SPC BENCHMARK 1™
EXECUTIVE SUMMARY

SUN MICROSYSTEMS, INC.
SUN STOREDGE™ 6130 ARRAY

SPC-1 V1.9

Submitted for Review: April 29, 2005
Submission Identifier: A00040
Revised: May 10, 2005
Accepted: June 28, 2005

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

Test Sponsor and Contact Information	
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Auditor	Storage Performance Council – http://www.StoragePerformance.org Walter E. Baker – AuditService@StoragePerformance.org 643 Bair Island Road, Suite 103 Redwood City, CA 94063 Phone: (650) 556-9384 FAX: (650) 556-9385

Revision Information and Key Dates

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SPC-1 Specification revision number	V1.9
SPC-1 Workload Generator revision number	V2.00.04a
Date Results were first used publicly	April 29, 2005
Date FDR was submitted to the SPC	April 29, 2005
Date revised FDR was submitted to the SPC The initial FDR was prepared using a V1.8 template rather than a V1.9 template. This revision updates the document to comply with the reporting requirements for V1.9:	May 10, 2005
Date the TSC is/was available for shipment to customers	May 18, 2005
Date the TSC completed audit certification	April 27, 2005

Summary of Results

| SPC-1 Results	
Tested Storage Configuration (TSC) Name: Sun StorEdge™ 6130 Array	
Metric	**Reported Result**
SPC-1 IOPS™	8,394.40
SPC-1 Price-Performance	$11.16/SPC-1 IOPS™
Total ASU Capacity	692.00 GB
Data Protection Level	Mirroring
Total TSC Price (including three-year maintenance)	$93,673

SPC-1 IOPS™ represents the maximum I/O Request Throughput at the 100% load point.

Total ASU (Application Storage Unit) **Capacity** represents the total storage capacity read and written in the course of executing the SPC-1 benchmark.

A **Data Protection Level** of Mirroring configures two or more identical copies of user data.

Storage Capacities and Relationships

The following diagram documents the various storage capacities, used in this benchmark, and their relationships.
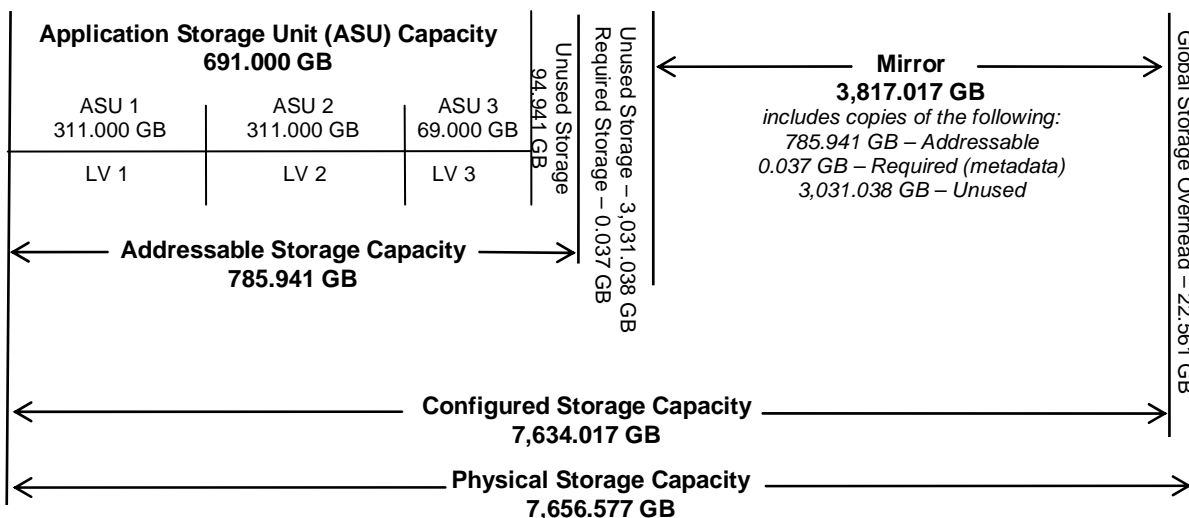
Response Time – Throughput Curve

The Response Time-Throughput Curve illustrates the Average Response Time (milliseconds) and I/O Request Throughput at 100%, 95%, 90%, 80%, 50%, and 10% of the workload level used to generate the SPC-1 IOPS™ metric.

The Average Response Time measured at the any of the above load points cannot exceed 30 milliseconds or the benchmark measurement is invalid.
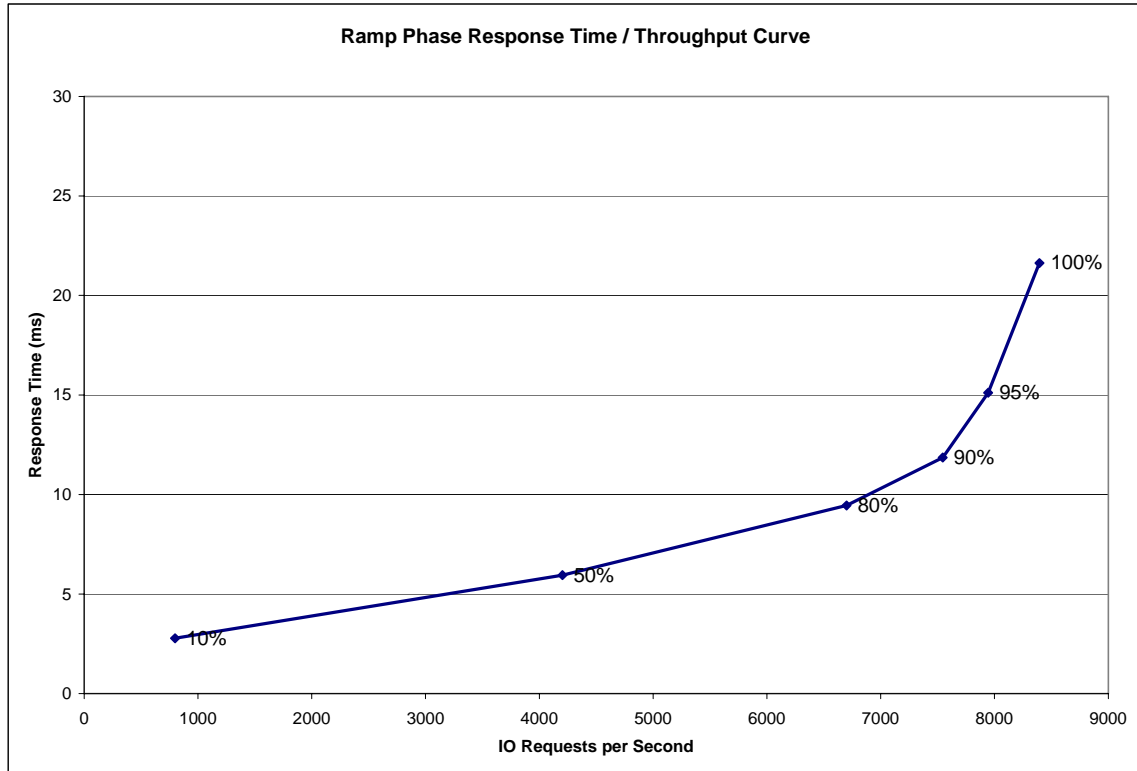
Response Time – Throughput Data

	10% Load	50% Load	80% Load	90% Load	95% Load	100% Load
I/O Request Throughput	798.83	4,203.51	6,699.85	7,545.28	7,944.25	8,394.40
Average Response Time (ms):						
All ASUs	2.78	5.95	9.45	11.86	15.12	21.63
ASU-1	3.37	6.98	11.04	13.55	16.43	23.34
ASU-2	2.93	6.16	9.95	12.69	16.60	22.52
ASU-3	1.45	3.67	5.86	7.90	11.68	17.58
Reads	4.90	9.55	15.02	18.14	21.34	29.42
Writes	1.40	3.61	5.82	7.77	11.06	16.55

Tested Storage Configuration Pricing *(Priced Storage Configuration)*

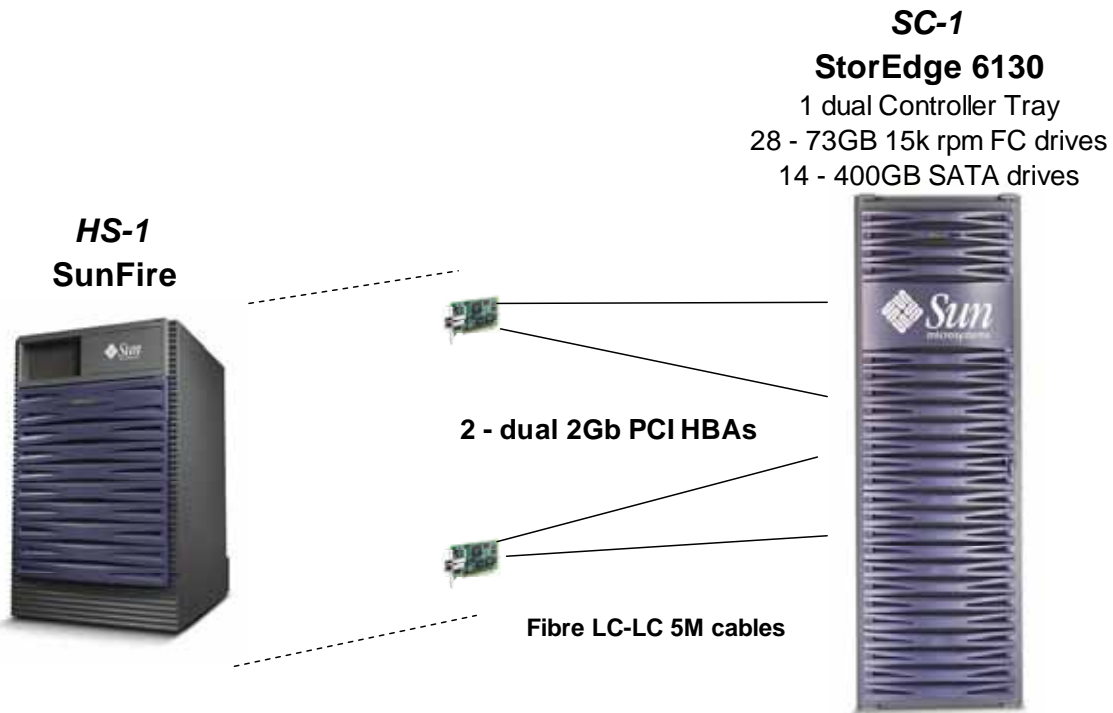| Part Number	Description	Quantity	US List	Total	discount	Ave. Price
XTA6130R11A2V1022	Dual Controller with 1022G-1x1x14x73G V-RR	1	$66,995	$66,995	38%	$41,537
XTACSM1R01A0V1022	FC Expansion tray SE CSM100-1022G-0x1x14x73G V-RR	1	$35,995	$35,995	38%	$22,317
XTACSM1R01A0Y5600	SATA expansion tray (0x1 14x400G-SATA)	1	$28,495	$28,495	38%	$17,667
X6767A	2Gb PCI Single FC Host Based Adapter	4	$4,900	$19,600	38%	$12,152
Total				$151,085		$93,673

Three year "Gold Service" System Maintenance is included, which provides the following:

- 7 days per week, 24 hours per day coverage.

- Acknowledgement of new and existing problems within four hours.

- Onsite presence of a qualified maintenance engineer or provision of a customer replaceable part within four hours of the above acknowledgement for any hardware failure that results in an inoperative Priced Storage Configuration component. In either of the two cases, the remedy will result in resumption of operation.

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

The Tested Storage Configuration was configured with two (2) dual-port HBAs and used both ports in each HBA. The Priced Storage Configuration substituted four (4) single port HBAs for the two (2) dual-port HBAs. If the single port HBAs had been used in the Tested Storage Configuration, they would not have contributed to any measurable performance difference.

Benchmark Configuration/Tested Storage Configuration Diagram

SC-1
StorEdge 6130
1 dual Controller Tray
28 - 73GB 15k rpm FC drives
14 - 400GB SATA drives

HS-1
SunFire

2 - dual 2Gb PCI HBAs

Fibre LC-LC 5M cables

Host System:	Tested Storage Configuration (TSC):
UID=HS-1	2 – 2 GB FC Dual PCI HBAs
Sun Fire™ V440:	*UID=SC-1:*
4 – UltraSPARC™ III 1062 MHz CPUs 8 MB EEC external cache per CPU	Sun StorEdge™ 6130 FC Array: 1 – dual controller 2 GB cache 4 – 2 Gb LC-SFF Fibre Channel host ports
8 GB – main memory	
Solaris 10 FCS	
WG	28 – 73 GB 15k rpm FC disk drives
	14 – 400 GB 7200 rpm SATA disk drives

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