	Y	N/C
TS3000 System Console	2732	Y	N/C
Internal Modem	2733	Y	N/C
Drive-to-Switch Cable/Rack	3062	Y	N/C
FICON Short-wavelength Attachment	3441	Y	N/C
FICON Long wavelength Attachment	3442	Y	N/C
FICON 10 km Long wavelength Attachment	3443	Y	N/C
Direct Connect Drives Field	3493	Y	N/C
Fibre Channel Switch Rack Mount Kit	3518	Y	N/C
Redundant FC Rack Attach	3519	Y	N/C
Logical Library option (provides 2x additional HDDs)	4444	Y	N/C
1st Controller Installed in a Base F05 Frame	4451	Y	N/C
2st Controller Installed in a Base F05 Frame	4452	Y	N/C
3st Controller Installed in a Base F05 Frame	4453	Y	N/C
4st Controller Installed in a Base F05 Frame	4454	Y	N/C
1st Controller Installed in an Expansion F05 Frame or Customer supplied Rack	4461	Y	N/C
2nd Controller Installed in an Expansion F05 Frame or Customer supplied Rack	4462	Y	N/C
3rd Controller Installed in an Expansion F05 Frame or Customer supplied Rack	4463	Y	N/C
4th Controller Installed in an Expansion F05 Frame or Customer supplied Rack	4464	Y	N/C
Install Controller in Rack	4641	Y	N/C
8Gb Fibre Channel Switch	4875	Y	N/C
Reinstall 4Gb FC Switch	4897	Y	N/C
Dual Ported FC HBA	5241	N	N/C
CU Encryption Configuration / Field	5595	N	N/C
QuadPort Ethernet Adapter	5597	Y	N/C
Field Merge C07 in a 3952 F05 Frame	5891	Y	N/C
Attached to System z	9000	Y	N/C
3592 Tape Drive Attached to C07/C06	9478	Y	N/C
Direct Connect Drives/Plant	9493	Y	N/C
CU Encryption Configuration / Plant	9595	N	N/C
No Factory Cables	9700	Y	N/C
9-Micron LC/LC 31 Meter Fibre Cable	9752	Y	N/C
50-Micron LC/LC 31 Meter Fibre Cable	9762	Y	N/C
9-Micron LC/SC 31 Meter Fibre Cable	9793	Y	N/C
Plant install C07 in a 3952 F05 Frame (for TS3500 Attachment)	9890	Y	N/C

Description	Machine type	Model	Feature number	MES Removal	MES Removal Charge
Attached to System z	3592	E07	9000	Y	N/C

Description	Machine type	Model	Feature number	MES Removal	MES Removal Charge
FC Switch	3952	F05	3518	Y	N/C
Mount Kit for TS3500 Attachment					
Redundant FC Mounting for TS3500 Attachment			3519	Y	N/C
8Gb Fibre Channel Switch			4875	Y	N/C
Reinstall 4Gb FC Switch			4897	Y	N/C
Ethernet Switch			5755	Y	N/C
Plant Install	3592	C07	5890	Y	N/C
Field Merge	3592	C07	5891	Y	N/C
Field Install	3592	C07	5892	Y	N/C
TS3500 Tape Library Attachment			7325	Y	N/C
TS3500 Tape Library Attachment Expansion			7326	Y	N/C
Outbound FC Switch			9816	Y	N/C

Description	Machine type	Model	Feature number	MES Removal	MES Removal Charge
CU BE Switch	3584	L23, D23	4876	Y	N/C
Mounting H/W					
Reinstall CU 8Gb BE Switches			4877	Y	N/C
CU Adj Frame Support for BE Switches			4878	Y	N/C

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