



Intercom
Computer
Systems



I-5594/TapeFile High Capacity Tape Library System for S/390 and Open Systems

Highlights

Library Capacity

800 GB to 8 TB native
1.6 TB to 16 TB compressed
21 to 210 DLT Cartridges
1 to 20 DLT 8000, 7000, 4000 Drives

Bandwidths

43 to 432 GB per hour native
86 to 864 GB per hour compressed

Tape Drive Emulation

IBM 3490E
DLT 8000

Backward Compatibility

36 Track with IBM 3490 Emulation
18 Track with IBM 3480 Emulation
9 Track with IBM 3422 Emulation

Modes of Operation

10/20 Cartridge Auto Loader
Random Access Library
Virtual Tape Library with
- 18 GB to 1TB RAID Disk Cache
- 4 to 64 Virtual Tape Drives

Supported Host Systems

IBM OS/390, MVS, VM/VSE
IBM OS/400, RS/6000, AIX
Bull GCOS 8
FSC BS2000
UNISYS, Tandem
UNIX, Windows NT/2000

Supported Interfaces

ESCON, Channel Type S
Block Multiplex Channel, OEMI
Channel Type 2
FIPS 60
SCSI, ETHERNET
ATM, FDDI

The I-5594/TapeFile half inch DLT cartridge library system offers the best combination of performance, capacity, scalability and price. Native capacity ranges from 800 GB to 8 TB and bandwidth from 43 GB to an incredible 432 GB per hour. The tape storage system is available as Auto Loader, Random Access Library or Virtual Tape Server. Enterprise wide connectivity is provided to IBM S/390, BS2000, Bull, UNISYS, UNIX and Windows NT/2000 via ESCON, Block Multiplex Channel and SCSI.

Best Value Package

Innovative engineering has made it possible to place the most requested features into the best value package. True incremental scalability provides low initial cost and investment protection as your needs grow. Optimal cartridge-to-drive ratio of 10:1 maintains high performance. Robust tri-axial robotics and built-in redundancy guarantees high reliability and a long life cycle.

The tape system can be configured as Auto Loader with a sequential storage of 800 GB* per drive, as Random Access Library and as Virtual Tape Server. Enterprise wide connectivity is provided to mainframes, AS/400, UNIX and Windows NT/2000.

Best Solution for S/390 Multiprise

The low entry cost of less than \$ 2 per GB qualifies the I-5594/TapeFile for UNIX and mainframe entry systems, such as the IBM S/390 Multiprise 3000, while the wide scalability protects the investment and provides growth as needed.

Wide Range of Scalability

The basic building block of the modular I-5594/TapeFile library system is just 7 inch (4HU) high library module. It contains 20 DLT cartridges in two bulk-load magazines and one or two DLT tape drives. Supported are DLT 8000, DLT 7000 and DLT 4000 as well as the new Super DLT, when available. But that's only the beginning. Additional modules, each only 7 inches high, can be

stacked on top of each other to create a 10 module library system with 200 cartridges and up to 20 hot swappable drives. The intelligent modules configure into an extended library, where all cartridges can be loaded into each tape drive. The incremental scalability allows you to pay for the storage you need, when you need it, without losing your initial investment in library hardware and software.

The fully assembled library system can provide a total capacity of 16 TB* and an almost incredible bandwidth of 240 MB* per second or 864 GB* per hour. All of this fits into a single 19 inch rack.

Capacity and Performance

With 20 cartridges and 2 drives per library module, the I-5594/TapeFile maintains the optimal cartridge - to - drive ratio of 10 : 1, no matter how much you may expand the library. In addition to the two bulk load cartridge magazines, each module is equipped with a dedicated cartridge slot, which may be used as mailbox for importing and exporting single cartridges or as a cleaning slot, enabling automatic drive cleaning without losing a data cartridge slot.

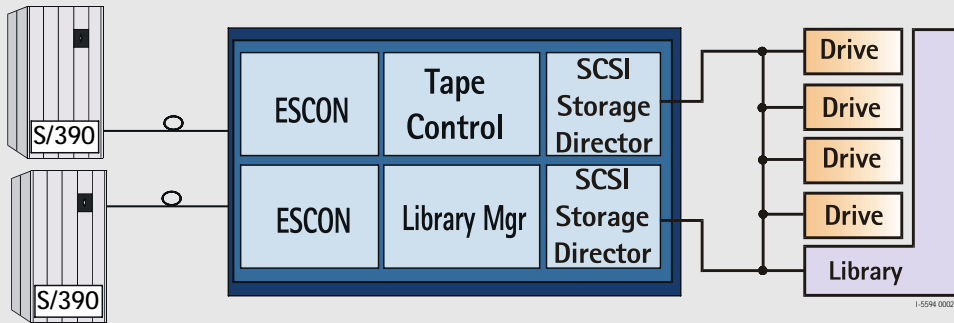
Barcode

A Barcode scanner is available as an optional feature. Barcode support, normally only available in high cost library systems, allows easy cartridge identification and fast cartridge inventory.

* DLT 8000 with 2:1 data compression



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Easy to Use and Easy to Maintain

All cartridges are located in a replaceable bulk load magazine, regardless of the size of the library. The removable 10- Cartridge-Magazine supports fast import and export of cartridge sets, enabling new handling patterns: Assigning particular magazines to different host systems or to different back up generations; separate magazines for input and output tapes; use one magazine for back up, the other for archiving or for storing temporary data sets; dedicate particular magazines to different logical or physical hosts; assign 1 magazine to S/390, the other to UNIX or Windows NT/2000; make a simultaneous copy of backup data for disaster recovery.

The I-5594/TapeFile is loaded with comprehensive diagnostic capabilities and provides Remote Maintenance via public network or Internet. The robot servo system is self calibrating. It eliminates field adjustments and the need for special Field Service tools.

DLT Tape Drive Technology

The I-5594/TapeFile features Quantum's 1/2 inch Digital Linear Tape technology. Supported are DLT 4000, DLT 7000 and DLT 8000. Super DLT will be supported in the future available. All drives are hot swappable. DLT 8000 provides a native storage capacity of 40 GB per cartridge and maintains a native data rate of 6 MB/s. The high efficiency Digital Lempel-Ziv (DLZ) compression/compaction feature can double or triple the cartridge capacity and data rate.

IBM S/390 Connectivity

The I-5594/TapeFile provides connectivity to

Mainframes including S/390, FSC BS2000, UNISYS, Tandem and Bull via ESCON or Block Multiplex Channel. It emulates IBM 3490 device characteristics and is supported by OS/390, VM/VSE and all other operating systems, which maintain 3490 type 36 track tape systems or DLT Tape drives.

The I-5594/TapeFile Library System operates in three different modes:

Sequential Auto Loader:

One magazine with 10 cartridges is assigned to each tape drive. Cartridges are sequentially loaded, one after another, similar to IBM 3490 auto loader technique. A basic library module with 2 drives and two cartridge magazines provides up to 1.6 TB* sequential backup storage and a bandwidth of 86.4 GB/hour*. The basic library is field



upgradable to 16 TB* and to a bandwidth 864 GB/hour*.

Random Access Library:

The I-5594/TapeFile control unit interprets the display messages or robot control commands from CA 1 or other library control program. Supported are all popular operating systems, including but not limited to OS/390, MVS, VM/VSE, BS2000, GCOS 8, as

well as all major Tape Management Systems, including RMM, ZARA, CA 1 and others.

Virtual Tape Library:

A high capacity DLT cartridge holds 80 GB of compressed data on average. Most data volumes in the mainframe environment contain just 500 MB or less, wasting 90% or more of the available capacity. Virtual tape technology makes optimal use of tape resources and provides immediate benefits to users by reducing personnel, hardware and media expenses. Virtual Tape can provide faster data access, reduces tape mounts, and manages peak loads with reduced hardware by providing virtually an unlimited number of virtual tape drives.

The I-5594/Virtual TapeFile utilizes the full cartridge capacity and significantly increases data throughput. It emulates 4, 8, 16, 32 or 64 virtual tape drives, no matter how many physical tape drives are available.

The hosts volumes are temporarily stored on disk as virtual volumes and eventually stacked together with other virtual volumes on a real tape cartridge.

The virtually unlimited number of virtual drives compensate peak loads, deal with the ever increasing backup data in an ever shrinking backup window and ensures that no program needs to wait for the availability of tape drives.

The I-5594 Virtual TapeFile can be equipped with RAID protected disk cache, ranging from 36 GB to 1 TB for parallel processing of up to 64 virtual drives and for keeping work files on disk cache for fast recall.



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True Enterprise Wide Storage Area Network

Because the I-5594/Virtual TapeFile is designed as Storage Area Network (SAN), it provides enterprise wide access from mainframes, UNIX and Windows NT/2000. Mainframes connect via ESCON or Block Multiplex Channel, while open systems connect via LAN or WAN (Ethernet, ATM, FDDI). This architecture maintains centralized enterprise wide data management for tape resources and enables the establishment of an enterprise wide in backup and data security strategy.

Remote Tape Processing

The SAN architecture provides connectivity to remote hosts some thousand miles away via public or private networks. This feature provides new capabilities in the enterprise wide storage management of locally dispersed systems and in developing new strategies for disaster recovery.

Backward Compatibility to 36, 18 and 9 Track Tape Format

There are still millions of 9 track open reel tapes in the archives and 9 track tapes are still used for data exchange. IBM terminated manufacturing of 9 track tape systems 20 years ago. The existing field units are worn out, short of spare parts, expensive to maintain, consume costly floor space and power and do not support ESCON and SCSI. The same is principally true for 18 and 36 track tape cartridge systems.

One size fits all.

In addition to DLT, the I-5594/TapeFile supports also 36 track, 18 track and 9 track tape drives, providing full backward compatibility to 3490, 3480 and 3420 tape formats. It supports ESCON, Block Multiplex Channel and SCSI connectivity to old tape formats and it pays for itself with reduced maintenance costs and savings in floor space, power consumption and increased availability.

Open Systems Connectivity

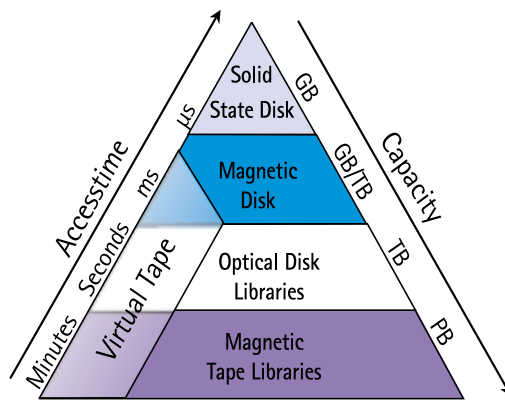
The I-5594/TapeFile connects to UNIX and Windows NT via SCSI, Ethernet, ATM, FDDI and other links. Mainframe and Open Systems connectivity can coexist.

Reliability and Availability

The I-5594/TapeFile is designed for reliability and availability. The Remote Service Facility via public network and Internet is a standard feature, enabling remote diagnostics and statistical error analysis. It allows the replacement of weak components before the user recognizes malfunctions. Tape drives are hot swappable and the modular design of the tape library allows operation to continue even if one library module is defective. A twin control unit, available as an optional feature, provides fault tolerance. If one twin fails, the other twin still maintains full access to the library.

Ready for the Future

With all these features, the I-5594/TapeFile is the most advanced tape system available today. It enables use of today's tape technologies, provides full backward compatibility to older tape formats and protects the investment in the future: Intercom guarantees the implementation of new tape technologies as it becomes available. There will be no need to replace the whole tape system to participate in new tape technologies.





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Specifications

I-5594 Control Unit	Single	Twin
Total Number of Channels	4	8
Total Number of Storage Directors	4	8
Number of supported Tape Drives	16	16
Compatibility	IBM 3490E	
Modes of Operation	10/20 Cartridge Sequential Auto Loader Random Access Tape Library Virtual Tape Library	
Virtual Tape Library Disk Cache	18 GB to 1000 GB	
Virtual Tape Drive Support	4, 8, 16, 32 or 64 Virtual Tape Drives	
Supported Operating Systems	IBM OS/390, MVS, VM/VSE IBM OS/400, AIX FSC BS2000, Bull GCOS 8 UNISYS, Tandem UNIX, Windows NT	
Interfaces	ESCON, Channel Type S Block Multiplex Channel OEMI Channel, FIPS 60, Channel Type 2 SCSI, Ethernet, ATM, FDDI, HIPPI	
Remote Maintenance	Via Public Network or Internet	
MagFile Library	Basic	Max
Number of Library Modules	1	10
Supported DLT Drives	DLT 4000, 7000, 8000	
Number of DLT Drives	1 or 2	10 to 20
Number of DLT Cartridges	21	210
Number of removable Magazines	2	20
Number cartridges per Magazine	10	10
Number of dedicated Cartridge Slots	1	10
Cartridge Capacity native/compressed*	40/80 GB	40/80 GB
Library Capacity native/compressed*	0.8/1.6TB	8/16 TB
Bandwidth native/compressed*	6/12 MB/s	120/240 MB/s
Backward compatible Tape Drives	36 Track Cartridge Drive, IBM 3490 compatible 18 Track Cartridge Drive, IBM 3480 compatible 9 Track Open Reel, IBM 3422 compatible	
Power	220/110 V, 50/60 Hz, 5 kW max.	
Heat dissipation	17 kBTU/h max.	

* DLT 8000

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