



**SPC BENCHMARK 2™  
EXECUTIVE SUMMARY**

**SUN MICROSYSTEMS, INC.  
SUN STORAGE J4400 ARRAY**

**SPC-2™ V1.2.1**

**Submitted for Review: August 15, 2008  
Submission Identifier: B00034**

## **EXECUTIVE SUMMARY**

### **Test Sponsor and Contact Information**

<b>Test Sponsor and Contact Information</b>	
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### **Revision Information and Key Dates**

<b>Revision Information and Key Dates</b>	
<b>SPC-2 Specification revision number</b>	V1.2.1
<b>SPC-2 Workload Generator revision number</b>	V1.0
<b>Date Results were first used publicly</b>	August 15, 2008
<b>Date FDR was submitted to the SPC</b>	August 15, 2008
<b>Date the TSC will be available for shipment to customers</b>	July 8, 2008
<b>Date the TSC completed audit certification</b>	August 15, 2008

### **Tested Storage Product (TSP) Description**

Looking for high-capacity, low-cost storage to extend your server-storage capabilities? The Sun Storage J4400 array offers bulk SAS/SATA JBOD storage with double the storage density, twice the connectivity, and higher availability at half the price per gigabyte. Plus, you also get the groundbreaking ZFS file system included at no extra charge. ZFS automates common administrative tasks, protects data from corruption, and provides unlimited scalability.

## 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 Storage J4400 Array				
SPC-2 MBPS™	SPC-2 Price-Performance	ASU Capacity (GB)	Total Price	Data Protection Level
887.44	\$25.63	23,965.918	\$22,742	Unprotected
<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	949.38			\$23.95
Write Only:				
1024 KiB Transfer	924.26	24	38.51	
256 KiB Transfer	904.50	24	37.69	
Read-Write:				
1024 KiB Transfer	849.97	24	35.42	
256 KiB Transfer	894.20	24	37.26	
Read Only:				
1024 KiB Transfer	1,065.85	24	44.41	
256 KiB Transfer	1,057.54	24	44.06	
<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	1,024.71			\$22.19
1024 KiB Transfer Size				
4 I/Os Outstanding	1,054.18	24	43.92	
1 I/O Outstanding	1,053.41	24	43.89	
64 KiB Transfer Size				
4 I/Os Outstanding	999.64	24	41.65	
1 I/O Outstanding	991.60	24	41.32	
<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
	688.22	875	0.79	\$33.04

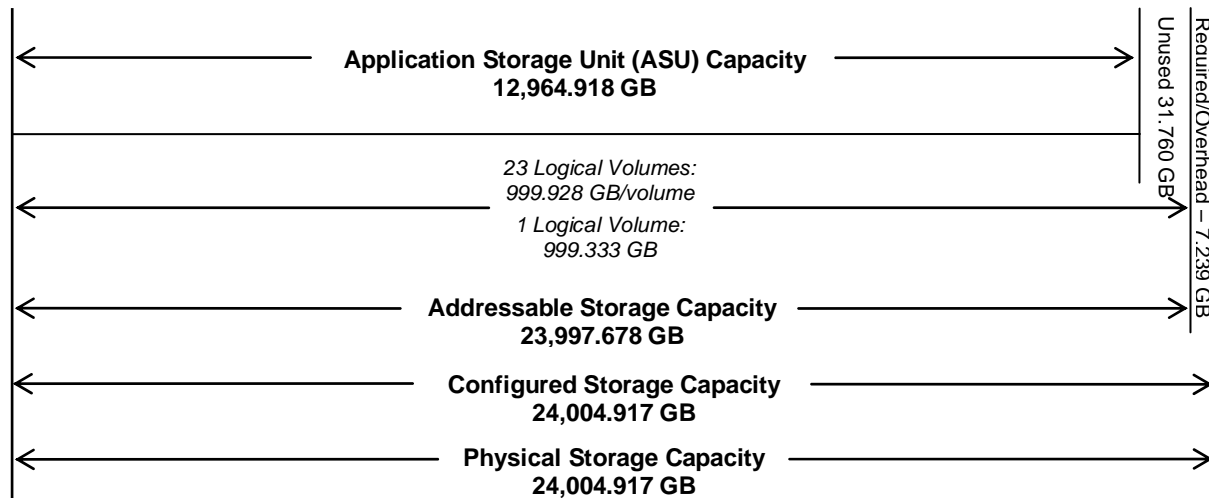
**SPC-2 MBPS™** represents the aggregate data rate, in megabytes per second, of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video on Demand (VOD).

**ASU (Application Storage Unit) Capacity** represents the total storage capacity read and written in the course of executing the SPC-2 benchmark.

A **Data Protection Level of Unprotected** provides no data protection.

### Storage Capacities and Relationships

The following diagram (*not to scale*) documents the various storage capacities, used in this benchmark, and their relationships.



**Tested Storage Configuration Pricing (Priced Storage Configuration)**

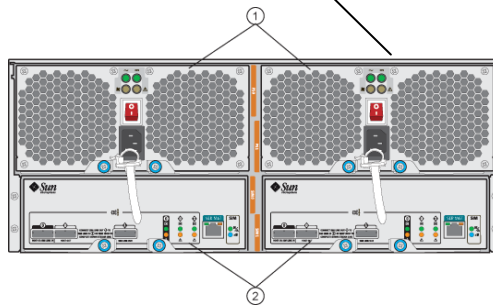
Part Number	Description	Quantity	US List	Total	discount	Ave. Price
XTA4400R00A10DISK	Sun Storage J4400 Rack Ready JBOD Chassis, No drives, dual AC power supplies, dual fan module, rail kit, single SAS I/O module, One .5M SAS cable, RoHS-5.	1	\$3,525.00	\$3,525	22%	\$2,750
XTA-4400-IOM	One three-port SAS I/O module for Storage J4400, One .5M SAS cable.	1	\$600	\$600	22%	\$468
XTA-ST1NJ-1T7K	RoHS-6. Internal 1TB 7.2K SATA HDD, 3.5" x 1" drive with bracket.	24	\$949	\$22,776	22%	\$17,765
XTA-4200-2URK-19U	Sun Storage J4400 4U universal rack rail kit; RoHS-5	1	\$175	\$175	22%	\$137
SG-XPCIE8SAS-E-Z	Sun StorageTek (TM) PCIe SAS Host Bus Adapter, 8 port, RoHS 6 compliant	1	\$550	\$550	22%	\$429
IWU-STJ4400-24-3G	Controller unit upgrade 3 year Gold Service Maintenance	1	\$2,131.27	\$2,131	44%	\$1,194
	- 7/24 coverage					
	- 4 hr response time					
	- 4 hour resolution					
<b>Total</b>				<b>\$29,757</b>		<b>\$22,742</b>

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

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

**Benchmark Configuration/Tested Storage Configuration Diagram**

**HS-1  
Sun SPARC Enterprise T5220 Server**



**SC-1  
Sun Storage J4400 Array**

**Host System(s) and Tested Storage Configuration Components**

Host System:	Tested Storage Configuration (TSC):
<b>UID=HS-1</b> Sun SPARC Enterprise T5220 Server	1 – Sun StorageTek PCI Express SAS 8-Channel HBA
1 – 8 core 1.2 GHz UltraSPARC T2 processor 4 MB integrated L2	<b>UID=SC-1:</b> <b>Sun Storage J4400</b>
3968 MB main memory	3 – 3 Gb/s “x4 wide” SAS ports available 1 port used
Solaris 10 Update 5	24 – 1 TB, 72000 RPM Seagate SATA disk drives
PCIe	
WG	