



# **SPC BENCHMARK 1™**

## **EXECUTIVE SUMMARY**

**3PARDATA, INC.**

**3PAR INSERV™ S800 (8-NODE) STORAGE SERVER**

**SPC-1 V1.5**

**Submitted for Review: October 10, 2002**

**Revised: December 6, 2002**

## **EXECUTIVE SUMMARY**

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

<b>Test Sponsor and Contact Information</b>	
<b>Test Sponsor Primary Contact</b>	3PARdata, Inc. – <a href="http://www.3par.com">www.3par.com</a> Le My – <a href="mailto:le.my@3pardata.com">le.my@3pardata.com</a> 3PARdata, Inc. 4209 Technology Drive Fremont, CA 94538 Phone: 510.413.5999 FAX: 510.413.5998
<b>Test Sponsor Alternate Contact</b>	3PARdata, Inc. – <a href="http://www.3par.com">www.3par.com</a> Geoff Hough – <a href="mailto:geoff.hough@3pardata.com">geoff.hough@3pardata.com</a> 3PARdata, Inc. 4209 Technology Drive Fremont, CA 94538 Phone: 510.413.5999 FAX: 510.413.9596
<b>Auditor</b>	Storage Performance Council <a href="http://www.storageperformance.org">www.storageperformance.org</a> Walter E. Baker <a href="mailto:AuditService@storageperformance.org">AuditService@storageperformance.org</a> 1060 El Camino Real, Suite F Redwood City, CA 94063 Phone: (650) 556-9384 FAX: (650) 556-9385

### **Revision Information and Key Dates**

<b>Revision Information and Key Dates</b>	
<b>SPC-1 Specification revision number</b>	V1.5
<b>SPC-1 Workload Generator revision number</b>	V1.1
<b>Date Results were first used publicly</b>	October 10, 2002
<b>Date FDR was submitted to the SPC</b>	October 10, 2002
<b>Date the revised FDR was submitted to the SPC December 6, 2000: Updated pricing and SPC-1 Price-Performance (page 3, 5)</b>	December 6, 2002
<b>Date the TSC is/was available for shipment to customers</b>	September 24, 2002 (pricing effective December 6, 2002)
<b>Date the TSC completed audit certification</b>	October 09, 2002

## Summary of Results

SPC-1 Results	
Tested Storage Configuration (TSC) Name: 3PAR InServ™ S800 (8-node) Storage Server	
Metric	Reported Result
SPC-1 IOPS™	47,001.19
SPC-1 Price-Performance	\$24.90/SPC-1 IOPS™
Total ASU Capacity	4,444.44 GB
Data Protection Level	Mirroring
SPC-1 LRT™	2.34 ms
Total TSC Price (including three-year maintenance)	\$1,170,286

**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. The actual Configured Storage Capacity was 9,195 GB, which included the multiple copies of user data required by a Data Protection Level of Mirroring. The Configured Storage Capacity utilized 78.08% of the priced Physical Storage Capacity of 11,776 GB.

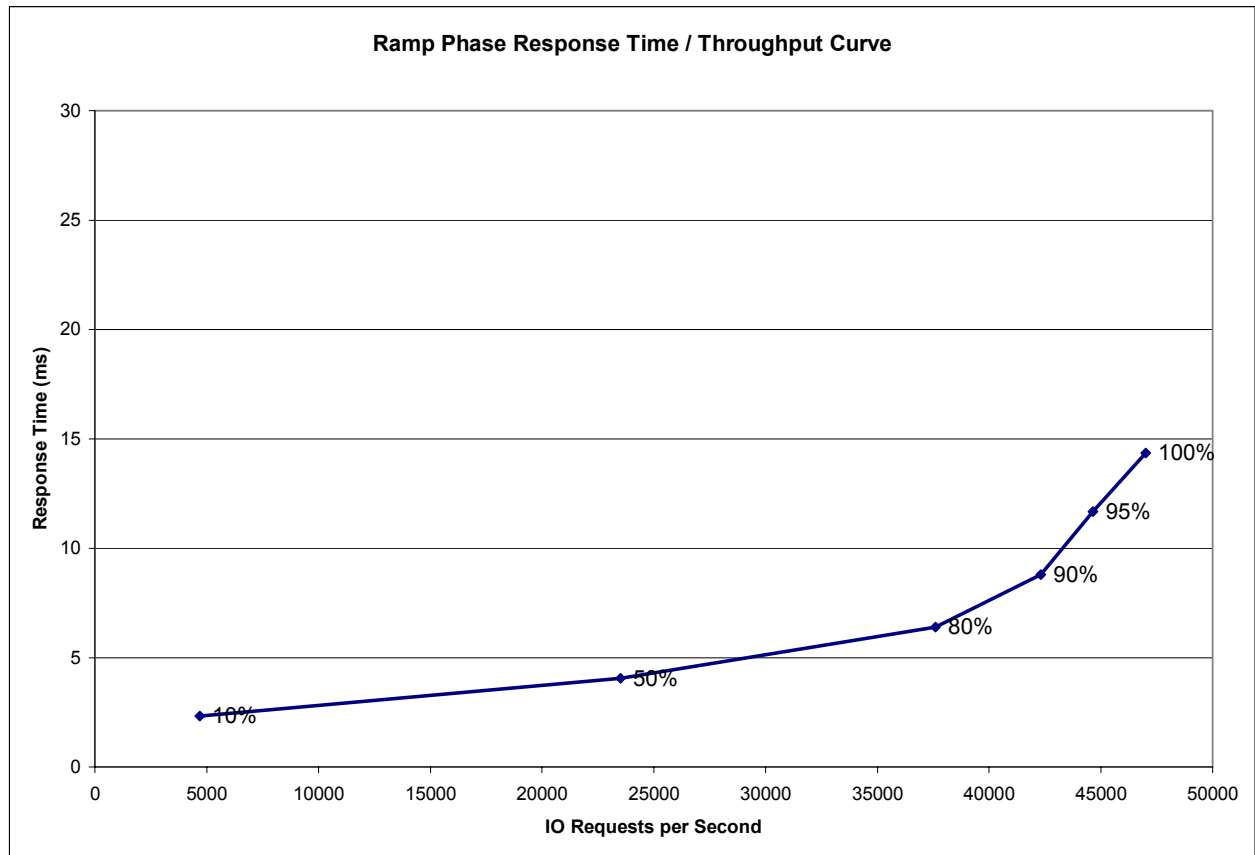
A **Data Protection Level** of Mirroring configures two or more identical copies of user data, maintained on separate disks.

The **SPC-1 LRT™** metric is the Average Response Time measured at the 10% load point, as illustrated on the next page. SPC-1 LRT™ represents the Average Response Time measured on a lightly loaded Tested Storage Configuration (TSC).

## 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 100% load point cannot exceed 30 milliseconds or the benchmark measurement is invalid.



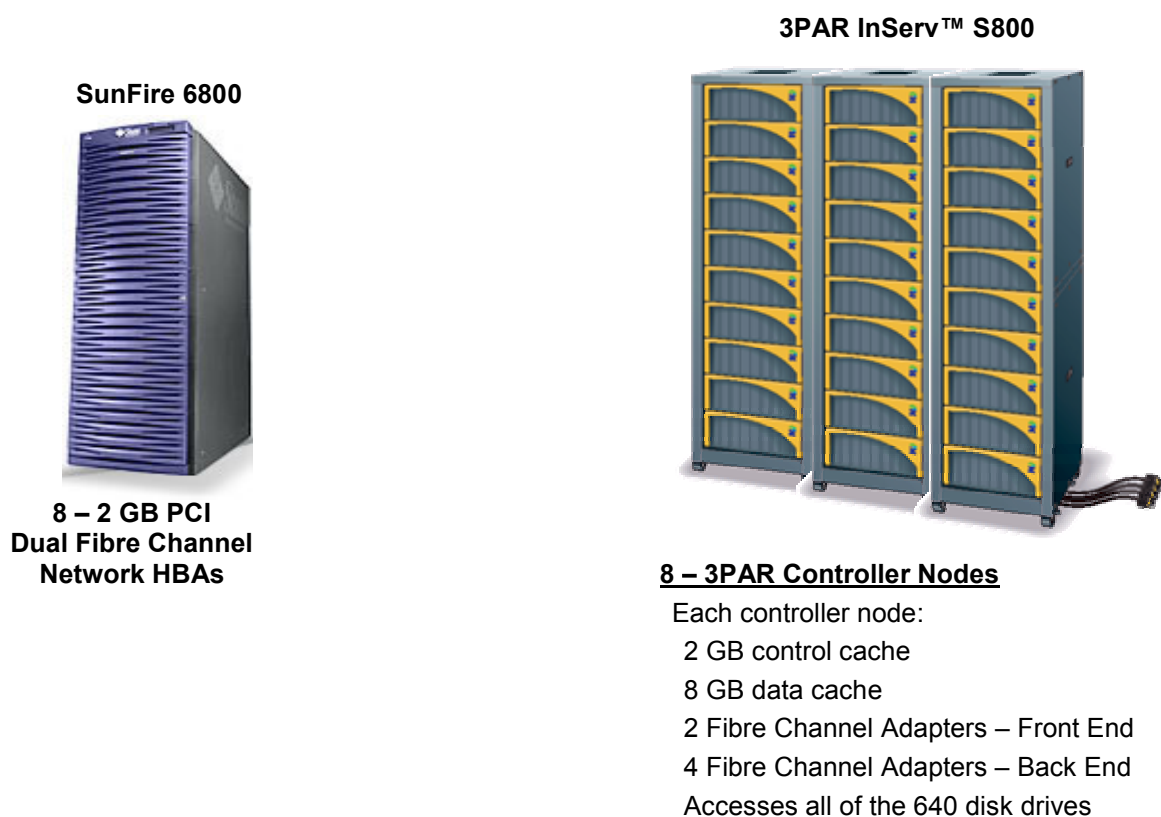
## Response Time – Throughput Data

	10% Load	50% Load	80% Load	90% Load	95% Load	100% Load
<b>I/O Request Throughput</b>	4,698.48	23,506.48	37,602.86	42,306.96	44,658.98	47,001.19
<b>Average Response Time (ms):</b>						
All ASUs	2.34	4.05	6.40	8.80	11.67	14.36
ASU-1	2.96	4.80	6.54	7.48	8.69	10.48
ASU-2	2.29	4.32	7.69	10.62	13.37	14.62
ASU-3	1.03	2.34	5.54	10.81	17.25	22.48
Reads	4.53	7.04	9.82	11.19	12.34	13.89
Writes	0.91	2.10	4.17	7.25	11.24	14.67

## Tested Storage Configuration Pricing

Item	Description	Qty	Price
980-0001-01	1000-MHZ CONTROLLER NODE	6	
980-0002-01	1024MB CONTROL CACHE (2 X 512 DIMMS)	16	
980-0005-01	2048MB DATA CACHE (2 X 1024 DIMMS)	32	
980-0006-01	2-PORT FIBRE CHANNEL ADAPTER	48	
980-0016-01	INSERV S800 BASE MODEL	1	
981-0001-01	10-BAY DRIVE CHASSIS	16	
981-0008-01	4 X 18GB DRIVE MAGAZINE (10K RPM)	160	
982-0008-01	2M CABINET KIT (WITH REDUNDANT PDU PAIR)	3	
982-0009-01	2-METER CABLE (LC-LC)	4	
982-0010-01	4-METER CABLE (LC-LC)	6	
982-0011-01	50-METER CABLE (LC-LC)	54	
985-0001-01	SERVICE PROCESSOR	1	
985-0005-01	INSTALLATION AND SET-UP 8-NODES	1	
985-0050-01	3PAR ADVANTAGE	8	
987-0003-01	EXPRESS SUITE (S800)	8	
982-0003-01	10-METER CABLE (LC-LC)	16	
	<b>3PAR InServ S800 Storage Server Package</b>	<b>1</b>	<b>\$ 1,138,158</b>
<b>X6768A</b>	<b>Sun StorEdge™ 2 Gb PCI Dual Fibre Channel Network HBA</b>	<b>8</b>	<b>\$ 30,400</b>
	<b>3 year-maintenance X6768A (quantity 8)</b>	<b>1</b>	<b>\$ 1,728</b>
	<b>Total Cost (including 3-year maintenance)</b>		<b>\$ 1,170,286</b>

## Benchmark Configuration/Tested Storage Configuration Diagram



Host System:	Storage System:
Sun Fire™ 6800	3PAR InServ S800
UID=HS-SF6800	UID=SC-S800
24 UltraSPARC™ III 750 MHz CPUs with 8 MB EEC External Cache per CPU	64 GB Data Cache 16 GB Control Cache
24 GB Main Memory	8 - 3PAR Controller Nodes
Solaris™ 8 Generic_108528-13	16 - 10-Bay Drive Chassis
PCI	160 - 4 x 18 GB Drive Magazines (10K RPM, FC)
Fibre Channel	3PAR Express Suite (S800)
WG	Fibre Channel