



SPC BENCHMARK 1™

EXECUTIVE SUMMARY

DELL COMPUTER CORPORATION

PERC3/QC SCSI RAID CONTROLLER

SPC-1 V1.4

Submitted for Review

June 19, 2002

Test Sponsor and Contact Information

Test Sponsor and Contact Information	
Test Sponsor Primary Contact	Dell Computer Corporation – http://www.dell.com/ James Jordan – James_Jordan@dell.com Mailing Address : Enterprise Storage Systems 1 Dell Way Round Rock, TX 78682 Phone: (512) 728-0986 FAX: (512)283-9483
Test Sponsor Alternate Contact	Dell Computer Corporation – http://www.dell.com/ Mike Molloy – Mike_Molloy@dell.com Mailing Address : Enterprise Storage Systems One Dell Way Round Rock, TX 78682 Phone: (512) 723-3525 FAX: (512)283-9483
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Auditor	Storage Performance Council www.storageperformance.org Walter E. Baker AuditService@storageperformance.org 1060 El Camino Real, Suite F 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	V1.4
SPC-1 Workload Generator revision number	V1.0
Date Results were first used publicly	June 19, 2002
Date FDR was submitted to the SPC	June 19, 2002
Date the TSC is/was available for shipment to customers	March 01, 2001
Date the TSC completed audit certification	June 18, 2002

Summary of Results

SPC-1 Results	
Tested Storage Configuration (TSC) Name: PERC3/QC SCSI RAID Controller	
Metric	Reported Result
SPC-1 IOPS ^Ô	7650.40
SPC-1 Price-Performance	4.48 \$/SPC-1 IOPS TM
Total ASU Capacity	440 .0 GB
Data Protection Level	Mirroring
SPC-1 LRT ^Ô	3.10ms
Total TSC Price (including three-year maintenance)	34,241.00\$

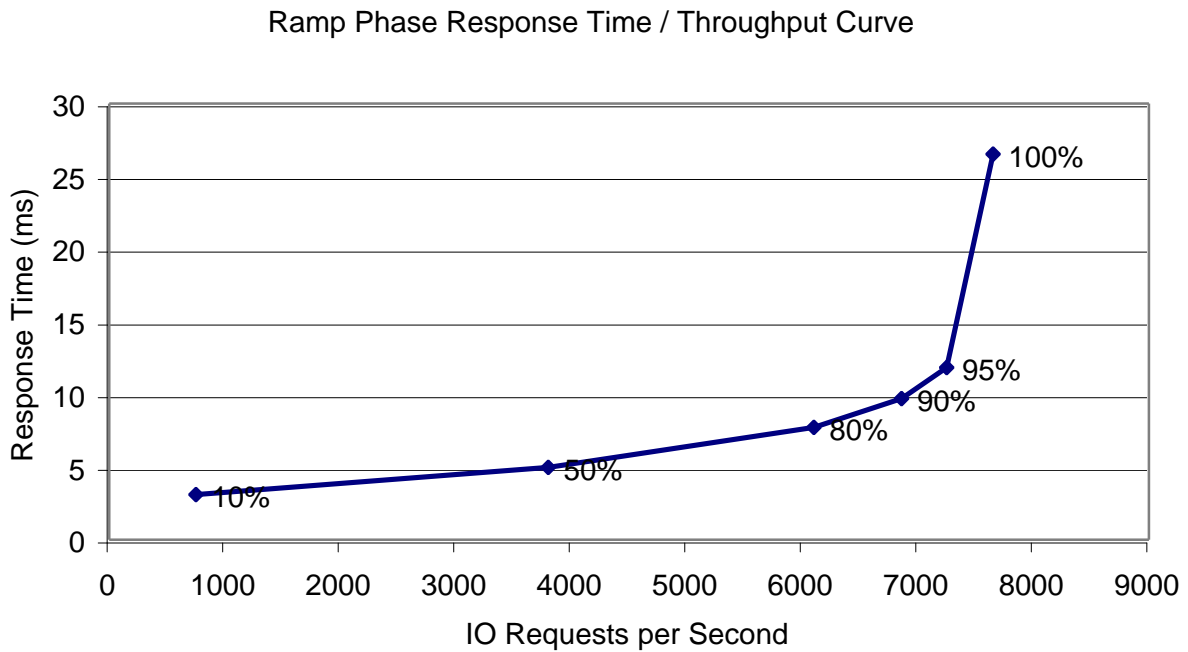
SPC-1 IOPSTM represents the maximum I/O Request Throughput at the 100% load point.

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* has two or more identical copies of user data maintained on separate disks.

The **SPC-1 LRTTM** metric is the Average Response Time measured at the 10% load point, as illustrated on the next page. SPC-1 LRTTM 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.

Tested Storage Configuration Pricing

Performance (IOPS)	Perc3/QC SCSI RAID Controller	Dell Computer Corporation
\$7,649.00		Report Date 5/28/2002
Price / Performance (\$/IOPS)	Price	Availability Date
\$4.48	\$34,241	5/28/2002

Description	Part No.	Vendor	Reference Price	Quantity	Extended Price	3 Yr Maintenance Price
Controller Hardware:						
CONTROLLER: PERC3-QC,128MB,4-CH,PE24/44/6X00.CUS <i>Quad channel 64 bit/ 66 Mhz SCSI RAID controller. Supports 4 PV22xS drive enclosures up to 56 drives. 4 Terabyte storage capacity possible. Uses one PCI slot.</i>	340-4207	1	\$2,049	1	\$2,049	
MAINT: 3Yrs SILVER 4Hr,DL,UNY On-Site initial year	900-6810	1	\$483	1		\$483
MAINT: 3Yrs SILVER 4Hr,DL,UNY On-Site two years	900-6352	1	\$799	1		\$799
					Storage Hardware Subtotal	\$3,331
					Dell Discount (11%)	\$366
Storage Hardware:						
SYSTEM: PowerVault 221S,3U,14HDD,U160 Tower <i>U160 drive enclosure supporting upto 14 drives. Redundant power supply and EMM options.</i>	220-4477	1	\$1,563	4	\$6,252	
CTRL: ZEMM,U160,PV22XS,SINGLE, Not Clusterable	340-3089	1	\$399	4	\$1,596	

POWER: 600W,PWR SPLY,PV22XS	310-0683	1	\$89	4	\$356	
DISK: 18GB,U160,SCSI,1IN 15K	340-3087	1	\$399	56	\$22,344	
CBL: 2X4M,CBL,PERC/39160,68P	310-0679	1	\$99	2	\$198	
MAINT: 3Yrs SILVER 4Hr,DL,UNY On-Site initial year	900-6790	1	\$480	4		\$1,920
MAINT: 3Yrs SILVER 4Hr,DL,UNY On-Site two years	900-6792	1	\$619	4		\$2,476
					Storage Hardware Subtotal	\$35,142
					Dell Discount (11%)	\$3,866
					TOTAL	\$38,473
					Dell Discounts	\$4,232

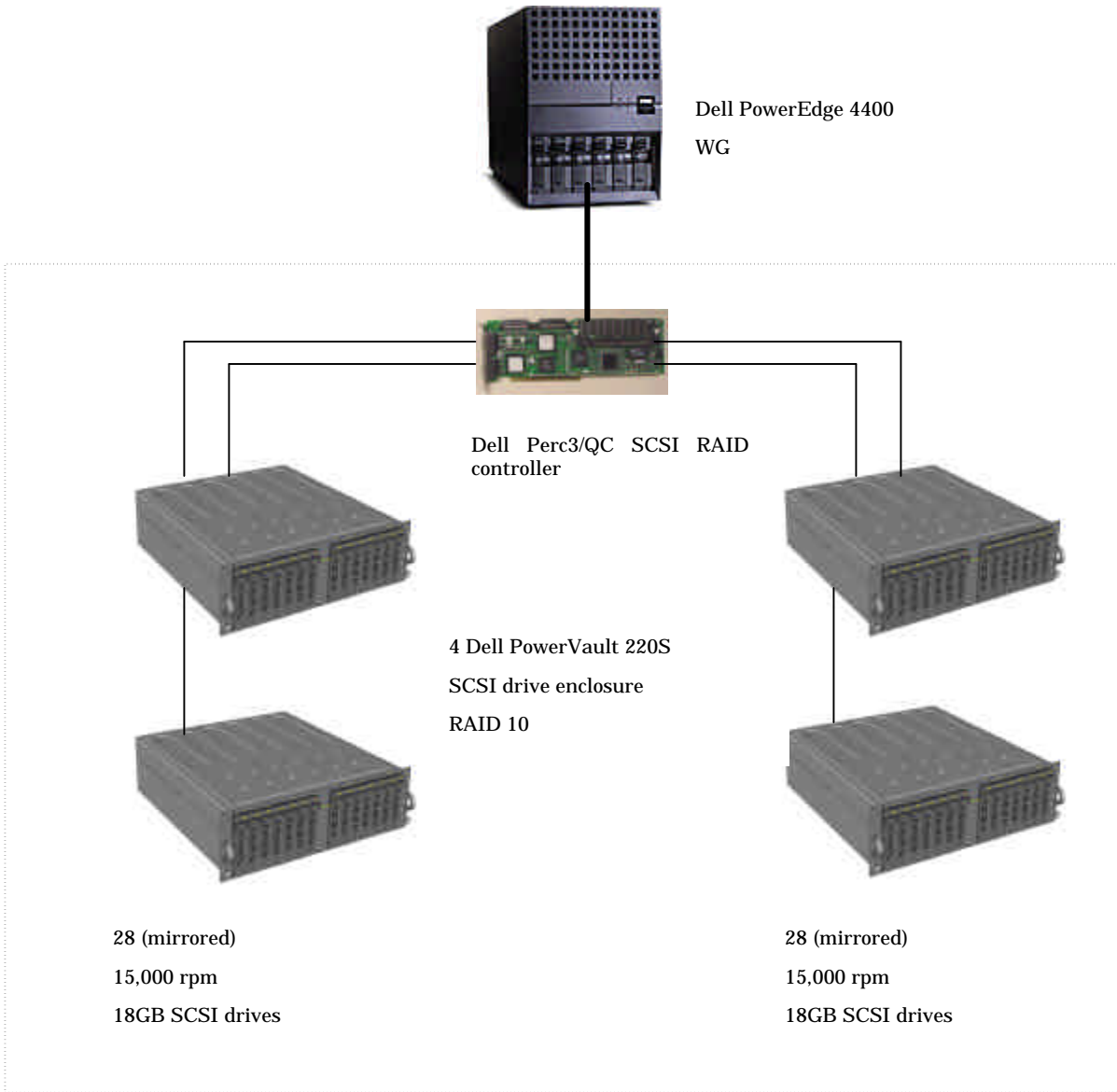
Three Year Cost of Ownership \$34,241

Vendor List

1 - DELL

Benchmark Configuration/Tested Storage Configuration Diagram

Dell PERC3/QC SCSI RAID Controller



Host System	Storage System
Dell Power Edge 4400	Perc3/QC SCSI RAID Controller
UID=HS-PE4400	UID=SC-Perc3/QC
2 x 733MHz Pentium III	128MB
2GB RAM	Ultra3
Windows 2K	4 back-end PowerVault220S SCSI Enclosure
Ultra3	56 x 18GB 15Krpm hard drives
1 64-bit/66MHz PCI slot	