

Sun StorEdge™ L25 and L100 Modular Tape Libraries

Just the Facts



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Positioning



Figure 1. The Sun StorEdge™ L100 and L25 tape libraries

Introduction

Sun provides reliable data storage solutions that deliver comprehensive availability, access, and protection for its customers critical business data. The Sun StorEdge™ L25 and L100 tape libraries combine Sun's data continuance innovation, quality, and high standards that create exceptional performance, capacity, and value, helping to lower the total cost of ownership.

Whether the Sun StorEdge L25 and L100 products work in unison along with Sun's backup applications or data replication products or independently, their dependability meets critical data protection requirements and, more importantly, vital data recoverability. The Sun StorEdge L25 and L100 libraries implement advanced, scalable design with proven technologies that ease management and protection of business critical data in network environments, from the workgroup to the department.

Sun's leadership in data protection and storage is shown in the reliability, quality, and serviceability of the entire storage solutions family for easy, nondisruptive, end-to-end infrastructure integration.

The Sun StorEdge L25 and L100 modular tape libraries are designed for backup and restore of data in corporate IT environments. These products should be considered with all proposals for servers and/or primary (disk) storage. The Sun StorEdge L125 and L100 modular libraries can be linked in a rack system, via StackLink (when available), creating a storage system that can be designed for the specific needs of the customer. These two libraries together can satisfy a wide range of backup and restore needs.

The Sun StorEdge L25 library is available with one to two LTO, DLT8000, or SDLT220 (when available) tape drives (both must be of the same type and interface). Each module has 25 LTO or 21 DLT/SDLT cartridge slots in two removable magazines, plus one fixed slot, for a native data capacity of up to 2.5 TB and a native throughput of up to 30 MB/sec. Each magazine holds 12 LTO or 10



DLT/SDLT cartridges. The Sun StorEdge L25 library should be considered when the primary data set is between 125 GB and 1 TB and the backup window for that data is from 1 to 10 hours.

At 13.5 EIU, the Sun StorEdge L100 library is one of the densest mid-range libraries in the market today. Each module can be configured with one to six¹ LTO, DLT8000, or SDLT220 tape drives (all tape drives must be the same type and interface). Each module has 100 LTO or 84 DLT/SDLT total cartridge slots in eight removable magazines plus four fixed slots. Each magazine holds 12 LTO or 10 DLT/SDLT cartridges (note that one magazine and one fixed slot are removed when adding a sixth drive, so capacity is reduced).

The Sun StorEdge L100 library offers a native data capacity of up to 10 terabytes (LTO) and a native throughput up to 90 MB/sec, (LTO, 324 GB per hour). The Sun StorEdge L100 library should be considered when the primary data set is between 1 TB and 5 TB and the backup window for that data is between one to 20 hours.

Key Messages

- **Part of a complete tape backup/restore solution:** Combined with Sun Enterprise™ or Sun Fire™ servers and backup software (such as VERITAS NetBackup or Solstice Backup™ software), the Sun StorEdge L25 and L100 tape libraries are a valuable part of a complete tape backup solution.
- **Flexibility:** The modular design allows customers to configure, buy, and add performance and capacity as data increases and protection needs change. The Sun StorEdge L25 and L100 tape libraries support either LTO, DLT8000, or SDLT220 drives. Choose LTO or SDLT for high capacity and throughput, and DLT8000 for legacy systems and for a lower pricepoint.
- **High data density:** With one of the densest products in the mid-range, customers can pack more data into a small amount of space.
- **Low cost of ownership:** The first automated tape libraries with the ability to intermix, the Sun StorEdge L25 and L100 tape libraries can mix and match with each other using the optional StackLink mechanism to scale across Sun's entire product line yielding a lower total cost of ownership.
- **Scalability:** Customers can add drive modules to increase throughputs, or add capacity with a second library module (available in a subsequent release). Modular design allows buying storage in right-sized increments with easy upgrades to capacity and performance for maximum investment protection.
- **High performance, reliability, and availability:** The Sun StorEdge L25 and L100 tape libraries feature standard redundant power supplies and remote monitoring (as a required option).
- **Ease of use and administration:** Simple administration through bulk magazines, intuitive front panels, visible, automated robotics, and lowered time to repair make these libraries less costly, as they require fewer man-hours of administrative time.
- **Excellent quality:** Sun has an extremely rigorous qualification testing and design collaboration process.
- **One-stop shopping:** Besides hardware and software, Sun offers worldwide installation (additional for the Sun StorEdge L25 library; included in the purchase price of the Sun StorEdge L100 base unit) and maintenance (via a SunSpectrumSM program contract) of the Sun StorEdge L25 and L100 tape libraries.

¹ When configured with six tape drives, each Sun StorEdge L100 module can use seven removable magazines and three fixed media slots to provide up to 87 LTO or 73 DLT/SDLT cartridge slots. When configured with one to five tape drives, each Sun StorEdge L100 module can use eight removable magazines and four fixed media slots to provide up to 100 LTO or 84 DLT/SDLT cartridge slots.



Product Availability

The Sun StorEdge L25 and L100 tape libraries are scheduled for general availability on August 6, 2002. DLT8000 and LTO drive technologies are included in this announcement, all HVD SCSI.

StackLink part numbers and SDLT220 drives are scheduled to announce within 60 days of general announcement. The StackLink mechanism connects two or more Sun StorEdge L25 and/or L100 units by enabling cartridges to be passed from a slot in one module to an available drive in another module.

Fibre connectivity for these products will not be available until Sun qualifies native Fibre Channel drives.

Key Features and Benefits

Feature	Benefit
<ul style="list-style-type: none">• Ability to intermix	<ul style="list-style-type: none">• The Sun StorEdge L25 and L100 libraries can be stacked to scale into larger systems and can be mixed in an integrated stacked system. Customer can very easily grow and size system capacity to match application requirements. Multi-module systems integrate for cost-effective management by a single host or ISV package.
<ul style="list-style-type: none">• Flexible capacity and performance	<ul style="list-style-type: none">• These systems can grow as storage requirements increase. Customers can tailor system performance to match application requirements and adjust drive to cartridge ratios to match backup window requirements.
<ul style="list-style-type: none">• True incremental scalability	<ul style="list-style-type: none">• Investment protection. Ideal for situations where it is difficult to predict future storage requirements. Add modules without taking the library offline.
<ul style="list-style-type: none">• Independent modules utilize multiple robots (when additional modules are in place)	<ul style="list-style-type: none">• High-availability through multiple systems with no single point of failure
<ul style="list-style-type: none">• Dedicated fixed media slots	<ul style="list-style-type: none">• Can be used for data cartridges to maximize capacity or configured as cleaning cartridge slots for unattended drive cleaning.
<ul style="list-style-type: none">• Full bulk access via removable magazines	<ul style="list-style-type: none">• Operator convenience that protects cartridges and data integrity. Full data availability if a module fails by swapping magazine into a working unit.
<ul style="list-style-type: none">• Smallest/most dense rack space	<ul style="list-style-type: none">• Saves valuable customer rack and data center floor space
<ul style="list-style-type: none">• Tri-axial robotics	<ul style="list-style-type: none">• Quiet, rapid cartridge swaps
<ul style="list-style-type: none">• Serviceability	<ul style="list-style-type: none">• All parts accessible front and rear (no side access required)



Target Markets/Users

The Sun StorEdge L25 and L100 tape libraries serve all horizontal and vertical markets that require a scalable backup and archive solution.

The Sun StorEdge L25 and L100 libraries are designed for companies looking for the ability to cost-effectively scale their tape backup solution as their secondary storage needs increase. The modular design allows for easy upgrades, reliable tape backup, and highly available data protection where and when it is needed. With the greatest density per cubic foot in the midrange class, the Sun StorEdge L100 library requires very little valuable data center rack space to accommodate its compact design. The Sun StorEdge L25 and L100 libraries offer all the benefits of an enterprise-class library (scalability, redundancy, density and flexibility) at a mid-range price.

Industry/Customer	Key Features to Highlight
Mid-size companies to enterprise data centers that need from 840 GB to 20 TB of native secondary storage capacity.	Modular architecture allows cost-effective growth in data environments with unpredictable growth.
High-growth businesses that may need to switch to a distributed storage architecture	Modules can be quickly redeployed from a centralized strategy to a WAN or campus topology.

Product Family Placement

Because the optimal choice of a secondary storage system depends on customer requirements and sensitivities, Sun offers a family of solutions to help customers make the best choice for their specific requirements and budgets. Sun's tape library offerings include the following (note that all capacities listed are native):

- Sun StorEdge L25 modular tape library (2.5-TB LTO, 840-GB DLT8000, 2.31-TB SDLT220)
- Sun StorEdge L100 modular tape library (10-TB LTO, 3.36-TB DLT8000, 9.24-TB SDLT220)
- Sun StorEdge L180 tape library (3.48-TB 9840, 6.96-TB DLT8000, 17.4-TB LTO or multimedia)
- Sun StorEdge L700 tape library (13.8-TB 9840, 27.6-TB DLT8000, 67.8-TB LTO or multimedia)
- Sun StorEdge L5500 tape library (120-TB 9840, 550-TB LTO)
- Sun StorEdge L6000 tape library (120-TB 9840)

Internationalization and Localization

The documentation provided with the Sun StorEdge L25 and L100 tape libraries is localized into nine languages on a CD. These are English, French, Japanese, Korean, Simplified Chinese, Traditional Chinese, Italian, German, Spanish, and Swedish. The operator control panel and printed user manual are in English only.



Selling Highlights

Market Value Proposition

The Sun StorEdge™ L25 and L100 libraries both provide extremely high scalability and flexibility in a rackmountable tape library market, offering enterprise-class features at a mid-range price. The Sun StorEdge L100 library is one of the most dense tape products available today.

These libraries allow the customer to buy storage capacity as needed, leveraging the total investment.

The high reliability and fault-tolerant components are designed to help ensure a low total cost of ownership and maximum system uptime.

Product Features

- 4U (L25) and 13.5U (L100) compact modules provide high density and conserve valuable rack space
- The ability to add drives or modules (via StackLink) as needed provides flexible capacity and performance
- System grows as storage requirements grow; StackLink (pass-through mechanism) allows a rackmounted configuration of two modules to function as an integrated, single library
- True incremental scalability (easy field expansion after initial installation)
- Leading drive technologies available — LTO, DLT8000, and SDLT220
- Native LTO capacities range from 2.5 TB (L25 single module) to 17.5 TB (L25 7-module stack) OR 10 TB (L100 single module) to 20 TB (L100 2-module stack)
- Bar code standard
- Remote management standard (required option for first module) — Alert Notification via email
- Investment protection
- Ideal for storage requirements that are difficult to predict
- Add modules while others remain online and operational
- Independent modules run utilizing multiple robots (no single-point-of-failure robotics)
- High availability through standard redundant power supplies
- Fixed media slots can be used for data cartridges to allow for maximum capacity or configured as cleaning cartridge slots to allow for unattended drive cleaning
- Full bulk access via cartridge magazines; priority-access load port with the ability to add/remove one, 10, or 12 cartridges in each magazine while library remains online and operational
- Magazines are interchangeable between Sun StorEdge L25 and L100 libraries and work in both left and right sides
- Quiet, rapid cartridge swaps
- Advanced GUI front panel reduces training and simplifies library operation



- Control of entire system from any module; no dedicated master or slave
- Hot-swappable, hot-pluggable tape drives
- Universal auto-ranging 110 to 240VAC power supply for worldwide use
- Serviceable from the front and rear without removal from rack
- One million or more mean swaps between failures (MSBF)
- Scheduled preventative maintenance is not required
- 20 minute or less mean time to repair (MTTR)

Typical Applications

- Backup for active-use databases

To help ensure capacity for multiple backups of data (daily, weekly, and monthly), tape capacity should be configured for at least three to five times the capacity of on-line storage. Typically, customers perform full backups on Saturday with incremental backups during the week.

- Archival
- Hierarchical storage management (HSM)

Ease of Use/Administration

Simple administration through bulk magazines, intuitive graphical user interface (GUI) control front panel, visible robotics, and library management features make management of the Sun StorEdge L25 and L100 libraries less costly by requiring fewer man hours of administrative time. Bulk loading allows for easy rotation of multiple generations of backup sets, practical transport and archival storage, and simplified labeling. The easy-to-read, intuitive front GUI control panel makes the libraries easy to understand, use and configure, including running diagnostic checks. Visible robotics indicate that the library is responding to instructions. Customers may avoid costly system downtime because all serviceable parts are accessible from the rear or front of the unit.



Enabling Technology

StackLink Mechanism

The StackLink is a pass-thru "elevator" mechanism that connects multiple Sun StorEdge™ L25 and/or L100 units by enabling cartridges to be passed from a slot in one module to an available drive in another module. This operation is completely transparent to the application software. The StackLink mechanism can move a cartridge from any module to any other module in less than 3 seconds (L25) or 7 seconds (L100).

The following StackLink configuration table lists how many modules of each type can be used with the appropriate StackLink model number.

Sun StorEdge L25 and L100 Library StackLink Configurations

StackLink Type	Rack Units	L25 only configurations	L100 only configurations	Mixed Configuration
StackLink2	8	2	0	Not applicable
StackLink5	20	5	0	1 L100 1 L25
StackLink7	28	7	2	1 L100 3 L25s

Unlike other elevator mechanisms, StackLink is not bolted to the back of the libraries. Instead, it sits independently in a "U" channel at the back of the library that allows modules to be removed and replaced in the rack without disturbing the operation of the StackLink itself. Therefore, all the other libraries in the stack continue to operate and can pass cartridges to other units even with library modules missing in the stack.

Visual representations of the some of the available StackLink configurations are shown below.

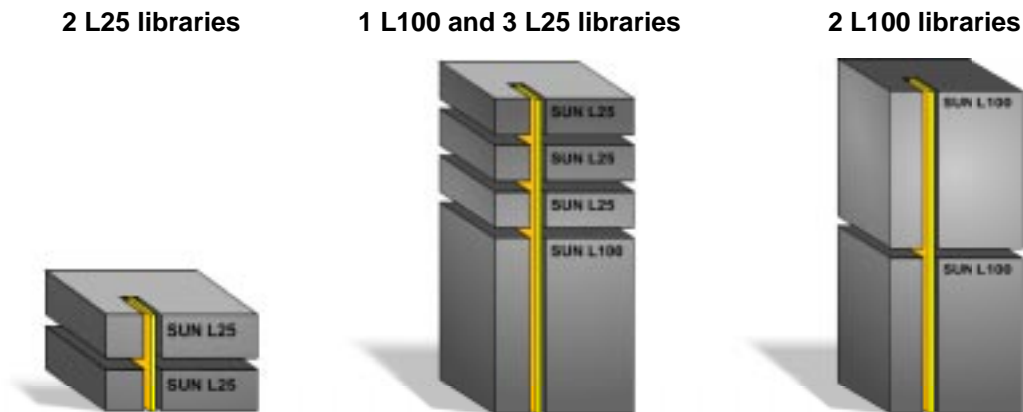


Figure 2. Example StackLink configurations

Reliability, Availability, and Serviceability (RAS)

Reliability, availability, and serviceability features for the Sun StorEdge™ L25 and L1000 tape libraries are listed in this section.

Reliability

- Mean time between failure (MTBF): 500,000 (L100) and 250,000 (L25) power-on hours
- Mean swaps between failure (MSBF): greater than 1,000,000
- Redundant power supplies

Availability

- Hot-swap tape drives and power supplies
- Stack system auto-negotiation

If the master unit in a stack fails, the next unit becomes the master, keeping the rest of the system online. Note that remote management is not available in the event of the failure of the master, unless another module contains a management card, and the unit is manually switched over to master.

Serviceability

- All field replaceable units (FRUs) can be accessed from the front or back of the module, which allows for on-site repair of the module without having to disassemble the rack system.
- 20 minute or less mean time to repair (MTTR)



Specifications

Physical Dimensions

Feature	Sun StorEdge L25 Library		Sun StorEdge L100 Library	
	US	Metric	US	Metric
Height	6.9 in.	176 mm	23.6 in.	599 mm
Width	19.0 in.	482 mm	19.0 in.	482 mm
Depth	28.6 in.	726 mm	28.6 in.	726 mm
Weight (w/o drives)	75 lb.	34 kg	210 lb.	95.3 kg

Environment

Feature	Sun StorEdge L25 Library		Sun StorEdge L100 Library	
	US	Metric	US	Metric
Power, Operating • Typical • Maximum	200 Watts 250 Watts		320 Watts 400 Watts	
Temperature • Operating • Nonoperating	+50°F to +104°F -40°F to +140°F	+10°C to +40°C -40°C to +60°C	+50°F to +104°F -40°F to +140°F	+10°C to +40°C -40°C to +60°C
Relative Humidity • Operating • Nonoperating	20% to 80% noncondensing 5% to 90% noncondensing		20% to 80% noncondensing 10% to 95% noncondensing	
Altitude • Operating • Nonoperating	-1,000 to +10,000 ft -1,000 to +36,000 ft	-300 to +3,000 meters -300 to +11,000 meters	0 to +8,000 ft 0 to +36,000 ft	0 to +2,438 meters 0 to +11,000 meters
Vibration	0.21gRMS (random) 0.25 g (5-500-5 Hz, 5 sweeps), operating axis (bottom)			
Shock	4.0 g, 11 msec. half-sine, applied in all six directions			
Noise (in accordance with ISO 9296)	7.5 Bels operating 7.0 Bels idle			



Regulations

This information applies to both the Sun StorEdge L25 and L100 libraries.

Category	Specifications
Safety	UL-1950, CSA C22.2 950, EN 60950
RFI/EMI	FCC CFR 47-15J (Level A), EN55022 (CISPR 22) Level A, EN 55024 (CISPR 24), VCCI
Agency Markings	CE, VCCI, UL, FCC, CSA

Media and Drive Specifications

Tape Drive Specifications

Feature	DLT8000	LTO SCSI	SDLT220
Capacity	40 GB native	100 GB native	110 GB native
Transfer Rate Sustained	6 MB/sec. native	15 MB/sec. native	11 MB/sec. native
Transfer Rate Peak	20 MB/sec. burst, synchronous	40 MB/sec. burst	40 MB/sec. burst
Track Format	Proprietary, linear serpentine	Proprietary, linear serpentine	Proprietary, linear serpentine
Load to BOT Time	37 seconds	<10 seconds	12 seconds
Max. Rewind Time	120 seconds	152 seconds	140 seconds
Average Access Time	60 seconds	76 seconds	70 seconds
Unload from BOT	17 seconds	3 seconds	12 seconds
Buffer Size	8 MB	64 MB	8 MB
Drive Life	50,000 hours (max. head life)	250,000 hours @ 100% duty cycle	50,000 hours (max. head life)

Tape Cartridge (Media) Specifications

Feature	DLTtape IV	LTO Ultrium	Super DLTtape I
Archival Life	30 years with less than 5% demagnetization loss	30 years with less than 5% demagnetization loss	30 years with less than 5% demagnetization loss
Media Life	1,000,000 write/read passes	25,000 write/read passes	1,000,000 write/read passes
Media Operating Temperature	10° C to 40° C (max. gradient: 10 degrees C/hr)	10° C to 45° C (max. Gradient: 11° C/Hr)	10° C to 40° C (max. gradient: 10 degrees C/hr)
Media Operating Relative Humidity	20% to 80% (max. Gradient: 10%/Hr)	20% to 80% (max. Gradient: 10%/Hr)	20% to 80% (max. Gradient: 10%/Hr)
Media Operating Maximum Wet Bulb Temp.	26°C	26°C	25°C



Feature	DLTtape IV	LTO Ultrium	Super DLTtape I
Uncorrected Bit Error Rate	1 x 10 ¹⁷ bits read	< 1 in 10 ¹⁷ bits	1 x 10 ¹⁷ bits read
Loads/Unloads	15,000 minimum	300,000 (no thread)	15,000 minimum



System Compatibility

Operating Environment Support

- Solaris™ 2.6, 7, 8, and 9 Operating Environment
- Patch information:
 - Solaris 2.6 = 105847-13
 - Solaris 7 = 107460-12
 - Solaris 8 = 108725-09
 - Solaris 9 = no patches necessary at this time

Software Compatibility

- VERITAS NetBackup 3.4 or later, with patches
- Solstice Backup™ 6.1 software or later, with patches

Hardware Compatibility

The following table lists maximum drives supported for each platform, plus HBA information for the Sun StorEdge™ L25 and L100 libraries.

Platform	HVD SCSI HBA Support	Max. DLT8000 SCSI	Max. LTO SCSI
Sun Fire™ 15000 server	X6541A	270	112
Sun Fire 12000 server	X6541A	96	36
Sun Enterprise™ 10000 server	X1065A	96	36
Sun Fire 6800 server	X6541A, X6749A	92	46
Sun Fire 4800/4810 servers	X6541A, X6749A	60	30
Sun Fire 3800 server	X6749A	44	22
Sun Enterprise 6500 server	X1065A, X6541A	64	40
Sun Enterprise 5500/4500 servers	X1065A, X6541A	32	18
Sun Enterprise 3500 server	X1065A, X6541A	16	10
Sun Fire V880 server	X6541A	48	20
Sun Enterprise 450 server	X6541A	24	16
Sun Enterprise 250 server	X6541A	12	8
Sun Enterprise 220R/420R servers	X6541A	12	6
Sun Fire 280R/V480 servers	X6541A	12	8
Sun Blade™ 1000/2000 workstations	X6541A	12	8
Ultra™ 60/80 workstations	X6541A	12	6



User Interfaces

Management Card

The Sun StorEdge L25 and L100 libraries can be remotely managed via a management card (noted in manuals as the MC300). The management card consists of two powerful tools: ALERT Notification and ALERT Library Management.

ALERT Notification signals the user of any error conditions within the library (or the entire stack) through email.

ALERT Library Management allows remote access to the status of the library and components, such as tape drives or robotics, allowing the user to quickly react to issues and administer a resolution. One management card is required for each library (or group of libraries). A single card has the ability to provide status of any of the libraries within the stack where it resides.

- **ALERT Notification provides:**

- Email status of library events to one or more specified email addresses, to provide proactive response to library events

- **ALERT Library Management allows:**

- Viewing of library availability
- Examining the status of library components such as drives and robotics
- Moving tapes to/from slots, drives or load port
- Monitoring barcodes of tape cartridges (inventory of library)
- Initiating drive cleaning
- Running diagnostics

Two of the important library management features are described below in more detail.

Remote Front Panel

ALERT Library Management provides a menu-driven remote interface that includes nearly all the functions available on the front panel of the library itself. From a remote browser anywhere in the world, the system administrator can check the status of the library, reconfigure the library, move tapes to and from drives and to the load ports, and initiate drive cleaning and system tests. The graphical representation of the slots and drives in the library shows the location of all tape media, including the barcode labels. Performing operations such as unloading tapes via the load port by initially moving tape cartridges from the slots via the browser is a convenient management technique that saves time and money. For example, the tapes can be ready in the load port when the operator goes to the library to retrieve them.

Component-Level Diagnostics

ALERT Library Management allows the system administrator to check the status of the most critical library component — the tape drives. If the E-Mail Home system signals an error condition at the library, the administrator can check the status of individual subsystems in the library, or can insert a tape in the drive that is showing the error. The ability to remotely perform diagnostics can help eliminate the need for the administrator to go to the data center if an error condition arises, saving valuable time.



Software Compatibility

The Sun StorEdge L25 and L100 tape libraries are supported by VERITAS NetBackup, Solstice Backup software, and many other storage management software applications. Refer to the SunSolve web site at <http://sunsolve.sun.com> for the appropriate patches.

These libraries are supported on leading database applications:

- Informix
- Lotus Notes on Microsoft Windows NT
- Lotus Notes on SPARC™ systems
- MS Exchange
- MS SQL Server
- Oracle
- Oracle on Microsoft Windows NT
- SAP
- Sybase

Software Commands

VERITAS NetBackup and Solstice Backup storage management applications have their own documentation, which helps users get set up and running with tape automation products such as the Sun StorEdge L25 and/or L100 tape libraries.

Controller

If the library controller fails, the library is considered non-functional. Since the robotics controller communicates with the robot and all functional controls and calibration values are held on that board, the library is "dead" (even in a manual mode) if a failure occurs with the library controller. This has no impact on the data stored on the tapes in the library, and the tapes are accessible via bulk magazine unload.

Racks

The Sun StorEdge L25 and L100 tape libraries fit into and is supported in the standard 72-inch Sun storage rack. The Sun StorEdge L25 library is 4U, and the Sun StorEdge L100 library is 13.5U.

Tape Drive Cleaning

Cleaning cartridges can be put into any open slot in the library. Once the library performs an inventory, it identifies to the application software where the cartridge is for accessibility. The Sun StorEdge L25 and L100 tape libraries do not have auto-clean features. It is up to the ISV to initiate a cleaning requirement. When the drive requires cleaning, it sends a "cleaning required" message to the host.

Note: A bad tape may trigger a cleaning request message. However, this does not mean the head needs cleaning, since the next good tape loaded resets the cleaning request message. If the tape cleaning message keeps appearing, the drive needs to be cleaned.



Ordering Information

Follow the steps described in the two flow charts below to order a Sun StorEdge™ L25 or L100 tape library. Due to outsourcing of service to ATL on both the Sun StorEdgeL25 and L100 libraries, a service notification process must be followed prior to order shipments. This process is also used to initiate installation for the Sun StorEdge L100 library.

Sun StorEdge L25 Library Ordering Flow Chart

Step Number	Marketing Part No.	Req./Optional
1. Order library chassis (rackmount): <ul style="list-style-type: none"> – Choose either LTO or DLT/SDLT version. – See note below; service notification required. 	Order one of the following: SG-XLIBL25L-BASE (LTO) <i>or</i> SG-XLIBL25D-BASE (DLT8000 or SDLT)	Required
2. Order cosmetic cover/casters, if wanting a desktop unit.	SG-XLIBCOV-L25	Optional
3. Order management card. Note: Card is required option in first module. In purchasing subsequent modules, it is optional.	SG-XMGMTCARD-MOD	Required
4. Order type and number of drives required: LTO, SDLT, or DLT8000. Drive types cannot be mixed. <ul style="list-style-type: none"> – Maximum two drives per library enclosure 	SG-XTAPLTO-MOD (LTO) <i>or</i> SG-XTAPDLT8-MOD (DLT8000) <i>or</i> SG-XTAPSDLT2-MOD (SDLT220)	Required (at least one)
5. Order required number of host bus adapters. <ul style="list-style-type: none"> – See matrixes under Hardware Compatibility. 	X6541A (SCSI-PCI-based) <i>or</i> X1065A (SCSI-SBus-based) <i>or</i> X6749A (SCSI-cPCI-based)	Required
6. Order StackLink, if adding additional modules AND additional library chassis, same base unit and drive types only.	SG-XSTACK2-MOD (connecting 1 L25) and appropriate base model) <i>or</i> SG-XSTACK5-MOD (connecting up to 5 L25s and appropriate base models) <i>or</i> SG-XSTACK7-MOD (connecting 1 L100 and 2-3 additional L25s and appropriate base models)	Optional
7. Order additional magazines as appropriate.	SG-XMAGLTO-MOD (LTO) <i>or</i> SG-XMAGDLT-MOD (DLT8000 or SDLT)	Optional



Step Number	Marketing Part No.	Req./Optional
8. Order data cartridges/media as appropriate. Media is sold in packs of 10.	SG-XMEDLTO100GB-10 (LTO) <i>or</i> SG-XMEDDLTCIV-10 (DLT8000) <i>or</i> SG-XMEDSDLT220-10 (SDLT)	Optional
9. Order additional cleaning cartridges as appropriate. Cleaning cartridges are sold in packs of 10.	SG-XMEDLTOUNVCL-10 (LTO) <i>or</i> SG-XMEDDLTCL-10 (DLT8000) <i>or</i> SG-XMEDSDLTCL-10 (SDLT)	Optional
10. Order backup/restore application of choice: – Solstice Backup™ software – VERITAS NetBackup software		Optional
11. Order extra SCSI cable as needed.	X979A	Optional
12. Order Sun Professional Engagement Tape Library Implementation Service.	PS-EO-DSTLI-1	Optional

Sun StorEdge L100 Library Ordering Flow Chart

Step Number	Marketing Part No.	Req./Optional
1. Order library chassis (rackmount): – Choose either LTO or DLT/SDLT version. – See note below; service notification required.	Order one of the following: SG-XLIBL100L-BASE (LTO) <i>or</i> SG-XLIBL100D-BASE (DLT8000 or SDLT)	Required
2. Order cosmetic cover/casters, if wanting a deskside unit.	SG-XLIBCOV-L100	Optional
3. Order management card. Note: card is required option in first module. In purchasing subsequent modules, it is optional.	SG-XMGMTCARD-MOD	Required
4. Order type and number of drives required: LTO, SDLT, or DLT8000. Drive types cannot be mixed. – Maximum 6 drives per library enclosure (note: adding a sixth drive reduces cartridge capacity)	SG-XTAPLTO-MOD (LTO) <i>or</i> SG-XTAPSDLT2-MOD (SDLT220) <i>or</i> SG-XTAPDLT8-MOD (DLT8000)	Required (at least one)
5. Order required number of host bus adapters. – See matrixes under Hardware Compatibility	X6541A (SCSI-PCI-based) <i>or</i> X1065A (SCSI-SBus-based) <i>or</i> X6749A (SCSI-cPCI-based)	Required



Step Number	Marketing Part No.	Req./Optional
6. Order StackLink, if adding a second module AND additional library chassis - same base unit and drive types only.	SG-XSTACK5-MOD (connecting 1 L25 and appropriate base model) <i>or</i> SG-XSTACK7-MOD (connecting second L100 or 1 to 3 L25s and appropriate base models)	Optional
7. Order additional magazines as appropriate.	SG-XMAGLTO-MOD (LTO) <i>or</i> SG-XMAGDLT-MOD (DLT8000 or SDLT)	Optional
8. Order data cartridges/media as appropriate. Media is sold in packs of 10.	SG-XMEDLTO100GB-10 (LTO) <i>or</i> SG-XMEDDLTCIV-10 (DLT8000) <i>or</i> SG-XMEDSDLT220-10 (SDLT)	Optional
9. Order additional cleaning cartridges as appropriate. Cleaning cartridges are sold in packs of 10.	SG-XMEDLTOUNVCL-10 (LTO) <i>or</i> SG-XMEDDLTCL-10 (DLT8000) <i>or</i> SG-XMEDSDLTCL-10 (SDLT)	Optional
10. Order backup/restore application of choice: – Solstice Backup software – VERITAS NetBackup software		Optional
11. Order extra SCSI cable as needed.	X979A	Optional
12. Order Sun Professional Engagement Tape Library Implementation Service.	PS-EO-DSTLI-1	Optional
NOTE: Service Notification (SCOPETOOL) is required.		
Installation is included in the price of the Sun StorEdge L100 library, but it requires a service notification. This is done through SCOPETOOL at http://scope.central or RSCOPETOOL for resellers. The salesperson or SE enters the customer information including customer name, installation address, phone number, and contact name. The Oracle sales order number is also required in order to submit a request for installation.		

What Ships with Each Product

Sun StorEdge L25 library base units ship with the following items.

Item	Quantity
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library Installation Guide	1
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library User's Guide	1
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library User's Guide CD ROM	1
Sun StorEdge L25 Tape Library Regulatory Statements	1
Unpack Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library Unpacking Instructions	1
Standard power cord	1



Item	Quantity
Set of 99 DLT data cartridge barcode labels and set of 33 DLT cleaning cartridge barcode labels (DLT/SDLT version only) <i>OR</i> Set of 220 LTO data cartridge barcode labels and set of 33 LTO cleaning cartridge labels, 8 character (LTO version only)	1 set, depending upon drive type

Sun StorEdge L100 library base units ship with the following items.

Item	Quantity
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library Installation Guide	1
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library User's Guide	1
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library User's Guide CD ROM	1
Sun StorEdge L25 Tape Library Regulatory Statements	1
Unpack Sun StorEdge L100 Tape Library Unpacking Instructions	1
Standard power cord	1
Set of 99 DLT data cartridge barcode labels and set of 33 DLT cleaning cartridge barcode labels (DLT/SDLT version only) <i>OR</i> Set of 220 LTO data cartridge barcode labels and set of 33 LTO cleaning cartridge labels, 8 character (LTO version only)	1 set each (data and cleaning), depending upon drive type
2.44-meter power cord - NEMA5-15	1
0.5-meter power cord jumpers	1

Drives ship with the following items.

Item	Quantity
LTO, DLT8000, or SDLT220 drive	1
Drive Installation Guide	1
HVD Drive Terminator	1
SCSI jumper cable	1
Drive filler plates	2

Management cards (referenced in manuals as MC300) ship with the following items.

Item	Quantity
Management card (required option for first module)	1
Sun StorEdge L25 Tape Library and Sun StorEdge L100 Tape Library User's Guide CD ROM	1
Contents List, MC300	1
Sun Prod Release Notes, MC300 V4.1.0	1
MC300 Quick Reference Guide	1
Cable, RS232 crossover	1



Optional library enclosures ship with the following items.

Item	Quantity
Sun StorEdge L25 or L100 enclosures, plus feet (L25) or casters (L100)	1
Installation Instructions	1

Ordering Bar Code Labels

Order additional bar code labels through Quantum. Contact Sharyn Harrist (Sales Administration Specialist) at 949-725-1877.

Upgrades

Upgrade Paths

Sun strongly encourages upgrades from previous generations of Sun StorEdge™ tape libraries to the current library line. This section provides product comparisons and TCO analyses for the Sun StorEdge L25, L1000, and L1800 libraries, and the Sun StorEdge L100 and L3500 libraries.

Product Comparison: Sun StorEdge L25, L1000, and L1800 Libraries

Feature	Sun StorEdge L25 Single Module	Sun StorEdge L25 Seven-Stack	Sun StorEdge L1000	Sun StorEdge L1800
Media Type	DLT8000, SDLT220, LTO Ultrium	DLT8000, SDLT220, LTO Ultrium	DLT7000, DLT8000	DLT7000
Media Bias	The L25 offers the customer multiple media choices: DLTtape and LTO Ultrium	The L25 offers the customer multiple media choices: DLTtape and LTO Ultrium	The L1000 is limited in media choices, only offering DLT7000 and DLT8000	The L1800 is limited in media choices, offering only DLT7000
Possible Configurations	21 DLT or 25 LTO	147 DLT or 175 LTO slots	30 DLT slots DLT7000 or DLT8000 drives only	52 DLT slots DLT7000 drives only
Maximum Number of Drives	2	14	4	4
Maximum Number of Slots	21 DLT8000/SDLT220, or 25 LTO Ultrium	147 DLT8000/SDLT220, or 175 LTO Ultrium	30	52
Maximum Capacity (Native)	840 GB DLT8000 2.31 TB SDLT220 2.50 TB LTO Ultrium	5.88 TB DLT8000 16.1 TB SDLT220 17.5 TB LTO Ultrium	1.05 TB DLT7000 1.20 TB DLT8000	1.89 TB DLT7000
Maximum Performance (Native)	12 MB/sec. DLT8000 22 MB/sec. SDLT220 30 MB/sec. LTO Ultrium w/ 2 drives	84 MB/sec. DLT8000 154 MB/sec. SDLT220 210 MB/sec. LTO Ultrium w/14 drives	20 MB/sec. DLT7000 24 MB/sec. DLT8000 w/4 drives	20 MB/ DLT7000 w/4 drives
Scalable	Yes, Up to seven L25s (can also mix and match with L100 units)	Seven stacked ATL L25s	No scalability beyond one unit	No scalability beyond one unit
Scalability Assessment	Additional modules can be added while rest of library remains online	A seven-stack has already been scaled to maximum capacity	No scalability beyond one unit	No scalability beyond one unit
Dedicated Media Slots	Yes, 2 (can be used for cleaning policies or capacity requirements)	Yes, 14 (can be used for cleaning policies or capacity requirements)	No	No



Feature	Sun StorEdge L25 Single Module	Sun StorEdge L25 Seven-Stack	Sun StorEdge L1000	Sun StorEdge L1800
Online Load Port	Yes, 10 DLT or 12 LTO cartridges, online exchange w/ removable magazine	Yes, 7 DLT or 12 LTO cartridges, online exchange w/ removable magazine	Yes, however, single-cartridge mail slot only (DLT7000 and DLT8000 only)	Yes, four (however limited to DLT7000 only)
Bulk Removable Cartridges	20 DLT or 24 LTO	140 DLT or 168 LTO	16 DLT only	No
Barcode Reader	Yes	Yes	Yes	Yes
Redundant Components	Power supplies	Robotics, power supplies	No, if robot goes down, entire library is offline	No, if robot goes down, entire library is offline
Hot-Swap, Hot-Plug Drives	Yes	Yes	Yes	No
PCI for Expanded Functionality	Yes	Yes	Yes	No
Interfaces	SCSI, FC	SCSI, FC	SCSI, FC	SCSI, no FC
Fibre Channel Approach ²	Will use native Fibre Channel drives	Will use native Fibre Channel drives	Not available	Not available
Remote Monitoring via E-mail	Yes, Alert Notification	Yes, Alert Notification	No	No
Remote Management/Operation via Web Browser	Yes, Alert Library Management	Yes, Alert Library Management	No	No
Operator Interface	Intuitive GUI control panel	Intuitive GUI control panel	Touch screen GUI	Buttons and basic LCD
MSBF (exchanges)	>1,000,000	>1,000,000	2,000,000	2,000,000
MTBF (hours)	500,000	500,000	250,000	170,000
MTTR	< 20 minutes. Rest of library remains functional, including StackLink, during replacement of failed module	< 20 minutes per module. Rest of library remains functional, including StackLink, during replacement of failed module	30 minutes	30 minutes
Dimensions (W x H x D)	19 x 6.9 x 28.6 inches Rackmount	19 x 48.3 x 28.6 inches Rackmount	17.5 x 18 x 28 inches Rackmount	23 x 56 x 36 inches Note: Does not fit in rack
Vertical Space in Rack	4U	28U	10.U	N/A
Cartridge Density (per 1U rack space) ³	6	6	N/A	N/A

² Fibre Channel drives are planned for a subsequent release of the Sun StorEdge L25 and L100 libraries.

³ Based on LTO Ultrium and maximum slot count.



Product Comparison: Sun StorEdge L100 and L3500 Libraries

Feature	Sun StorEdge L100 Single Module	Sun StorEdge L100 Two-Stack	Sun StorEdge L3500
Media Type	DLT8000, SDLT220, LTO Ultrium	DLT8000, SDLT220, LTO Ultrium	DLT7000
Media Bias	DLTtape and LTO Ultrium	DLTtape and LTO Ultrium	DLT7000 only
Possible Configurations	84 DLT or 100 LTO slots with 5 drives 73 DLT or 87 LTO slots with 6 drives	168 DLT or 200 LTO slots with 10 drives 146 DLT or 174 LTO slots with 12 drives	100 slots DLT7000 only
Maximum Number of Drives	6	12	7
Maximum Number of Slots	84 DLT8000/SDLT220, or 100 LTO Ultrium	168 DLT8000/SDLT220, or 200 LTO Ultrium	100 DLT7000
Maximum Capacity (Native)	3.36 TB DLT8000 9.24 TB SDLT220 10.0 TB LTO Ultrium	6.72 TB DLT8000 18.5 TB SDLT220 20.0 TB LTO Ultrium	3.5 TB DLT7000
Maximum Performance (Native)	36 MB/sec. DLT8000 66 MB/sec. SDLT220 90 MB/sec. LTO Ultrium w/ 6 drives	72 MB/sec. DLT8000 132 MB/sec. SDLT220 180 MB/sec. LTO Ultrium w/12 drives	35 MB/sec. DLT7000 w/7 drives
Scalable	Yes, up to two L100s (can also mix and match with L25 units)	Two stacked L100s maximum	No additional units can be linked.
Scalability Assessment	Additional modules can be added while rest of library remains online	A two-stack has already been scaled to maximum capacity	No scalability beyond one unit.
Dedicated Media Slots	Yes, 4 (Can be used for cleaning policies or capacity requirements).	Yes, 8 (Can be used for cleaning policies or capacity requirements).	No
Online Load Port	Yes, 10 DLT or 12 LTO cartridges, online exchange w/ removable magazine	Yes, two 10 DLT or 12 LTO cartridge, online exchange w/ removable magazine	Yes, four (however limited to DLT7000 only).
Bulk Removable Cartridges	80 DLT or 96 LTO	160 DLT or 192 LTO	No
Barcode Reader	Yes	Yes	Yes
Redundant Components	Power supplies	Robotics, power supplies	No, if robot goes down, entire library is offline
Hot-Swap, Hot-Plug Drives	Yes	Yes	No
PCI for Expanded Functionality	Yes	Yes	No
Interfaces	SCSI, FC	SCSI, FC	SCSI, No FC
Fibre Channel Approach ⁴	Will use native Fibre Channel drives	Will use native Fibre Channel drives	No Fibre Channel offered
Remote Monitoring via E-mail	Yes, Alert Notification	Yes, Alert Notification	No

⁴ Fibre Channel drives are planned for a subsequent release of the Sun StorEdge L25 and L100 libraries.



Feature	Sun StorEdge L100 Single Module	Sun StorEdge L100 Two-Stack	Sun StorEdge L3500
Remote Management/Operation via Web Browser	Yes, Alert Library Management	Yes, Alert Library Management	No
Operator Interface	Intuitive GUI control panel	Intuitive GUI control panel	Buttons and basic LCD
MSBF (exchanges)	>1,000,000	>1,000,000	2,000,000
MTBF (hours)	500,000	500,000	134,000
MTTR	< 20 minutes. Rest of library remains functional, including StackLink, during replacement of failed module	< 20 minutes per module. Rest of library remains functional, including StackLink, during replacement of failed module	30 minutes
Dimensions (W x H x D)	19 x 23.6 x 28.6 inches Rackmount	19 x 47.2 x 28.6 inches Rackmount	23 x 56 x 36 inches Note: Does not fit in rack
Vertical Space in Rack	13.5U	27U	N/A, does not fit in a rack
Cartridge Density (per 1U rack space)	7.4	7.4	N/A, does not fit in a rack

Total Cost of Ownership (TCO)

The sophisticated customer realizes that the acquisition cost is only part of the true price of the product. The price of the on-going service, support, and infrastructure can be several times greater than the initial cost

The tangible costs can be easily measured and calculated for these libraries and are shown in the next chart. However, there are many intangible costs that greatly increase the impact on the organization.

The library reliability and management features can either enhance or diminish the productivity of the entire company.

If IT professionals are wasting time on problems with a low-reliability, low-availability product, their productivity (or lack thereof) is felt by the entire business. The primary job of the IT person is to ensure top network performance: e-mail running, databases online and secure, and general system health. If those issues are sidelined because of the library, the productivity of the entire company is at risk if a mission-critical function becomes unavailable.

This is why all aspects of the Sun StorEdge L100 and L25 systems have been designed and manufactured to ensure that the operating costs provide the best advantage to the customer.

TCO: Sun StorEdge L100 and L3500 Library Comparison

The Sun StorEdge L100 library offers the lowest TCO over a three-year period when compared to the Sun StorEdge L3500 library. Below is the TCO comparing these two systems, based on comparable library configurations⁵ and illustrating the fact that TCO is 76 percent lower than the Sun StorEdge L3500 library. Additionally, the Sun StorEdge L3500 library does not offer LTO Ultrium tape drives and even in the same configuration, has 6.5TB less capacity than the Sun StorEdge L100 library.

⁵ Sun StorEdge L100 library based on two LTO tape drives running eight hours per day, six days per week in a metropolitan area with an average rack unit of \$1.20/1U/month and \$0.20/KWh. Sun StorEdge L3500 library based on two DLT7000 tape drives running eight hours per day, six days per week in a metropolitan area with an average \$5/sq.ft/month.



In the table below, the figures for the Sun StorEdge L100 library are based on LTO Ultrium and maximum slot count, and the figures for the Sun StorEdge L3500 library are based on DLT7000 and maximum slot count. All prices are in US dollars and are subject to change.

Feature	L100 2/100	L3500 2/100
List Price	\$46,475	\$70,000
Installation	\$1,200	\$900
24x7 Service ⁶	\$16,524	\$22,032
Rack/Floor Space Requirement	\$1,600.00	\$920
Power	\$300	\$570
Cooling	\$429	\$814
Total Cost	\$66,828	\$95,236
Cost/TB	\$6,683	\$27,210
Cost/TB Comparison	L100 Advantage: 76% LESS	76% MORE

TCO: Sun StorEdge L25, L1000, and L1800 Library Comparison

Below is a TCO analysis comparing the Sun StorEdge L25 library to the Sun StorEdge L1000 and L1800 systems, based on comparable library configurations⁷ and illustrating the fact that TCO is between 69 to 72 percent lower than the Sun StorEdge L1000 and L1800 libraries. Additionally, the Sun StorEdge L1000 and L1800 libraries do not offer LTO Ultrium tape drives and even in similar configurations, have significantly less capacity than the Sun StorEdge L25 library.

In the table below, the figures for the Sun StorEdge L25 library are based on LTO Ultrium and maximum slot count, and the figures for the Sun StorEdge L1000 and L1800 libraries are based on DLT7000 and maximum slot count. All prices are in US dollars and are subject to change.

Feature	L25 2/25	L1000 2/30	L1800 2/52
List Price	\$28,475	\$35,200	\$48,000
Installation	\$450	\$900	\$900
24x7 Service ⁸	\$8,244	\$23,400	\$36,000
Rack Space	\$473	\$620	\$920
Power	\$300	\$428	\$263
Cooling	\$429	\$407	\$250
Total Cost	\$38,378	\$60,955	\$86,333
Cost/TB	\$15,351	\$55,414	\$47,963
Cost/TB Comparison	L25 Advantage: 69 to 72% LESS	72% MORE	69% MORE

⁶ Annual service contract for a three-year subscription and 24x7x4 response.

⁷ Sun StorEdge L25 library based on two LTO tape drives running eight hours per day, six days per week in a metropolitan area with an average rack unit of \$1.20/1U/month and \$0.20/KWh. Sun StorEdge L1000 and L1800 libraries based on two DLT7000 tape drives running eight hours per day, six days per week in a metropolitan area with an average \$5/sq.ft/month.

⁸ Annual service contract for a three-year subscription and 24x7x4 response.



Service and Support

Support Programs

The SunSpectrumSM program is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs, ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. The SunSpectrum program provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the SolarisTM Operating Environment software, and telephone support for SunTM software packages. Customers should check with their local Sun Enterprise Services representatives for program and feature availability in their areas.

SunSpectrum program support contracts are available both during and after the warranty program. Customers may choose to uplift the service and support agreement to meet their business needs by purchasing a SunSpectrum contract. For more information on the SunSpectrum program offerings refer to the following URL: <http://www.sun.com/service/support/sunspectrum/index.html>

The three levels of SunSpectrum support contracts available for the Sun StorEdge L25 and L100 libraries are outlined below.

Program	Description
Mission-Critical SunSpectrum PlatinumSM Support	Designed to support client-server, mission critical solutions by focusing on failure prevention, rapid recovery and year round technical services planning. Support is provided 24 x 7.
Business-Critical SunSpectrum GoldSM Support	Includes a complete package of proactive and responsive services for customers who require maximum uptime for their strategic business-critical systems. Support is provided 24 x 7.
System Coverage SunSpectrum SilverSM Support	Combines the service expertise, responsive on-site support and technical support by telephone and SunSolve TM CD/on-line services. Support is provided 8 a.m. to 8 p.m. Mon. through Fri.

Warranty

The standard warranty for the Sun StorEdgeTM L25 and L100 tape libraries are one year, next business day on-site. Visit the warranty website at: <http://www.sun.com/service/support/warranty/> for more information on Sun hardware warranties.

Bundled Installation — Sun StorEdge L100 Library Only

Installation services are included with the Sun StorEdge L100 base library sale. Installation is coordinated as part of the overall Service Notification Process. All installations must be performed by Quantum-SSG or a Quantum-SSG authorized service provider. Details of this process are located at the following URLs:

<http://service.central/ACES/> and <http://scope.central>



Service Notification Process

Due to the nature of the install, and the outsourcing of support to Quantum-SSG, the Sun StorEdge L100 tape library must follow a Service Notification process prior to order shipment. Information regarding this process can be found at the following URL:

<http://gsops.central/sdeskproc/>

As support is outsourced to Quantum-SSG, it is also critical to verify supportability prior to sale. The worldwide supportability matrix is located at the above mention website.

Education

A new product training module is available at GA date. This Web-based, self-paced training course is available anytime and anywhere to Sales Reps, SEs, and Channel Partners worldwide at the following URLs.

- **From the MySales Portal (<http://mysales.central/>)**
 1. Go to the "Training - Product & Programs" section
 2. Click "Sun Product Training Home Page"
 3. Log in (New users complete the "new account" registration page.)
 4. Click "New Products" (New users may want to start at the beginning by clicking on "Product Training.")

- **From the Partner Portal (<http://channel.sun.com/>)**
 1. Go to "Training" tab at the top of the page
 2. Click "Sun Competency"
 3. Click "Sun Competency Partner Web-Based Training"
 4. Log in (New users complete the "new account" registration page.)
 5. Click "New Products"

Sun Professional Service

Sun Professional Service Engagement offers a range of Tape Library Implementation Services, which, when combined, deliver a working Sun StorEdge L25 and/or L100 tape library backup system. Generally speaking, they integrate the hardware and software components together. This provides customers with a platform that can be used to develop and implement their production backup and restore policies. The Sun Professional Service Engagement Tape Library Implementation Services available include:

- Sun StorEdge L25, L100 Tape Library Implementation
- VERITAS NetBackup Implementation
- Solstice Backup Implementation
- VERITAS NetBackup/Solstice Backup Oracle HotBackup Implementation



The services, when combined, address the following customer needs:

- Functional testing of the tape library
- Configuration of either VERITAS NetBackup or Solstice Backup™ software with the backup server system and tape library
- Configuration of Oracle HotBackup software for either VERITAS NetBackup or Solstice Backup
- Functional testing of the backup server with an existing client system using single files of UFS for backup and restores.

The customer deliverables are:

- Tape library tested and functional in a production environment
- Full configuration documentation

Hardware installation is not covered under the Sun Professional Service Engagement Tape Implementation Services. The hardware must be installed prior to this service being performed. Sun Professional Service Engagement Tape Library Implementation Services cover configuration of the tape library, installation and configuration of VERITAS NetBackup or Solstice Backup software and the installation and configuration of Oracle HotBackup for either VERITAS NetBackup or Solstice Backup. Only Oracle backup is addressed by the Sun Professional Service Engagement Tape Implementation Services. Other database offerings can be provided as a separate quote by Sun Professional Service Engagement Services, however.

These services, when combined, provide a basic functional, tested backup and restore platform, but does not develop any policies, procedures, nor is the backup and restore platform ready for full production. Additional service needs that customers may have can be discussed with the Sun Enterprise Support Service Sales Representative.

More information about the Sun Professional Service Engagement Tape Library Implementation Services can be found on the Sun Professional Service Engagement Services web site. Go to the URL:

http://sunps.central/Services/storage/tape_library/index.html

A Statement of Work must be completed and approved by the customer and included with the Sales Quote. This ensures a successful Sun Professional Engagement Tape Library Implementation Service for the customer. The Statement of Work details what activities are performed by Sun Professional Service Engagement Services, the responsibilities of the customer, as well as specific terms and conditions of the service. Contact the local Sun Enterprise Support Service Sales Representative as early in the sales cycle as possible to complete this SOW and to help ensure the included Sun Professional Service Engagement Services can meet customers' needs.



Glossary

Actuators	Robotic components that move inside the library to manipulate cartridges. These include the gripper, extension axis, and vertical and horizontal axes.
Archive	The process of moving data from one medium to another where it is stored for later use.
Autoloader	A peripheral device that contains <ul style="list-style-type: none">• A mechanism for moving cartridges sequentially or under program control• Several storage locations for storage media• One drive capable of reading or writing the media• Interface circuitry When commanded by a host system, autochangers can transport media back and forth between storage locations and the drive residing in the autoloader.
Automatic tape library	A robotic storage and retrieval system for digital linear tape cartridges.
Backup	The process of copying data to a secondary medium for protection in the event that the original copy is lost and needs to be recovered.
Bar code label	The identification label on digital linear tape cartridges.
Bin	A storage receptacle for a tape cartridge.
Compression	A procedure in which data is transformed by the removal of redundant information in order to reduce the number of bits required to represent the data.
Control panel	The panel on the front of the library that contains the Status Display Area, as well as the indicators and control button.
cPCI	The "c" in cPCI stands for compact. PCI connectors on board-level devices can use compact PCI (cPCI) connectors.
Differential	<i>See</i> Single-ended.
DLT	Digital linear tape. Linear tape recording technology (contrasted with helical scan). Digital linear tape technology segments tape media into parallel, horizontal tracks, and records data by running the tape past a stationary head. digital linear tape provides higher performance than helical scan technology.
Fibre Channel	A very high-speed, full-duplex data communications scheme that is optimized to carry large blocks of data, with very low latency (10 to 30 msec.) for both channel-type and LAN-type connections.
Host	The host computer system acting as controller for the drive.
Host adapter	A device that connects a peripheral device I/O protocol and medium to the computer system's I/O bus.
Host computer	The computer that issues SCSI commands to control the library robotics.



HSM	Hierarchical storage management. A method for keeping infrequently used data in secondary storage, then restoring it automatically when a user calls for the data. The underlying premise behind HSM is that if the most frequently used data is kept in the fastest (primary) storage, most of the time users perceive the overall system performance as if all the data were in fast storage. HSM software transparently "migrates" least frequently used data to more economical media, then restores it automatically as needed. HSM systems can provide users with performance and economy without sacrificing application portability or storage system transparency.
IOPS	Input/output operations per second, a measure of I/O performance usually used to quote random I/O performance.
LCD	Liquid crystal display.
Load	The process in which a drive takes in an inserted cartridge and goes online.
Load port	The operator-accessible component of the library that allows cartridges to be import/export loaded and unloaded into/from the library.
Magazine	A holder for tape cartridges used in robotic handling of media.
MCBF	Mean cycles between failure. An activity-dependent measure of reliability for a robotic cartridge handling system.
MSBF	Mean swaps between failure. A measure of reliability for the robotic cartridge handling system, this is the average expected number of full cartridge exchanges (i.e., the cartridge is unloaded from the digital linear tape drive and placed back into its storage slot, and a new cartridge is removed from its storage slot and loaded into the tape drive) between failures of equipment.
MTBF	Mean time between failure. The average expected time between failures of equipment, usually measured in operating hours.
MTTR	Mean time to repair.
Offline	A drive is offline if a tape is currently unloaded or not in the drive. The host has limited access, and cannot perform any commands that would cause tape motion. The host can, however, load a tape if one is inserted and can execute any diagnostic tests that do not require tape motion.
Online	A drive is online when a tape is loaded. The host has access to all command operations, including those that access the tape, set configurations and run diagnostic tests.
PCI	Peripheral component interconnect. PCI is an industry standard bus used in servers, workstations, and PCs.
Pick	Preparation for placing cartridge in another location.
Rear panel	The rear cosmetic panel of the library that contains the AC power switch, AC power receptacle and connectors for attaching external cabling to the library.
Robotics	The library robotics consist of the following components: gripper mechanism, vertical actuator, horizontal actuator, and extension actuator.
SBus	An I/O (input/output) bus used with host systems or boards designed according to SPARC™ processor architecture.



SCSI	Small computer system interface. A standard command specification and command set that enables computers and peripherals to communicate with each other. Sun's current of tape drives adhere to the SCSI-2 specification.
SCSI address	The octal representation of the unique address (0-7) assigned to a narrow device, or hexadecimal representation of the unique address (0-15) assigned to a wide SCSI device.
Sequential access	Sequential access devices store data sequentially in the order received. Tape devices are the most common sequential access devices. By contrast, disk drives are direct access devices, where data is stored in blocks, not necessarily sequentially.
Single-ended	SCSI devices can be single ended or differential. Single-ended devices transmit signals by setting a line in the cable to a pattern of high and low voltages in relation to a ground line. Differential devices send signals by swapping over high and low states between two lines. This is more expensive to implement, but reduces interference and allows longer cable lengths. Single-ended and differential devices must not be mixed on one SCSI bus.
StackLink	A mechanism that connects two or more Sun StorEdge L25 and/or L100 units by enabling cartridges to be passed from a slot in one module to an available drive in another module.
SWIS/S	Single-ended, wide, intelligent SCSI/SBus host adapter.
Termination	A SCSI bus (or cable) can have many devices plugged into it, but the end of the cable furthest from the host computer must always be terminated to avoid signals being reflected back and interfering with other signals. The terminator both absorbs signals and provides power to the lines in the cable. For this reason, it must itself be provided with power. Terminators can be of two types, active and passive.
Tape library	Type of tape autochanger that allows media to be accessed randomly.
Throughput	A measure of sequential I/O performance, quoted in MB per second. <i>See</i> IOPS.
Transfer rate	The rate at which data is transferred from one device to another, for example from the host computer to the tape drive during backup.



Materials Abstract

All materials will be available on SunWIN except where noted otherwise.

Collateral	Description	Purpose	Distribution	Token # or COMAC Order #
Product Literature				
– <i>Sun StorEdge™ L25 and L100 Modular Tape Libraries, Just the Facts</i>	Reference Guide (this document)	Training Sales Tool	SunWIN, Reseller Web	351394
References				
– <i>Sun StorEdge L25 and L100 Tape Libraries, Data Sheet</i>	Data Sheet for Product	Sales Tool	SunWIN, Reseller Web, COMAC	351395
– <i>Sun StorEdge Product Family Overview Quick Reference Card</i>	Quick Reference Card	Sales Tool	SunWIN	73691
External Web Sites				
– <i>Sun StorEdge Web Site</i>	http://www.sun.com/storage			
– <i>Tape Backup Solutions Main Page</i>	http://www.sun.com/storage/tape.html			
Internal Web Sites				
– <i>Network Storage Web Site</i>	http://webhome.ebay/networkstorage/products/			
– <i>Installation Information</i>	http://scope.central			



Internal Information

Sun Proprietary — Confidential: Internal Use Only

The information in this section is for internal use only and is to be distributed on a need to know basis only.

Note: The SDLT technology mentioned in this section is not available at the general announcement date. This feature is scheduled for availability approximately 60 days after the general announcement.

Sun StorEdge™ L25 Library Competitive Information

All pricing comparisons (given in US dollars) are based on Sun StorEdge™ L25 libraries with two LTO drives, redundant power supplies, and management card/software. ADIC and STK price these items individually; redundant power supplies are not available on the Sun StorEdge L20 library. ADIC/STK pricing as of May 2002. Pricing subject to change.

Feature	Sun StorEdge L25	ADIC Scalar 100	STK L20	Sun StorEdge L20
Drives	1 to 2	1 to 2	1 to 2	4 to 6
Cartridges	25 - LTO 21 - DLT8000/SDLT	19 - LTO 16 - DLT8000/SDLT	20 - all types	20 - LTO and DLT8000; not available in SDLT
Max. Native Capacity	2.5 TB - LTO 2.31 TB - SDLT 840 GB - DLT8000	1.9 TB - LTO 1.76 TB - SDLT/SDLT 640 GB - DLT8000	2 TB - LTO 2.2 TB - SDLT 800 GB - DLT8000	2 TB - LTO 800 GB - DLT8000
Max. Native Throughput	30 MB/sec. - LTO 22 MB/sec. - SDLT 12 MB/sec. - DLT8000	30 MB/sec. - LTO 22 MB/sec. - SDLT 12 MB/sec. - DLT8000	30 MB/sec. - LTO 22 MB/sec. - SDLT 12 MB/sec. - DLT8000	30 MB/sec. - LTO 12 MB/sec. - DLT8000
Rack Units (U)	4	14	4	5
Scalability	Up to 175 cartridges by adding 6 additional modules. (or by adding 1 L100 and 2 additional L25 modules)	From 15/18 cartridges to 60/72 cartridges	None past 80 cartridges, but can scale from L20/10-20 cartridges to L40-40 cartridges to L80-80 cartridges	Up to 60 cartridges
Field Upgrades	Yes - no need to take unit offline	Yes - unit must come offline	No - total box swap from L20 to L40 to L80	No - total box swaps to L40 and L60
US List Price	\$28,475.00	\$34,010.00	\$26,560.00	\$26,000.00
US ASP	\$19,363.00	\$25,507.00	\$21,240.00	\$21,240.00
\$/GB (based on ASP)	\$7.75	\$13.43	\$10.62	\$8.32



Comparison to Quantum ATL M1500

Feature	Sun StorEdge L25	Quantum ATL M1500
Drives	DLT8000, LTO, SDLT220	DLT8000, LTO, SDLT220
Max. Drives	2	2
Max. Slots	25 LTO, 21 DLT/SDLT	25 LTO, 21 DLT/SDLT
Max. Rack System	7 libraries	10 libraries
Fibre Channel Bridge	Not available	FC420 option
Redundant Power	Standard	Option
Remote Management	Required option for first module	Option
Desktop Enclosure	Option	Not available

Sun StorEdge L100 Library Competitive Information

All pricing comparisons (given in US dollars) are based on the Sun StorEdge L100 libraries with four LTO drives, redundant power supplies, management card/software, and installation. ADIC and STK price these items individually; redundant power supplies are not available on the Sun StorEdge L60 library. ADIC/STK pricing as of May 2002. Pricing subject to change.

Feature	Sun StorEdge L100	ADIC Scalar 100	STK L80	Sun StorEdge L60
Drives	1-6 (lose 12 LTO or 10 DLT/SDLT cartridges when adding sixth drive)	1 to 6	1 to 8	4 to 6
Cartridges	100 - LTO 84 - DLT8000/SDLT	72 - LTO 60 - DLT8000/SDLT	80 - all types	60 - LTO and DLT/SDLT8000; not available in SDLT
Max. Native Capacity	10 TB - LTO 9.24 TB - SDLT 3.36 TB - DLT8000	7.2 TB - LTO 6.6 TB - SDLT 2.4 TB - DLT8000	8 TB - LTO 8.8 TB - SDLT 3.2 TB - DLT8000	6TB - LTO 2.4TB - DLT8000
Max. Native Throughput	90 MB/sec. - LTO 66 MB/sec. - SDLT 36 MB/sec. - DLT8000	90 MB/sec. - LTO 66 MB/sec. - SDLT 36 MB/sec. - DLT8000	120 MB/sec. - LTO 88 MB/sec. - SDLT 48 MB/sec. - DLT8000	90 MB/sec. - LTO 36 MB/sec. - DLT8000
Rack Units (U)	13.5	14	18	16
Scalability	Up to 200 cartridges by adding second module. (can also add 1 to 3 L25 modules)	From 15/18 cartridges to 60/72 cartridges	None past 80 cartridges, but can scale from L20/10-20 cartridges to L40-40 cartridges to L80-80 cartridges.	Up to 60 cartridges
Field Upgrades	Yes - no need to take unit offline	Yes - unit must come offline	No - total box swap from L20 to L40 to L80	No - total box swaps from Sun L20 and L40
US List Price	\$66,025.00	\$64,975.00	\$68,545.00	\$66,700.00
US ASP	\$44,897.00	\$48,731.00	\$54,836.00	\$45,356.00



Feature	Sun StorEdge L100	ADIC Scalar 100	STK L80	Sun StorEdge L60
\$/GB (based on ASP)	\$4.49	\$6.77	\$6.85	\$7.56

Comparison to Quantum ATL M2500

Feature	Sun StorEdge L100	Quantum ATL M2500
Drives	DLT8000, LTO, SDLT220	DLT8000, LTO, SDLT220
Max. Drives	6	6
Max. Slots and 6 Drives	87 LTO, 73 DLT/SDLT	87 LTO, 73 DLT/SDLT
Max. Slots and 5 Drives	100 LTO, 84 DLT/SDLT	100 LTO, 84 DLT/SDLT
Max. Rack System	2 libraries	3 libraries
Fibre Channel Bridge	Not available	FC420 option
Redundant Power	Standard	Option
Remote Management	Required option for first module	Option
Deskside Enclosure	Option	Not available

Future/Roadmap

Sun plans to add native Fibre Channel LTO drives, second-generation LTO, and SDLT320 technology to these libraries over the next 12 months.

Also, support for Sun StorEdge Utilization Suite Recovery and Archive Service software (formerly SAM-FS) is in process.

Support of the Sun StorEdge L25 and L100 libraries in both the next-generation rack and Sun Fire™ rack is in process.

Contact the product manager for additional details, as needed.

