

Sun StorageTek™ 2500 Series of Arrays

Simple, reliable, and affordable storage solutions



> The Sun StorageTek™ 2500 series of arrays is ideal for primary and secondary storage within entry and workgroup application environments, and leverages Sun's expertise in data storage development to ensure "best of breed" technology, reliability, and affordability. An affordable entry point into the Sun modular family of arrays, the Sun StorageTek 2500 series of arrays utilizes new-generation SAS point-to-point disk subsystem technology, enabling growing organizations to take advantage of improved performance and reliability at lower costs.

Highlights

- Simple and cost-effective storage supporting a variety of configurations, and flexible for use with Sun x64 and SPARC® servers
- The Sun StorageTek™ 2510 array iSCSI model supports low-cost IP networks consolidating existing Direct Attached Storage (DAS) implementations
- The Sun StorageTek™ 2540 array's Fibre Channel (FC) model supports existing FC infrastructures and entry-level storage area networks (SANs)
- The Sun StorageTek™ 2530 array's Serial Attached SCSI (SAS) model delivers optimal performance and reliability at lower costs for external DAS environments, overcoming SCSI's limitations
- Financial value—cost savings, "start small, grow big" scalability
- Operational value—easy to use and deploy, easy to service
- Sun StorageTek™ Common Array Manager (CAM) software—simple to implement and manage, scalable across Sun's modular disk array portfolio

Meeting storage demands

Workgroup, enterprise, and NEP/telecom customers each face their own distinct challenges. The workgroup customer struggles to keep pace with their applications' data growth, which often accounts for the majority of their business issues. Enterprise customers, with departmental and remote offices, seek secondary Tier 2 storage—reliable and centrally manageable, from a name they can trust. And NEP/telecom customers look for storage to address their ruggedization requirements and new application buildouts. While each user faces unique storage demands, Sun satisfies all three markets' data requirements with the affordable, available, high-performance Sun StorageTek 2500 series of arrays.

With a choice of iSCSI, FC, or SAS host interface options, the Sun StorageTek 2500 series of arrays satisfies a wide range of storage requirements. It is an ideal solution for end users struggling with managing data growth within the limits of their current IT configurations. Each of the Sun StorageTek 2500 series of arrays is strategically positioned for a wide range of customers' unique data requirements.

A key attribute of the Sun StorageTek 2500 series of arrays is the integration of SAS and SATA technologies within the same tray. Where SAS drives are notable for high availability and typically utilized for mainstream transaction-based applications, SATA technology is generally deployed for nearline data and can drastically reduce the cost of a storage investment when cost/GB is the most important factor. By optimizing the right workload demand with the appropriate drive technology, the Sun StorageTek 2500 series of arrays can cost-effectively support an organization's entire range of data capacity requirements.

Sun StorageTek 2510 array (iSCSI)

Utilizing iSCSI host connectivity, the Sun StorageTek 2510 array enables simple and rapid setup of SANs without the cost and complexity of FC switches. It is offered at a very affordable price for businesses looking to move from direct attached storage to their first SANs, for remote offices needing to be networked, and for businesses requiring a cost-effective business continuity/disaster recovery (BC/DR) solution.

Scalable up to four Ethernet switches, the Sun StorageTek 2510 array utilizes reliable IP networks around the globe with great expandability and no distance limitations. It also leverages an enormous knowledge and experience base—as some level of network expertise is typically present in organizations of all sizes.

Sun StorageTek 2540 array (FC)

The Sun StorageTek 2540 array incorporates the latest 4 Gb/sec FC technology necessary when deploying in new enterprise/workgroup SAN environments. By combining FC host interface architecture with next-generation SAS drive and expansion technology, growing organizations can take advantage of improved performance and reliable data protection in an array that can be shared across an entire SAN. With up to four autonegotiating 4 Gb/sec FC host ports and 256 volumes per array, the Sun StorageTek 2540 array supports the direct attachment of two to four servers, or support for additional servers through SAN connectivity. It is an ideal choice for small storage consolidation environments, and it provides reliable storage at an affordable price.

Sun StorageTek 2530 array (SAS)

With up to six host-side 3 Gb/sec SAS interfaces, the Sun StorageTek 2530 array can provide support for up to three servers with redundant connections—enabling capacity-efficient storage consolidation without the need of a storage network. It provides an affordable, reliable, and robust storage solution designed to improve productivity through higher performance, availability, scalability, and functionality.

Entry-level and workgroup users might also be struggling with their internal DAS strategy. Newly purchased servers typically house several drives, and for an organization with a restrictive budget, this is often viewed as a convenient, low-cost solution. However, this distributed storage strategy leads to wasted data space, duplicated functions, inefficiencies

The Sun StorageTek 2500 series of arrays extends Sun's modular family

Customer needs:	The Sun StorageTek 2500 series of arrays delivers:
<ul style="list-style-type: none"> • Simple management <ul style="list-style-type: none"> – As easy as provisioning a server – Eases application optimization – Common management with modular • Flexibility and small footprint <ul style="list-style-type: none"> – Maximum storage density (spindles/RU) – Multiple drive and connectivity options 	<ul style="list-style-type: none"> • Simple management <ul style="list-style-type: none"> – Server-oriented management (CAM) – Application-oriented provisioning – Common management with modular • Flexibility and small footprint <ul style="list-style-type: none"> – Six drives per RU – iSCSI, FC, SAS host options – Tiered storage to meet all data levels
<ul style="list-style-type: none"> • Strong price/performance <ul style="list-style-type: none"> – Keep application and business running 	<ul style="list-style-type: none"> • Strong price/performance <ul style="list-style-type: none"> – Maximum of over 100K IOPs and 1 Gb/sec
<ul style="list-style-type: none"> • Reliable, cost-effective data protection <ul style="list-style-type: none"> – Trusted solution with no points of failure – Data protection software and services 	<ul style="list-style-type: none"> • Reliable, cost-effective data protection <ul style="list-style-type: none"> – Fully redundant RAID array – Data snapshot capabilities

in data protection, and availability inconsistencies. The Sun StorageTek 2530 array breaks through the capacity barriers of internal storage and provides increased capacity and performance by taking storage externally.

Start small, grow big

The Sun StorageTek 2500 series of arrays' modular design creates an affordable entry point without sacrificing future scalability—enabling customers to start small and scale incrementally when they're ready to address data growth. Dual-active controllers and up to 12 drives combine to create a feature-rich and highly available storage system within a space-efficient 2 U enclosure. When capacity or performance requirements change, the Sun StorageTek 2500 series of arrays supports up to a total of up to a total of 48 drives, enabling further investment protection and flexibility without the need to move to another platform architecture. The Sun StorageTek 2500 series of arrays is ideal for a server-clustering environment. By utilizing up to two active/active RAID controllers with mirrored cache—redundant components including power and cooling, hot-spare drives that can be available as a spare to any virtual disk in any enclosure, and automated I/O path failover—the arrays are well suited for clusters in which continuous application and data availability are key requirements.

Simple installation and management

SMI-S-compliant Sun StorageTek Common Array Manager software ensures a user-friendly interface from setup to administration. Its web-like, task-based management interface significantly reduces the complexity of installation, configuration, and management. Online capacity expansion, data-volume creation, and host-to-volume mapping give the user control of their array and the ability to make quick changes when necessary. Accessible from anywhere in the world with the use of a secure Internet connection, CAM includes automated diagnostics so users can focus on precise, predictable, repeatable results. CAM also scales across Sun's entire modular disk portfolio, and is provided at no added cost to the user.

Premium features provide additional functionality only when and if storage demands call for it. As businesses continue to grow, administrators have the flexibility to add premium features to support data utilization and protection requirements:

- Sun StorageTek™ Storage Domains logically divide a single array into multiple arrays by defining which host or host group can access each volume in the array. This enables a wide range of servers—with different capacity, performance, or data protection

demands—to effectively share a single array. Two domains are included with the array. Additional domains are available through a licensable upgrade

- Sun StorageTek™ Data Snapshot creates capacity-efficient, point-in-time volume images, providing a logical volume for such uses as file restoration and backup. Sun StorageTek Data Snapshot is available through a licensable upgrade
- Sun StorageTek™ Volume Copy creates a complete physical copy, or a clone, of a volume within a storage system that can be assigned to any host and used by applications requiring a point-in-time copy of production data—such as backup, application testing or development, information analysis, or data mining—without affecting the performance of the production volume.

SAS drives

As the next chapter of SCSI technology, SAS benefits from more than 20 years of SCSI technology, incorporating SCSI command sets while taking full advantage of serial architecture and bringing FC-class capabilities to the table. Comparatively priced to SCSI drives, SAS enables users to scale and add drives for their critical and transaction-based applications without extending their budget.

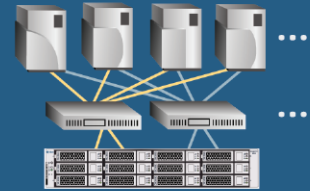
Sun StorageTek 2510 iSCSI array

> Up to four 1 Gbps iSCSI ports/array

Sun StorageTek 2540 FC array

> Up to four 4 Gbps FC ports/array

SAN and external DAS connectivity
DAS to SAN migration
Small server storage consolidation



Sun StorageTek 2530 SAS array

> Up to six 3 Gbps SAS ports/array

Shared external DAS connectivity
External DAS environments
2–3 node clusters



Typical deployment topologies for the Sun StorageTek 2500 series of arrays.

SAS has several key benefits:

- **Universal connection** – Interoperability with SATA drives, supporting SAS and SATA on the same controller
- High performance with 3 Gb/sec throughput with 10,000 rpm and 15,000 rpm options
- **Dual-porting** – Provides redundancy capabilities, increasing availability with each drive having an alternate link and maintaining that connectivity in the case that one link fails
- **Point-to-point architecture** – Provides direct contact with each drive, enabling the locating of problem drives more quickly than parallel-loop topology where communication travels through each node

SATA drives

Serial ATA is the latest generation of the ATA (Advanced Technology Attachment) disk interface. SATA uses a less expensive protocol and costs less to implement than other drive technologies. With a new, emerging market compromising unique applications where low-cost storage is a priority—such as near-line storage, virtual tape, tape replacement, fixed content, and Web caching—SATA technology fits the bill. With SATA technology, organizations can enable data that would otherwise be archived on tape to be cost-effectively brought online, thereby improving reliability, access rates, and service levels. In addition, with SATA's larger drive capacity, fewer drives are needed to reach a desired system capacity, resulting in larger savings for secondary storage applications.

Sun StorageTek 2500 Series of Arrays Specifications—2510, 2530, and 2540 Models

Sun StorageTek 2500 series of arrays

Controller card	<ul style="list-style-type: none"> 2510: Dual and single iSCSI RAID controller 2530: Dual and single SAS RAID controller 2540: Dual and single Fibre Channel RAID controller
Cache size (with ECC protection)	<ul style="list-style-type: none"> 512 MB or 1 GB/controller (up to 2 GB/system)
Host interfaces/link speeds	<ul style="list-style-type: none"> 2510: Two to four 1 Gb/sec iSCSI host ports per controller tray 2530: Three to six 3 Gb/sec SAS host ports per controller tray 2540: Two to four 4 Gb/sec FC host ports per controller tray
Other interfaces (FC or SAS)	<ul style="list-style-type: none"> Up to two 10/100 Base-T Ethernet Up to two nine-pin RS232 serial ports per dual controller tray
RAID levels	<ul style="list-style-type: none"> 0, 1, (1+0), 3, 5, 6 (p+q)
Cache battery backup	<ul style="list-style-type: none"> Up to 72 hours (depending on cache size)
Integrated data services	<ul style="list-style-type: none"> StorageTek Data Snapshot (optional) – Basic: 4 snaps/vol, Enhanced: 8 snaps/vol Sun StorageTek Volume Copy (optional) StorageTek Storage Domains – 2 domains included; (optional 4, 8, 16 or 32)
Dynamic capacity expansion	<ul style="list-style-type: none"> Five to 48 drives – 730 GB to 48.0 TB
Expansion tray	<ul style="list-style-type: none"> Up to three expansion trays
Drive depopulation	<ul style="list-style-type: none"> Scales from five to 12 hard disk drives per tray
Volume	<ul style="list-style-type: none"> Up to 256 (32/host)
Global hot spares	<ul style="list-style-type: none"> Up to 30
Maximum array capacity	<ul style="list-style-type: none"> 21.6 TB (450 GB SAS drives) 48.0 TB (1.0 TB SATA drives)

Disk drives

Form factor	<ul style="list-style-type: none"> 3.5-in., low –profile
Interface	<ul style="list-style-type: none"> Dual-ported SAS
Supported drives/system per tray capacity, raw, unformatted:	
SAS drives	<ul style="list-style-type: none"> 146 GB 15,000 rpm 3 Gb/sec, 1.75 TB per tray 300 GB 15,000 rpm 3 Gb/sec, 3.6 TB per tray 400 GB 10,000 rpm 3 Gb/sec, 4.8 TB per tray 450 GB 10,000 rpm 3 Gb/sec, 5.4 TB per tray

SATA II drives

- 500 GB 7,200 rpm 3 Gb/sec, 6.0 TB per tray
- 750 GB 7,200 rpm 3 Gb/sec, 9.0 TB per tray
- 1.0 TB 7,200 rpm 3 Gb/sec, 12.0 TB per tray

Supported software

- Sun™ Cluster Software
- StorageTek™ Enterprise Backup Software (EBS)
- Veritas NetBackup (NBU)
- Veritas Storage Foundation (2540)
- Oracle® Database – Oracle Real Application Clusters (RAC)
- Red Hat Enterprise Linux – Red Hat Cluster Suite
- Windows Server 2003 – Server Cluster

Management software support

StorageTek Common Array Manager (CAM) – included

Operating system support

- Solaris™ 10 OS and x86
- Microsoft Windows 2003, 2008
- SUSE Linux 9, 10
- Red Hat Enterprise Linux 4, 5
- VMware ESX 3.0.2 and higher – 2540
- VMware ESX 3.5 – 2510

Host connectivity

Host/HBA/IP switches
Multipath driver

- All HBAs supported in SAN 4.4.12

Warranty

Duration	<ul style="list-style-type: none"> Three years (parts exchange)
Phone support	<ul style="list-style-type: none"> 8 a.m.-5 p.m., Mon.-Fri.
Other	<ul style="list-style-type: none"> Additional support and extended on-site coverage available through Sun Services

Dimensions

Height x width x depth	<ul style="list-style-type: none"> 86.1 mm (3.39 in.) x 448.6 mm (17.66 in.) x 540 mm (21.26 in.)
Weight (maximum)	<ul style="list-style-type: none"> 59.55 lbs.

Power requirements

AC power	<ul style="list-style-type: none"> 515 W (+5V @ 19A/+12V @35A)
DC power	<ul style="list-style-type: none"> 17A max operating (-42 to -60 V DC)

Environmental (operating)

Temperature	<ul style="list-style-type: none"> 10°C to 40°C (50°F to 104°F) without battery 10°C to 40°C (50°F to 104°F), 10°C to 35°C (50°F to 95°F) with battery
Relative humidity	<ul style="list-style-type: none"> 20-80% noncondensing
Operating altitude	<ul style="list-style-type: none"> 68.3 kPa (3,200m), 40° C, four-hour dwell¹
Operating shock	<ul style="list-style-type: none"> 5.5 Gs, 11ms, half-sine, 10 shocks per direction, all six directions
Operating vibration	<ul style="list-style-type: none"> All three axes: 0.25 Gs, 5 to 500 Hz, swept-sine, five sweep cycles, one octave per minute
Heat output	<ul style="list-style-type: none"> 460 W (1,571 BTU/hr.)

Environmental (nonoperating)

Temperature (storage)	<ul style="list-style-type: none"> 10°C to 50°C (-14°F to 122°F) without battery -10°C to 45°C (-14°F to 113°F), with battery (three month maximum)
Temperature (transit)	<ul style="list-style-type: none"> 40°C to 60°C (-40°F to 140°F) without battery, -20°C to 60°C (-4°F to 140°F with battery (one week maximum)
Humidity (storage)	<ul style="list-style-type: none"> 10-90%, max dew point is 26°C (79°F), 10% per hour gradient
Humidity (transit)	<ul style="list-style-type: none"> 5-95%, max dew point is 26°C (79°F), 10% per hour gradient
Altitude	<ul style="list-style-type: none"> 18.8 kPa (12,200m), 0°C, four-hour dwell
Shock (storage)	<ul style="list-style-type: none"> 20G, 8.0 ms square wave in each direction along x, y, and z axes
Shock (transit)	<ul style="list-style-type: none"> 33Gs, 11 ms, half-sine, three shocks per direction, all six directions
Vibration	<ul style="list-style-type: none"> All three axes: 1.2Gs, 5 to 500 Hz, swept-sine, five sweep cycles, one octave per minute
Regulations	
Safety and emissions	<ul style="list-style-type: none"> FCC Class A, VCCI Class A, EN55022 Class A, EN 55024 UL BSM, C-Tick, RoHS, and WEEE
NEBS Level 3	<ul style="list-style-type: none"> GR-63 CORE requirements, GR-1089 CORE requirements

¹ Commencing upon product reaching temperature stability.

Learn More.

For more information about the Sun StorageTek 2500 series of arrays visit sun.com/st2500