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Computer
Systems

I-6980/Ultrium Enterprise Virtual Tape Server for S/390 and Open Systems

The I-6980/Ultrium Enterprise Virtual Tape System (EVTS) is a Tape Storage Area Network (SAN), offering the best combination of price, performance, capacity, scalability and connectivity. Compressed storage capacity is 200 GB per cartridge and 1.4 TB with a 7 cartridge auto loader. Sustained bandwidth is 30 MB/s with 2:1 compression. Connectivity is provided to IBM S/390, AS/400, BS2000, Bull, UNISYS, UNIX and Windows.

LTO "Ultrium" Technology

The I-6980 Virtual Tape System is based on the latest Linear Tape Open (LTO) "Ultrium" technology. LTO "Ultrium" is based on the tape standard, specified by the LTO Initiative, lead by IBM, HP and Seagate. It is the most innovative and most reliable magnetic tape technology available today, providing the best price/performance ratio.

A Ultrium Road Map, released by the LTO Initiative leads far into the next decade and shows capacity improvements up to 800 GB native per cartridge and data rates up to 160 MB/s.

Servo track controlled high accurate data recording via thin-film magneto resistive read/write heads with read-after-write data verification and advanced error detection and correction guarantees reliability, durability and data integrity. Automatic data caching and read/write buffering enhances performance.

The "Ultrium" high capacity tape cartridge is specially designed for repeated, unattended and troublefree use in automated tape libraries. It stores 100 GB native data or 200 GB with 2:1 compression. Data rate 15 MB/s native and 30 MB/s with 2:1 compression. The Memory in Cartridge collects

usage and error information for preventive maintenance as well as user data such as Volume and File Labels.

I-6980 Configuration

The I-6980 includes one to eight Ultrium tape drives, providing a total storage capacity of 800/1.600* GB and a sustained bandwidth of 120/240 MB/s. A Mini Library with 7 cartridges and 700/1.400* GB storage capacity can be attached to each tape drive.

The Ultrium tape storage system provides room for growth. A starter system with a single tape drive provides 100/200* GB. A fully configured system including eighth tape drives with Mini Libraries maintains 5.6/11.2* TB automated tape storage with a sustained data rate of up to 864 GB/h. The I-6980 operates in three different modes.

Sequential Auto Loader

The 7 cartridges of a Mini Library is sequentially assigned to a tape drive. Cartridges are sequentially loaded, one after another, similar to IBM 3490 auto loader technique. This mode of operation assigns up to 1.400 GB sequential tape storage to each drive. It works perfect for backup, but it does not allow random access to particu-

Highlights

LTO "Ultrium" Technology

100/200* GB per Cartridge
15/30* MB/s

Number of Tape Drives

1 to 8

Library Support

7 Cartridge Mini Library

Modes of Operation

Sequential Auto Loader
Random Access Library
Virtual Tape System

Connectivity

ESCON
Block Multiplex Channel
Fibre Channel
SCSI

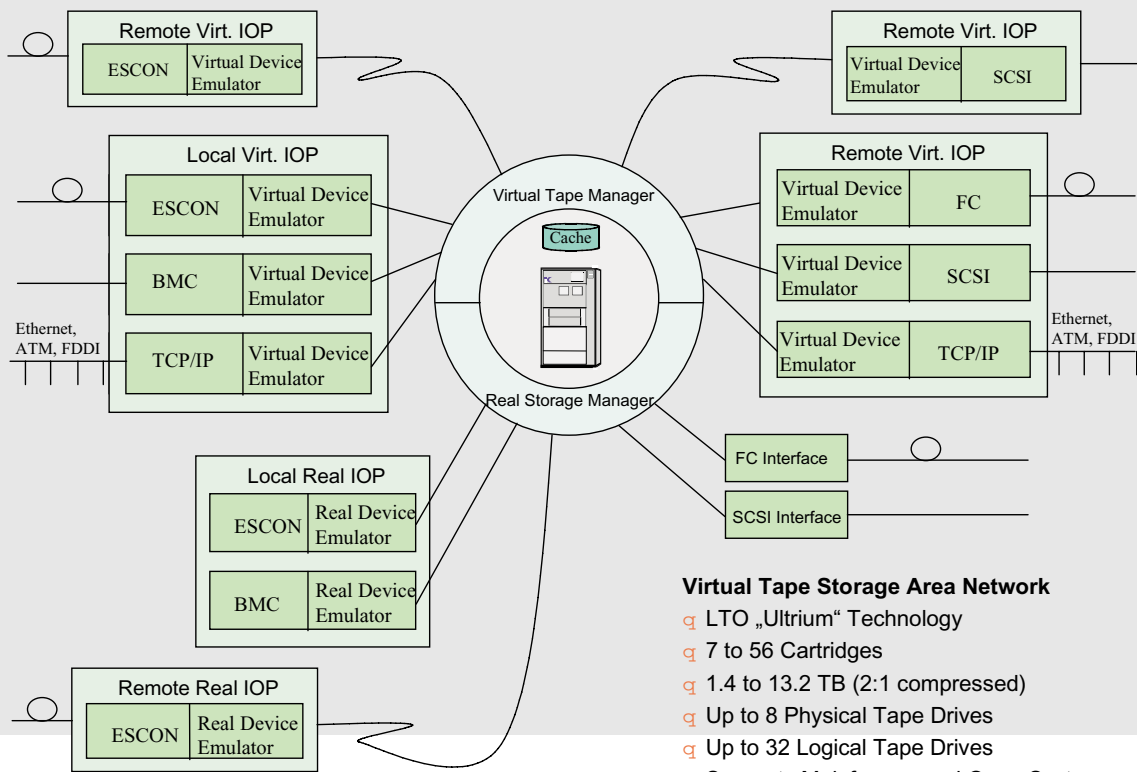
System Support

OS/390, VM/VSE
BS/2000, GCOS 8
UNIX, LINUX, AIX
Windows NT/2000

Backward Compatibility

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

* with 2:1 data compression



lar cartridges.

Random Access Library

This Mode of Operation allows direct access to a particular cartridge. Supported are all popular operations, including MVS, VM/VSE, BS2000, WIN2000 and all major Tape Management Systems like RMM, ZARA, DynamT and BVS.

Virtual Tape Management for IBM/390

As mentioned above, each high capacity LTO "Ultrium" cartridge holds up to 200 GB of compressed data. Many data volumes in a mainframe environment contain just 500 MB of data or less, wasting 95% or more of the available cartridge capacity.

The virtual operation mode makes optimal use of tape resources and provides immediate benefits by reducing personnel, hardware and media expenses. The hosts data volumes are written to virtual drives and temporarily stores data on disk cache as virtual volumes. The Virtual Tape Manager migrates virtual volumes according to pre-defined algorithms as logical volumes to real tape. The virtual mode can provide faster access to data, reduce tape mounts, utilize the full cartridge capacity, and manage peak loads with reduced hardware by maintaining virtually an unlimited num-

ber of virtual tape drives.

Disk Cache

The I-6980 Virtual Tape Manager includes a RAID protected disk cache, ranging from 144 to 800 GB for parallel processing of up to 16 virtual tape drives and for keeping work files on disk cache for fast retrieval.

Scalable Bandwidth

The Virtual Input/Output Processor (VIOP) provides connectivity to the host systems and emulates virtual tape drives. To meet the users bandwidth requirements, up to 2 VIOPs can be attached to an I-6980 Virtual Tape System. Each VIOP can be equipped with up to four ESCON and/or Block Multiplex Channel interfaces.

Each Virtual Input/Output Processor emulates up to 16 virtual tape drives, no matter how many physical tape drives are available. One I-6980 EVTS with 2 Virtual I/O Processors can maintain a total of 4 channels and 32 virtual tape drives. The virtual drives compensate peak loads, deals 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.

Virtual tape drives emulate IBM 3480 or 3490 drives for mainframes, as well as DLT and LTO "Ultrium" for open systems. This

feature maintains support for all popular operating systems, including OS/390, MVS, VM/VSE, BS2000, GCOS 8, UNIX, LINUX and Win2000 as well as compatibility to all backup and archiving programs, including Tivoli, Legato Networker and others.

Remote Tape Processing

For sharing tape resources by remote systems, one or more Input/Output Processors can be located remotely and connected via TCP/IP (Ethernet, ATM, FDDI etc.) to the Enterprise Tape Server. Supported are virtual as well as real tape drives. This feature eliminates the need of traditional channel extenders and provides new capabilities in the enterprise wide storage management of locally dispersed systems and in developing new strategies for outsourcing and disaster recovery.

Tape Format Compatibility

One size fits all: For importing and exporting virtual volumes to/from real volumes and for data exchange, the I-6980 VTS supports also real 36 track, 18 track and 9 track tape drives, providing full backward compatibility to 3490, 3480 and 3420 tape formats. It provides ESCON, Block Multiplex Channel and SCSI connectivity for older tape formats and pays for itself with reduced maintenance costs and savings in



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Systems

floor space, power consumption and increased availability.

Also supported are other tape formats, including but not limited to STK 9840, DLT, AIT, Exabyte, DAT and Optical Disks, CD and DVD.

True Enterprise Wide Storage Area Network

The I-6980/Enterprise Virtual Tape Server is designed as an Tape Storage Area Network (SAN), providing enterprise wide connectivity to mainframes, UNIX and Windows NT/2000 platforms. The SAN architecture provides centralized management for local and/or remote tape resources and enables an enterprise wide backup and data security strategy.

Connectivity to IBM S/390 and Open Systems

The I-6980/EVTS connects to Mainframes, including S/390, Fujitsu/Siemens, UNISYS, Tandem and Bull via ESCON or Block Multiplex Channel and to AS/400, AIX, UNIX, LINUX and WIN2000 via SCSI or Fibre Channel, LAN or WAN (Ethernet, ATM, FDDI).

Supported are all popular operating systems, including OS/390, MVS, VM/VSE, BS2000, GCOS 8, AIX, UNIX, LINUX and WIN 2000 by emulating IBM 3490, 3480 or 3420 device characteristics or DLT and LTO "Ultrium" for open systems.

Reliability and Availability

The I-6980/VTS is designed for reliability and availability. The Remote Service Facility via public network and Internet is standard, enabling remote diagnostics and statistical error analysis. Tape drives are hot swappable. Multiple Input/Output processors and redundant power supplies provide fault tolerance.

Ready for the Future

With all these features, the I-6980 Virtual Tape Server is the most advanced tape system available today. The Storage Area Network Architecture maintains enterprise wide connectivity, incorporates the latest tape technology, provides full backward compatibility to older tape formats and protects the investment for many years: The LTO Consortium has released an "Ultrium" road map, showing capacity improvements up to 800 GB per cartridge and a data rate beyond 50 MB/s. Intercom is committed to implementing new features as they become available. Replacing whole tape systems to participate in new tape technologies is a thing of the past.





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Specifications

	Control Unit	Tape Drive
Number of Cartridges		7
Capacity native total		700 GB
Number of Drives		1 to 8
Host Interfaces	8	
Escon	Yes	
Block Multiplex	Yes	
SCSI F/W	Yes	
Fibre Channel	(Q 04)	
Fault Tolerance	option	
Redudant Power Supply	option	
Raid Protection	option	
Remote Diagnostic	standard	
Dimensions (cm) w x h x d	65x110x92	21,9x19,0x58,1
max. Weight (kg/lb)	82/182	13,0/28,7
Power 200-240V (kVA)	0,8	0,3
Temperature	16° to 32°C	10° to 38°C
Relative Humidity	20%-80%	20%-80%

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