



**SPC BENCHMARK 2™
EXECUTIVE SUMMARY**

**SUN MICROSYSTEMS, INC.
SUN STORAGE TEK® 6540 ARRAY (RAID-5)**

SPC-2™ V1.2.1

**Submitted for Review: January 18, 2007
Submission Identifier: B00015**

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

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Revision Information and Key Dates

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SPC-2 Specification revision number	V1.2.1
SPC-2 Workload Generator revision number	spc2rc9g
Date Results were first used publicly	January 18, 2007
Date FDR was submitted to the SPC	January 18, 2007
Date revised FDR was submitted to the SPC Revised Total Price and SPC-2 Price-Performance	February 19, 2007
Date the TSC will be available for shipment to customers	July 11, 2006
Date the TSC completed audit certification	January 17, 2007

Tested Storage Product (TSP) Description

The Sun StorageTek® 6540 Array is a part of the Sun StorageTek modular storage family. The StorageTek modular storage family is designed for customers seeking to support business-critical applications and for Service Providers looking for a cost-effective, easy-to-use enterprise-class platform with the ability to confidently handle large data sets. Through common storage modules, common array management, and common data services, Sun's new modular storage helps customers preserve the investments they've made in people, processes and infrastructure.

The Sun StorageTek® 6540 Array is a ROHS-compliant, 4 gigabits-per-second (Gb/sec) Fibre Channel (FC) array designed for both direct attached and SAN attached storage. The system features a fully redundant architecture with drive intermixing (FC or SATA-2 disk drives), 8 x 4 Gb FC ports, 16 GB maximum cache, application-oriented management, switched drive connectivity and a maximum capacity of 224 disk drives.

SPC-2 Reported Data

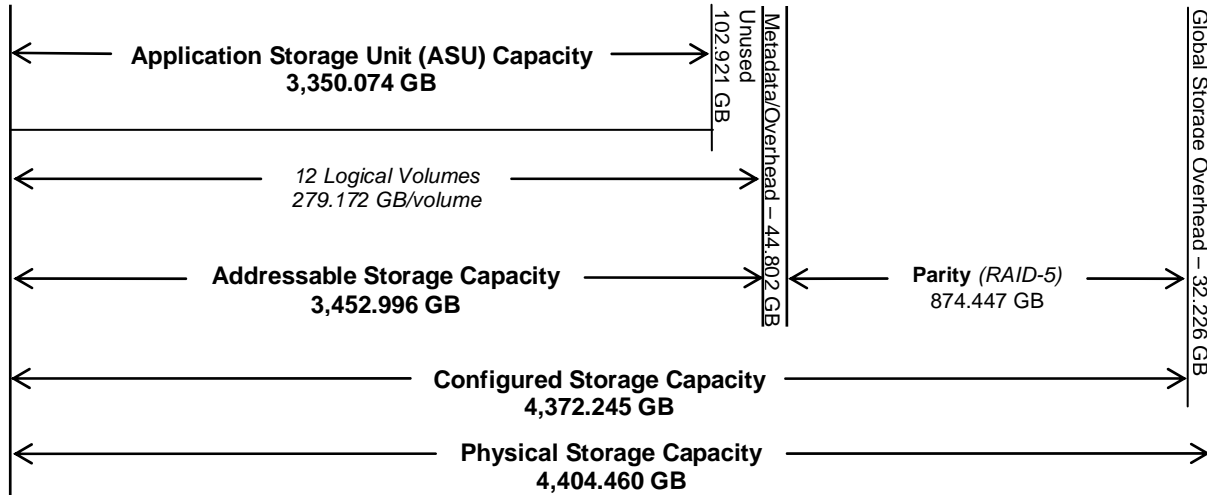
SPC-2 Reported Data consists of three groups of information:

- The following SPC-2 Primary Metrics, which characterize the overall benchmark result:
 - SPC-2 MBPS™
 - SPC-2 Price Performance
 - Application Storage Unit (ASU) Capacity
- Supplemental data to the SPC-2 Primary Metrics.
 - Total Price
 - Data Protection Level
- Reported Data for each SPC Test: Large File Processing (LFP), Large Database Query (LDQ), and Video on Demand Delivery (VOD) Test.

SPC-2 Reported Data				
Sun StorageTek® 6540 Array (RAID 5)				
SPC-2 MBPS™	SPC-2 Price-Performance	ASU Capacity (GB)	Total Price	Data Protection Level
1,360.40	\$80.52	3,350.074	\$109,537	RAID-5
<i>The above SPC-2 MBPS™ value represents the aggregate data rate of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video On Demand (VOD)</i>				
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
LFP Composite	1,098.94			\$99.68
Write Only:				
1024 KiB Transfer	1,168.18	32	36.51	
256 KiB Transfer	394.22	32	12.32	
Read-Write:				
1024 KiB Transfer	1,436.85	32	44.90	
256 KiB Transfer	673.20	32	21.04	
Read Only:				
1024 KiB Transfer	1,457.67	32	45.55	
256 KiB Transfer	1,463.50	32	45.73	
<i>The above SPC-2 Data Rate value for LFP Composite represents the aggregate performance of all three LFP Test Phases: (Write Only, Read-Write, and Read Only).</i>				
SPC-2 Large Database Query (LDQ) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
LDQ Composite	1,637.45			\$66.89
1024 KiB Transfer Size				
4 I/Os Outstanding	1,675.13	32	52.35	
1 I/O Outstanding	1,675.03	32	52.34	
64 KiB Transfer Size				
4 I/Os Outstanding	1,556.12	32	48.63	
1 I/O Outstanding	1,643.53	32	51.36	
<i>The above SPC-2 Data Rate value for LDQ Composite represents the aggregate performance of the two LDQ Test Phases: (1024 KiB and 64 KiB Transfer Sizes).</i>				
SPC-2 Video On Demand (VOD) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
	1,344.80	1,710	0.79	\$81.45

Storage Capacities and Relationships

The following diagram documents the various storage capacities, used in this benchmark, and their relationships.



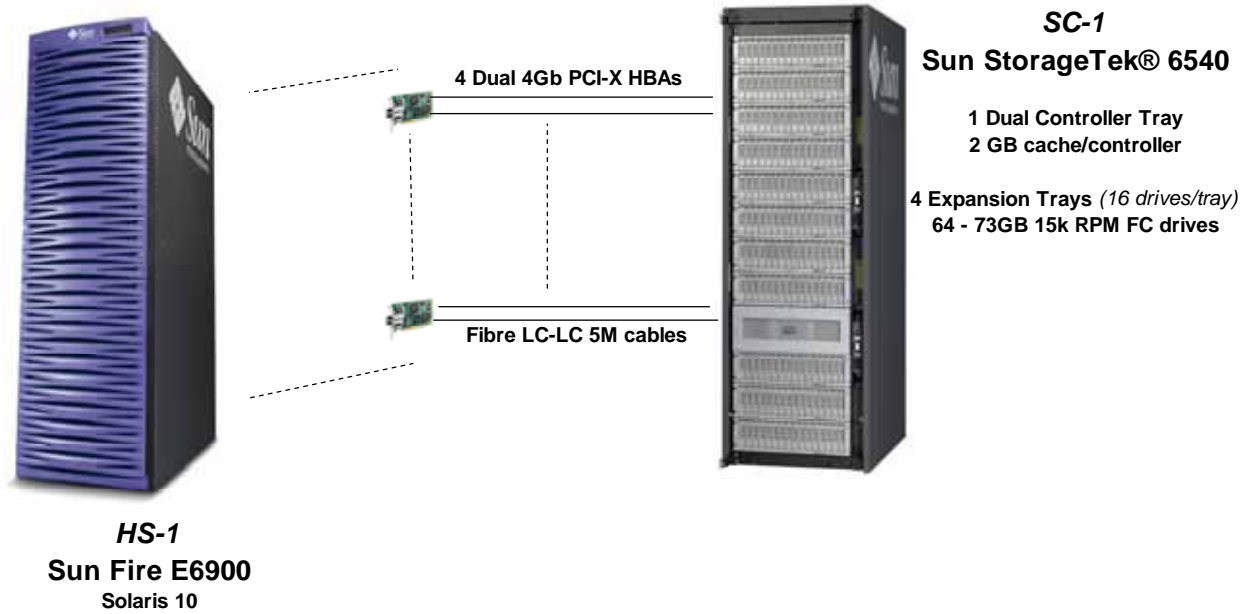
Tested Storage Configuration Pricing (Priced Storage Configuration)

Part Number	Description	Quantity	US List	Total	discount	Ave. Price
TCA6540M11A2-04FCZ	STK 6540 FC - 4GB RAID Controller Tray - 1x1	1	\$48,300	\$48,300	38%	\$29,946
	- 2 Controllers w/ 2GB cache each					
	- All required cables included					
TCCSM2M01A0B1168	STK CSM200 RM 0x1x16x73G15k	4	\$26,395	\$105,580	38%	\$65,460
	- 16 73GB 15k rpm 4Gb drives					
	- All required cables included					
SG-XPC12FC-QF4	4Gb PCI dual port FC Host Based Adapter	4	\$2,530	\$10,120	38%	\$6,274
W9D-ST6540-4-24-3G	3-yr Gold Service Maintainance for controller tray	1	\$4,608	\$4,608	38%	\$2,857
	- 7/24 coverage					
	- 4 hour resonse time					
	- 4 hour resolution					
W9D-STCSM2-24-3G	3-yr Gold Service Maintainance for CSM200 expansion tray	4	\$2,016	\$8,064	38%	\$5,000
	- 7/24 coverage					
	- 4 hr response time					
	- 4 hour resolution					
				\$176,672		\$109,537

Differences between the Tested Storage Configuration (TSC) and Priced Storage Configuration

There were no differences between the Tested Storage Configuration (TSC) and the Priced Storage Configuration.

Benchmark Configuration/Tested Storage Configuration Diagram



Host System(s) and Tested Storage Configuration Components

Host System:	Tested Storage Configuration (TSC):
UID=HS-1 Sun Fire E6900	4 – 4 Gb dual port FC PCI-X HBAs
24 – 1.2 GHz dual core UltraSPARC-IV processors 64 KB L1 cache per core, 2 MB L2 shared cache per core	UID=SC-1: Sun StorageTek® 6540 Array
48 GB main memory	1 Dual Controller 2 GB cache per controller (4 GB total)
Solaris 10 FCS	8 host connections (front end)
PCI-X	8 drive connections (backend)
WG	4 – 4 Gb Expansion Trays (16 drives/tray)
	64 – 73 GB, 15K RPM, 4 Gb Seagate disk drives