

MODELS

TL895 DLT 96 Cartridge Library

349350-B2x ("x" indicates the number of drives installed – 2,3,4,5,6, or 7)

349351-B21 Single add on TL895 Library drive

349351-291 Single add on TL895 Library drive (Japan)

Fibre Channel Storage Hub 12

295573-001

295573-291 (Japan)

295573-B31 (Int'l)

Fibre Channel Tape Controller

340654-001

340654-291 (Japan)

340654-B31 (Int'l)

Fibre Channel Host Controller Kit

223180-B21

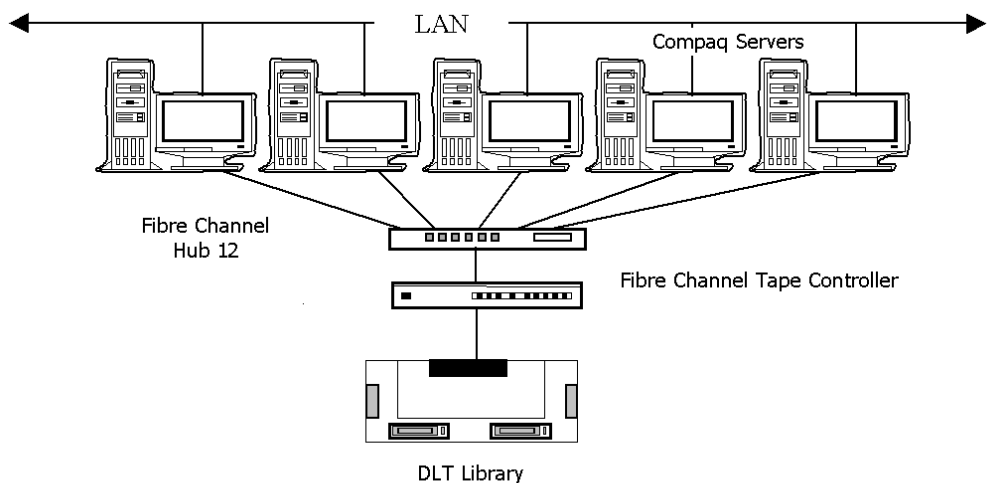
223180-291 (Japan)

The Compaq StorageWorks Enterprise Backup Solution (EBS)

Exponential growth of information technology in the business arena has led to an enormous volume of data stored across enterprise networks. IT organizations are finding that backing up and restoring data is becoming more and more of a challenging task. Compaq customers using Windows NT and Novell NetWare servers need a scalable, high-performance solution to meet their present and future data storage backup and restore requirements. The Compaq StorageWorks Enterprise Backup Solution (EBS) provides a unique solution to the backup dilemma by providing a consolidated backup of multiple servers over an independent Fibre Channel storage network to centrally attached SCSI tape libraries.

The Enterprise Backup Solution (EBS) offers a number of distinct advantages over traditional backup methods:

- Flexibility to scale the performance and capacity of the backup environment
- Effective utilization of assets by providing an environment where SCSI tape drives and tape libraries can be shared by multiple servers
- Increased corporate LAN bandwidth since EBS uses a dedicated Fibre Channel Loop to transfer data from the servers to the backup media and therefore does not saturate the corporate LAN with backup traffic
- 7 x 24 backup window to meet the provide for extended backup times
- Centralized management and administration data transfer across the Fibre Channel Loop and because each server has the capability to run multiple parallel backup or restore jobs



StorageWorks Enterprise Backup Solution

The Enterprise Backup Solution consists of the following components:

- An independent Fibre Channel loop capable of transferring data at 100 megabytes/second
- Fibre Channel Host Controllers and a Fibre Channel Storage Hub 12 to link the servers to the Fibre Channel loop
- Fibre Channel Tape Controllers that convert serial SCSI to parallel SCSI protocol for the attached DLT TL895 tape library. The controller also provides for autonomous control of the tape drives Automated tape libraries with multiple DLT drives.
- Storage management software that takes advantage of the added bandwidth of Fibre Channel and allows multiple servers to share a centralized tape drives and tape libraries

These components are integrated to provide the Compaq StorageWorks Enterprise Backup Solution (EBS) which is capable of efficiently backing up large quantities of server data over a dedicated Fibre Channel Loop. Compaq decided to integrate these specific "best-in-class" components because each one offers the very best technology to solve the problems of large-volume data protection. EBS answers the customer's need for a backup solution that delivers reduced administrative costs, scalability of capacity and performance, together with shared access to tape libraries drives and centralized management.

Fibre Channel Arbitrated Loop

The Compaq StorageWorks Enterprise Backup Solution uses a dedicated Fibre Channel Arbitrated Loop to transfer data between the servers and tape drives. Fibre Channel technology delivers the advantages of 100 MB/s bandwidth, up to 126 addressable connections, easy cabling, 500 meter to 10 kilometer distances between nodes, hot pluggable and node-bypass capabilities.

Fibre Channel Storage Hub 12

A Fibre Channel Storage Hub 12 is a 12 port Fibre Channel Hub that acts as the focal point of the Enterprise Backup Solution. This storage hub provides up to 12 multi-mode or single-mode (supported in future release of EBS) Fibre Channel connections. For example, nine servers can be connected to the storage hub, leaving three available ports for connections to Fibre Channel Tape Controllers. The storage hub is a rack-mountable unit with a 1U form factor.

Fibre Channel Tape Controller

The Fibre Channel Tape Controller provides the capability to attach SCSI Tape Libraries and DLT Tape drives to the Fibre Channel Loop. Each Fibre Channel Tape Controller has a single Fibre Channel connection and single 20 MB/s SCSI bus that can be daisy-chained to a maximum of two DLT 35/70 tape drives. The Fibre Channel Tape Controller is rack mountable and has 1U Form Factor.

Compaq TL895 DLT Library

The TL895 supports up to seven DLT 35 70 tape drives and up to 96 data cartridges for a compressed capacity of 6.7 TB. The TL895 is a vast improvement in performance and capacity over the current DLT 35 70 Library models that possess 15 cartridges. The TL895 was introduced for customers with large storage and performance requirements.

Fibre Channel Host Controller (PCI)

The Fibre Channel Host Controller is a high speed PCI card that provides server connectivity to the EBS Fibre Channel Arbitrated Loop. The Fibre Channel Host Controller card is supplied in a kit that also includes one 5m Multi-Mode Fibre Channel Cable and two Gigabit Interface Converters (GBICs). These GBICs are required to attach the Fibre Channel cable to the Fibre Channel Host Controller card and to the Storage Hub 12. The GBICs also convert digital signals to the optical signals required in the Fibre Channel environment.

Integrated Software Solutions

A key component of the Compaq StorageWorks Enterprise Backup Solution is the backup management application software. Compaq joined with industry-leaders Computer Associates, Inc. and Seagate Software, Inc. to deliver the Compaq StorageWorks Enterprise Backup solution. These Backup applications have been enhanced to operate in the EBS Fibre Channel environment and also to share the tape drives and libraries that are attached to the EBS Fibre Channel loop.

Computer Associates ARCserveIT

Computer Associate's ARCserveIT products are designed around a centralized primary server. This primary ARCserveIT server controls and coordinates all tape device access within the EBS environment. It keeps track of all the available tape drives and tape libraries within the EBS environment. Before a servers begins a backup, it will first communicate with the primary server to determine if a tape drive within the required tape library is available. If tape drive is available, the primary server will reserve the tape drive and allocate it to the backup server. The backup server then transfers the data directly across the Fibre Channel loop to the tape drive as though it were locally attached to the backup server. When the backup job is complete, the primary server releases the tape drive for use by any other server within the EBS environment. To deliver this functionality, ARCserveIT requires the Enterprise Library Option to be installed on all the servers participating within the Compaq StorageWorks Enterprise Backup Solution.

Seagate Backup Exec

Seagate Software's Backup Exec products are designed around a database server. This database server controls and coordinates all tape device access within the EBS environment. It keeps track of all the available tape drives and tape libraries within the EBS environment. Before a server begins a backup it will first communicate with the database server to determine if a tape drive within the required tape library is available. If the tape drive is available, the database server will reserve the tape drive and allocate it to the backup server. The backup server then transfers the data directly across the Fibre Channel loop to the tape drive as though it were locally attached to the backup server. When the backup job is complete, the database server releases the tape drive for use by any other server within the EBS environment. To deliver this functionality, Backup Exec requires the Shared Storage Option to be installed on all the servers participating within the Compaq StorageWorks Enterprise Backup Solution.

Scalability

Capacity and performance can be scaled up to meet the growing backup and restore demands of the NT and NetWare environment within their organizations. The Compaq StorageWorks Enterprise Backup Solution provides customers with the capability to scale up the Enterprise Backup Solution by adding additional servers, tape libraries and tape drives to the existing EBS environment.

Capacity

Since multiple tape libraries can be added to the EBS Fibre Channel loop, additional storage capacity is added to the EBS environment by simply adding another tape library. All the servers attached to the EBS Fibre Channel loop can now share this new tape library and tape drives.

Performance

The performance of the Enterprise Backup System can be scaled-up by simply adding more drives to an existing tape library or by adding a new tape library containing one or more tape drives. The incremental performance from the new drives can be utilized by all the servers attached to the Enterprise Backup Solution.

Centralized Management

Seagate Software's Backup Exec and Computer Associate's ARCserveIT provide for centralized administration of the Enterprise Backup Solution and all backup and restore activities. All backup and restore jobs can be scheduled from a single server within the Enterprise Backup Solution environment. The tape libraries and tape drives can now be centralized so as to optimize and streamline the management and administration of the physical tape media. The entire backup and restore process can therefore be managed and operated by a much smaller number of operations staff.

Smooth Integration/Installation

The Compaq StorageWorks Enterprise Storage Solution integrates smoothly into an existing environment that already uses Backup Exec or ARCserveIT. Also, any 35/70 DLT Tape library can be easily integrated into the Enterprise Backup Solution environment where all the servers attached to the Fibre Channel Loop can share it. All the components are customer installable or can be installed by Compaq for an additional charge.

Warranty¹

The Fibre Channel Host Controller card, Fibre Channel Hub 12, Fibre Channel Tape Controller and TL895 DLT Library are all covered by a three-year, limited warranty¹.

Required Warranty Service Training

Compaq requires that service technicians attend Service Training for the above listed products at an Authorized Compaq Training Center prior to installing and servicing this product. Additional information on Compaq training is available on the Compaq website, www.compaq.com/resellers. Compaq strongly recommends that the above products be installed by a trained Compaq Authorized Service Technician.

SPECIFICATIONS

Fibre Channel Storage Hub 12

Dimensions (HxWxD)	1.66 in x 17.3 in x 17.2 in
Weight	10.5 lbs
Control Indicators	LEDs Power GBIC LED Fault/Self Test Port LED Indicator Port Bypass LED Controls Reset Button
Connectivity	12 Ports
Data Rate	100 MB/sec, full duplex; 8B/10B encoded
Topology	Fibre Channel Arbitrated Loop
Temperature Range	50° to 104°F/10° to 40°C
Relative Humidity	20% to 80%, non-condensing
Input Requirements	
Voltage	100 to 240 VAC, Auto Ranging
Line Frequency	50 to 60 Hz
Typical Input Current	3 A typical @ 110 VAC
Power (Watts)	85 W maximum

Fibre Channel Tape Controller

Dimensions (HxWxD)	1.7 in x 17 in x 9 in
Weight	7 lbs
Control Indicators	LEDs Power Self Test Failure Fibre Channel Activity SCSI Activity Ethernet Activity Controls On/Off
Connectivity	2 Ports
Data Rate	1,062.5 Mb/sec
Topology	Fibre Channel Arbitrated Loop, Fabric
Protocols	FCP (SCSI 3), PLDA
Temperature Range	48° to 104°F/ 5° to 40°C
Relative Humidity	5 to 80%, non-condensing
Input Requirements	
Voltage	110 to 240 VAC, Self Sensing
Line Frequency	50 to 60 Hz
Power (Watts)	85 W maximum

DLT Library TL895 Specifications

DLT Tape Drives	7
Max. Cartridge Count	96
Maximum Formatted Capacity²	
With DLTtape IV	6.72 TB (96 cartridges at 70 GB each)
With DLTtape IIIXT	2.88 TB (96 cartridges at 30 GB each)
Max. Throughput²	252 GB/hour
Avg. Fibre Channel Throughput²	180 GB/hr
Tape Drive Technology	35/70 DLT

SPECIFICATIONS *(continued)*

DLT Library TL895 Specifications *(continued)*

Dimensions

Height	56 in (142 cm)
Width	23 in (58 cm)
Depth	36 in (71 cm)
Weight	500 lbs (227 kg) with 7 drives and 96 cartridges

Communication Interfaces

Electrical	Differential SCSI-3 "P" Fast & Wide, 68-pin Micro D female
Software	SCSI-2 medium changer command set

Power Consumption (robotics and seven drives)

Standby	270 Watt, 350 VA (nominal)
Average running	310 Watt, 405 VA (100% duty cycle)
Peak running	340 Watt, 430 VA

Environmental

Operating	
Humidity	20% to 80%, non-condensing
Temperature	59° to 90°F/15° to 32°C
Altitude	Sea level to 10,000 ft
Non-operating (storage & shipping)	
Humidity	5% to 95%, non-condensing
Temperature	-40° to 151°F/-40° to 66°C
Altitude	Sea level to 12,000 ft

Robotics Reliability

MTBF	170,000 power-on hours
MSBF	2 million load/unload cycles (swaps)
MTTR	Less than 30 minutes

Agency Approvals

Safety	UL 1950 Listed, CSA, C22.2-No. 950 TUV-EN60950
Emission	FCC Part 15B Class A, CE Mark, VCCI Class 1

35/70 Drive Specifications

Drive Reliability

MTBF	200,000 Hours at 100% Duty Cycle
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Tape Drive Characteristics

Tape Speed	160 ips
Rewind Speed	175 ips
Recording Method	Serpentine
Number of Tracks (physical)	208
Blocks per Track	Variable
Bytes per Block	Variable
Blocks per Frame	Variable
Percentage ECC	25%
Bytes per Group	64,000
Data Frame/Group	16
Recording Density/Inch	62,500
Track Density/Inch	256
Encoding Method	(2,7) RLL
Native Data Transfer Rate	5 MB/s
Error Correction	Reed Soloman (3 levels)
Read-Write Head	four-channel, ferrite w/mig
Data Compression Algorithm	DLZ (Digital-Lempel-Ziv) Specifications

SPECIFICATIONS *(continued)*

Fibre Channel Host Controller

Protocol	Fibre Channel Arbitrated Loop
Data Transfer Method	32-bit PCI bus master
Maximum Transfer Rate (on Fibre Channel Arbitrated Loop)	100 MB/s
LED Indicators on Slot Panel	GBIC Transmit Status GBIC Receive Status

¹ Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

² 2:1 Compression.