Sun Enterprise 6500 Cluster using Oracle8i

Sun

ORACLE ®

TPC-C 3.4

Report Date:
September 24, 1999

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$13,153,324	**135,461.40 tpmC**	**$97.10 per tpmC**	**January 31, 2000**

Processors	Database Manager	Operating System	Other Software	Number of Users
4*24 * 400MHz UltraSPARC II	**Oracle8i v 8.1.6**	**Solaris 2.6**	**Sun Cluster 2.2 BEA Tuxedo 6.3**	**110,000**

100 BaseT

SWITCH

SWITCH

100 BaseT

2 * 8 port 10/100 Mbps
Ethernet Switch

4*Sun Enterprise 6500 Servers
4*24*400MHz UltraSPARC-II CPUs
4*8GB Memory
17 * 9GB SCSI-2 disks

4*2 100 BaseT

8 Sun StorEdge A5100 Arrays
60 Sun StorEdge A5200 Arrays

40 Sun Ultra 10 Model 333 Servers
2750 user connections to 1 client (3 segments per client)
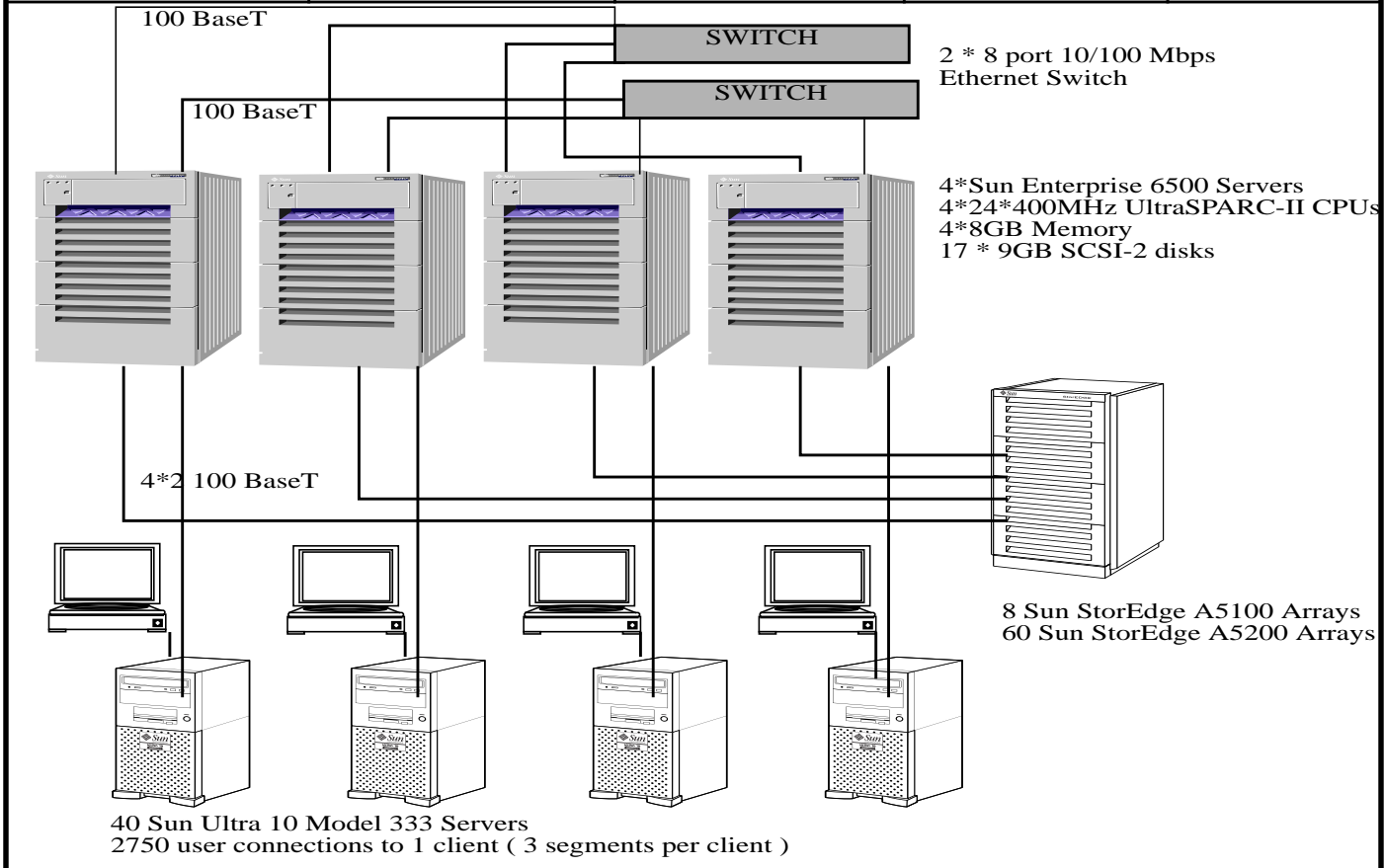
Configuration

	Server System	Front End Systems
Database Nodes:	4 Sun Enterprise 6500 Servers	40 * Ultra 10 Model 333
Processors	4*24* 400 MHz UltraSPARC II	1 * 333 MHz UltraSPARC II each
Cache memory	32KB (D+I), 8MB external	32KB (D+I), 512KB external, each
Main memory	4*8 GB	1 GB each
Disk controllers	4 * 16 dualport FC-AL, 4 *4 Fast/Wide SCSI-2	1
Disk Drives	1320 * 9GB FC-AL, 112 * 18GB FC-AL, 17 * 9GB SCSI-2	1 * 9 GB disk
Total Disk Storage	14,050 GB	9 GB each
10 BaseT Hub	None	13760 * 9-Port Hubs
100 Base T Hubs	8 x 8-Port Hubs	None
100 BaseT Switches	2 * 8-Port	None

Pricing Summary

Description	Part Number	Source	Unit Price	Qty	Ext. Price	5 Yr. Maint.
Server Hardware						
Enterprise 6500 Server Base	E6501	2	86,400	4	345,600	540,518
CPU/Memory board	2602A	2	4,320	48	207,360	487,526
400MHz/8MB UltraSPARC II	2580A	2	10,800	96	1,036,800	
1GB memory (8 * 128MB)	7023A	2	6,840	32	218,880	
PS/300W for Ex000	954A	2	1,296	24	31,104	
SBus I/O board	2612A	2	4,680	16	74,880	
FCAL 100MB/S SBus Host Adapter	6730A	2	1,944	48	93,312	
FCAL GBIC Module	6731A	2	432	188	81,216	
200GB StorEdge A5200 Array	SG-ARY522A-200GR4	2	68,040	16	1,088,640	225,792
200GB StorEdge A5200 Array	SG-ARY520A-200G	2	68,040	44	2,993,760	620,928
252GB StorEdge A5100 Array	SG-ARY530A-254G	2	45,288	8	362,304	112,896
FC-AL cables	978A	2	978	72	70,416	
9GB disk Unipack	SG-XDSK010A-9G	2	1,053	17	17,901	
Cluster Terminal Concentrator	X1312A	2	1,800	1	1,800	
12-24GB 4mm DDS-3 Tape Drive	6283A	2	972	4	3,888	
8 port 10/100 Mbps Ethernet Switch	NX-SW8	5	219	4	876	
Server Hardware Subtotal					**6,628,737**	**1,987,661**
Server Software						
Solaris Server Software	SOLMS-26ZW9999	1	100	1	100	
SPARC Compiler C/C++ 5.0	WCCIS-500-T999	1	995	1	995	1,080
Sun Cluster 2.2 license for E6500	CL7IS-229-9999	1	24,000	4	96,000	139,680
Sun Cluster 2.2 OPS Agent for E6500	CLCIS-22P-9999	1	4,000	4	16,000	23,280
Oracle OPS8i		3	1,909,080	1	1,909,080	1,909,080
Server Software Subtotal					**2,022,175**	**2,073,120**
Client Hardware						
Ultra 10 Server Model 333	A22UHC1Z9S-B512CP	2	5,433	40	217,320	172,224
512MB Memory for Ultra 10	7039A	2	1,562	40	62,480	
PCI QEF Card	1034A	2	1,292	40	51,680	
Color Monitor	x7126	2	418	40	16,720	
Client Hardware Subtotal					**348,200**	**172,224**
Client Software						
BEA Tuxedo CFS 6.3		4	3,000	40	120,000	96,000
Client Software Subtotal					**120,000**	**96,000**
User Connectivity						
8-port 10/100Mbps Fast Ethernet Hub	NX-SOHODH8	5	129	10	1,290	
9-port 10Mbps Ethernet Hub	NX-H9EZ	5	30	15136	454,080	
User Connectivity Subtotal					**455,370**	
Sun Enterprise Services discounts						**(750,163)**
			Total		9,574,482	3,578,842
			5Yr. cost		13,153,324	
			tpmC Rating		135,461	
			$/tpmC		$97.10	

Service for all Sun products is from Sun Microsystems, Inc.

Notes:

1. Sun Microsystems Inc. 2. OAT Technology Inc 3. Oracle Corp 4. BEA Systems, Inc. 5. NETLUX

Audited by: Lorna Livingtree, Performance Metrics Inc.

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchase are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

Numerical Quantity Summary

MQTH, Computed Maximum Qualified Throughput = **135,461.40 tpmC**

% throughput difference, reported & reproducibility runs = < 0.5%

Response Times (in secs)	90th Percentile	Average	Maximum
Menu	0.50	0.25	1.09
New-Order	1.00	0.47	13.53
Payment	0.60	0.34	17.43
Order-Status	0.40	0.34	5.18
Delivery(interactive)	0.74	0.30	1.50
Delivery(deferred)	2.00	0.28	8.00
Stock-level	5.00	3.24	12.24

Transaction Mix, in percent of total transactions

New-Order	44.75%
Payment	43.11%
Order-Status	4.04%
Delivery	4.05%
Stock-level	4.04%

Keying/Think Times (in secs)	Average.	Min.	Maximum
New-Order	18.02/12.09	18.01/0	18.06/120.80
Payment	3.02/12.08	3.01/0	3.04/120.80
Order-Status	2.02/10.08	2.01/0	2.04/100.80
Delivery	2.02/5.08	2.01/0	2.06/50.80
Stock-level	2.02/5.08	2.01/0	2.05/50.80

Test Duration	
Ramp-up time	29 minutes
Measurement Interval	30 minutes
Number of checkpoints	1
Checkpoint Interval	30 minutes
Number of transactions (all types) completed in measurement interval	9081376