# SGI® InfiniteStorage TP9500 Storage Array

### Features

- Industry-leading performance, up to 800MB per second peak
- High-density 2Gb Fibre Channel architecture
- Supports from 4 to 224 drives with maximum capacity over 32TB
- Advanced enterprise software features for high-availability and data protection
- Multi-OS support for IRIX®, Windows®, Linux®, and other UNIX® operating environments
- Uses same comprehensive storage management as the SGI® TP9300 storage array

### Industry-Leading Performance

The SGI® InfiniteStorage TP9500 (SGI® TP9500) storage array delivers industry leading performance in a full end-to-end 2Gb Fibre Channel solution. TP9500 combines parallel high-performance controllers and advanced cache management to deliver the throughput needed for the most demanding, large-scale, data-intensive applications in government and defense, media, the sciences, energy, and manufacturing. The modular 2Gb Fibre Channel architecture provides four 200MB per second host channels for up to 800MB per second peak performance when connecting to a SAN, or up to eight host connections if high availability is desired. Four redundant 200MB per second channels to the back end media deliver throughput that matches the host side connectivity for overall balanced performance.

### Advanced High-Availability and Data Protection Features

TP9500 provides enhanced RAID availability and full redundancy with duplication of all active components, including controllers, cache, data channels, cables, interfaces, power supplies, fans, and battery-backup modules. Battery backup for cache will retain data for a minimum of seven days. Each TP9500 comes standard with a powerful GUI-based software management tool called SGI® TPSSM, which provides optional data protection features. TPSSM SnapCopy provides an incremental point-in-time copy of a volume using only a fraction of the original volume's disk space. By backing up the SnapCopy volume instead of the active volume, backups are easier to implement and are done in less time, and applications are left unencumbered by the backup process. SnapCopy also provides quick recovery of data that may have been lost since the last backup caused by operator or application error. SGI TPSSM's optional Remote Volume Mirror (RVM) feature will replicate data across a SAN fabric to another TP9500 or TP9400 system in a campus-wide environment. TPSSM RVM operates in a synchronous fashion, so application servers have access to a completely concurrent mirror of the primary volume-providing for instantaneous disaster recovery and a complete remote replication of potentially lost data.

### Multi-OS Support for Heterogeneous Environments

TP9500 was designed to meet the data access requirements of technical and creative users in heterogeneous environments. In addition to the IRIX operating environment, TP9500 also supports the Solaris™, Windows NT®, Windows® 2000, Linux, HP-UX®, AIX®, and Novell® platforms. The SGI TPSSM partitioning feature allows multiple heterogeneous host systems to represent a single TP9500 as multiple virtual TP9500 systems, an especially important ability when sharing disk in storage consolidation solutions. Customers have the ability to share data in a heterogeneous SAN with a single shared filesystem with SGI® InfiniteStorage Shared Filesystem CXFS™. Sharing data in a heterogeneous SAN with a single scalable filesystem results in accelerated customer workflows by eliminating data access bottlenecks and data replication.

### Enterprise Storage Management and Advanced Software Features

SGI TPSSM provides comprehensive storage management for the TP9500. A powerful and intuitive GUI-based tool, TPSSM allows for centralized monitoring and management of one or multiple SGI InfiniteStorage disk arrays in your environment. Functions such as configuration, expansion, and online upgrades to system software are performed with no system downtime and no interruption to system I/O. TPSSM will manage the TP9500 as a single system, or virtually divide the capacity into as many as 2,048 separate systems using an optional partitioning feature, key to increasing utility for storage consolidation applications. SGI TPSSM also features point-in-time copy and a remote replication feature for data protection schemes involving backup of corporate data.

# SGI InfiniteStorage TP9500 Storage Array

## TP9500 Base Enclosure

- Dual active 2Gb Fibre Channel controllers
- RAID Levels 0, 1, 1+0, 3, 5
- 1.024GB cache per controller, 2.048 GB total per TP9500
- Up to 7-day minimum cache backup
- Up to 256 LUNs per partition
- Up to 2,048 LUNx per TP9500 (requires optional partitioning SW)
- Up to 30 drives (29+1) for RAID 5 group
- RAID stripe depth configurable to 16, 32, 64, 128, or 256 per disk
- Up to 15 global hot spare disk drives
- Two ethernet ports for remote management
- Two RS-232 ports
- 3-Yr 5X9 parts and labor warranty, on-site, NBD response; upgradeable to multi-year, 7X24, 2-hour response

## Host Interface

- Four 2Gb Fibre Channel host channels, FC-AL or FC-SW attachment, each capable of 200MB/s peak bandwidth
- Four optical host minihubs, one per host channel, each with two LC connectors, enables eight separate FC-AL (point-to-point) host connections or four redundant host connections per TP9500
- Command tag queuing with up to 256 tags
- Aggregate peak bandwidth of 800MB/s from cache

## Media Interface

- Four redundant 2Gb Fibre Channel drive channels, each capable of 200MB/s peak bandwidth
- Four optical media minihubs, two per host controller, each with two LC connectors, provides eight loops or four redundant channels for drive expansion module
- Aggregate peak bandwidth of 800MB/s to media

## Software Management

- SGI® TPSSM included at no cost
- Same SW management as SGI InfiniteStorage TP9300
- Dynamic RAID level migration
- Dynamic segment size migration
- Dynamic defragmentation
- Immediate LUN availability
- Performance monitoring
- Nondisruptive firmware upgrades
- Enterprise management window provides comprehensive view of all TP9300 and TP9500 storage systems in the management domain

## Optional Array Software

| | |
|---|---|
| • TPSSM Partitioning | Up to 64 partitions per TP9500 |
| • TPSSM Volume Copy | For data copy from one volume to another for improved performance and assists with data migration and backup |
| • TPSSM SnapCopy | Creates a static point-in-time image of a volume |
| • TPSSM Remote Volume Mirroring | Synchronous remote replication of volumes for disaster recovery |

## Optional Host Software

| | |
|---|---|
| • XVM | Volume Manager for SGI® systems, is a virtualization technology to organize logical data structures for high performance and ease of management |
| • XVM Plex | Provides disk striping, mirroring, concatenation and advanced recovery features |
| • XVM Snapshot | Creates point-in-time snapshots of data at the filesystem level; can create single snapshot of entire filesystem for customers with vast amounts of data |
| • XFS | High-performance, 64-bit journaled filesystem for SGI® IRIX® and Linux system platforms |
| • CXFS | Heterogeneous shared filesystem for storage area networks; eliminates the need for replicating data across a SAN by allowing multiple heterogeneous systems to share one scalable filesystem |

## Dimensions (Approximate)

### Controller Enclosure

| | |
|---|---|
| • Height | 6.9", 17.5cm, 4 EIA units |
| • Width | 24.8", 61.0cm |
| • Depth | 19.0", 48.2cm |
| • Weight | 97 lb (44 kg) |

### Drive Enclosure

| | |
|---|---|
| • Height | 5.2", 13.1cm, 3 EIA units |
| • Width | 22.8" 57.9cm |
| • Depth | 19.0", 48.0cm |
| • Weight | 88 lb (40 kg) |

### Rack

| | |
|---|---|
| • Height | 72.0", 182.9 cm, 3 EIA units |
| • Width | 36.0", 91.4cm |
| • Depth | 22.0", 56cm |
| • Weight | 1,020 lb (464 kg) full, 440 lb (215 kg) empty |

## Supported Hosts

- IRIX, Solaris, Windows NT, Windows 2000, Windows XP, Linux, HP-UX, AIX, and Novell

## Storage Capacity

| | |
|---|---|
| • Disk drives available | 36GB, 15K RPM drives<br>73GB, 15K RPM drives<br>146GB, 10K RPM drives |
| • Min. drive capacity | 4 per drive enclosure |
| • Max. drive capacity | Up to 224 drives per TP9500 |
| • Drive expansion | TP9500 drive enclosure |
| • Max. expansion | 16 drive enclosures per TP9500 |
| • Drives per enclosure | 4–14 |
| • Max. drives per rack | 154 |
| • Max. enclosures per rack | 11 drive enclosures and once controller enclosure per 38U rack |

## Power (Redundant Power per Enclosure)

- Input power for rack
  Dual power input lines, single phase,
  voltage 250 VAC (180 min. to 257 max. VAC),
  frequency 50/60 Hz
- Power connections rack
  AC distribution 250 VAC, 16A
  US: NEMA L6-30P, 250 VAC, 30A
  International: IEC 309, 230 VAC 32A

## Environmental

- Operating temperature
  Minimum 50 degrees F (10 degrees C)
  Maximum 104 degrees F (40 degrees C)
- Operating relative humidity
  20% to 80% (noncondensing)
- Altitude 30.5 m to 3,000 m (100 ft to 9,846 ft)
- Safety compliance
  UL 1950
  CSA 22.2 No. 950
  IEC 950
  EN 60950

## Electromagnetic Compliance

FCC Class A
VCCI Class 1
EN 55022 Class A
EN 50082-1; IEC 801-2, IEC 801-3,
IEC 801-4

## Quality Standard

Manufactured under an ISO 9000-registered quality system


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