



SPARC SuperCluster with T3-4 Servers

TPC-C 5.11.0
TPC-Pricing 1.5.0

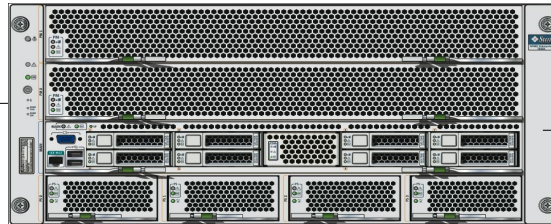
Report Date
December 2, 2010

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$30,528,863USD	30,249,688 tpmC	\$1.01USD/tpmC	June 1, 2011	
Database Server Processors/Cores/Threads	Database Manager	Operating System	Other Software	Number of Users
SPARC T3 1.65GHz 108 / 1,728 / 13,824	Oracle Database 11g Release 2 Enterprise Ed. With Oracle Real Application Clusters and Partitioning	Oracle Solaris 10 09/10	Tuxedo CFS-R Tier 1 Oracle iPlanet Web Server	24,300,000

Clients

81 Sun Fire X4170M2
2.93GHz Intel
Xeon X5670 HC
48GB Memory
2 146GB SAS disk

Database Nodes



27 Sun SPARC T3-4 Servers
4 1.65GHz SPARC T3
512GB Memory
3 300GB 10K RPM SAS
4 8Gb/s FC HBA, 2 port
10GbE SFP+
5RU High

Storage

67 X4270M2 DATA COMSTAR
6 2TB 7.2K RPM SAS
2 Sun F5100 Flash Arrays

2 X4270M2 DATA COMSTAR
5 2TB 7.2K RPM SAS
2 Sun F5100 Flash Arrays

28 X4270M2 REDO COMSTAR
11 2TB 7.2K RPM SAS

System Component	Each Server Node		Each Client	
Processors/Cores/Threads and cache	4/64/512	SPARC T3 1.65GHz 6 MB L2 Cache	2/12/24	Intel Xeon X5670 12MB Smart Cache
Memory		512GB (13.5TB Total)		48GB
Disk Controllers	4	8Gb/s FC HBA 2 Port	1	8 port Internal SAS
OS Disks (each system)	3	300GB 10K RPM SAS	2	146GB 10K RPM SAS
External Storage (Equally visible to all T3-4 Server nodes)	11,040 720	24GB SSD Flash Modules 2TB 7.2K RPM SAS		
Total Storage		1.76PB		



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Description	Part Number	Price Source	Unit Price	Qty	Extended Price	3 yr Maint. Price	
Server Hardware							
Sun T3-4 Server, XATO chassis	SE5ASY11Z		1	6,400	27	172,800	
Pwr Jumper Cables, 2.5mx1 RoHS	SR-JUMP-1MC13		1	23	108	2,484	
8Gb/s FC HBA, 2 port, Emulex	SG-XPCIE2FC-EM8-Z		1	2,399	108	259,092	
Sun Dual 10GbE SFP+ PCIe 2.0	1110A-Z		1	1,195	27	32,265	
Sun 10Gbps Dual Rate SFP+ SR	X2129A-N		1	995	27	26,865	
SE 300GB 10K 2.5" SAS HDD	SE6Y3G11Z		1	689	81	55,809	
2 x SPARC T3 1.65GHz 16c	SE5Y1B11Z		1	31,000	54	1,674,000	
16GB (2*8GB) DDR3 Memory	SE6Y2C11Z		1	3,200	864	2,764,800	
2000 Watt PSU Climate Saver	SE5Y5PS3Z		1	995	108	107,460	
Snap-in Rear I/O Module, Cable Mgmt	SE5YRM2Z		1	699	27	18,873	
Tripp Lite Smart Online 5000VA UPS (+10%)	947887		2	2,953	30	88,590	
Tripp Lite UPS 192V RM 3U Ext. Batt.(+10%)	959740		2	970	30	29,100	
Sub-Total						5,232,138	0
Server Storage							
X4270M2 12 disk 1 x PSU	X4270M2-H1-AA		1s	3,499	97	339,403	
Oracle Solaris 11 Express	SOLZ9-11XC9A7M		1	20	97	1,940	
Jumper Cable Kit: 1 x 1m C13	XSR-JUMP-1MC13-N		1	23	97	2,231	
3.5" 2TB 7.2K RPM SAS HDD	RA-SS1CR-2T7K		1s	949	720	683,280	
8Gb/s FC dual port, QLogic	SG-XPCIE2FC-QF8-N		1	2,399	97	232,703	
6Gb/s SAS External PCI-E HBA	SGX-SAS6-EXT-Z		1	550	276	151,800	
6Gb/s SAS Internal PCI-E HBA	SG-SAS6-INT-Z		1	419	69	28,911	
6Gb/s SAS RAID HBA, Internal	SG-SAS6-R-INT-Z		1	1,079	28	30,212	
1 x Intel Xeon X5670 ATO	5921A		1s	2,499	97	242,403	
1200W AC Gold PSU XATO	5933A		1s	349	97	33,853	
4GB (1 x 4GB) DDR3-1333	4910A		1s	255	194	49,470	
Express Slide rail kit	5889A-N		1	150	97	14,550	
X4270 X4275 CPU Heatsink XATO	5899A-N		1	0	97	0	
0.5M, Mini, shielded, SAS cable	XTA-0.5M-SAS		1	95	552	52,440	
Sun Storage F5100 Flash Array	TA5100RASA4-80AA		1	159,995	138	22,079,310	
15M LC-LC FC Optical Cable	X9734A-Z-N		1	105	410	43,050	
Sub-Total						23,985,556	0
Server Software							
Oracle Solaris 10 09/10 for SPARC T3-4	SOLZS-11X9A9S-IP-N		1	0	27	0	
Oracle Database 11g Release 2 Ent. Ed., Per Processor for 3 years			1	23,750	432	10,260,000	
Oracle Real Applications Clusters, Per Processor for 3 years			1	11,500	432	4,968,000	
Oracle Partitioning, Per Processor for 3 years			1	5,750	432	2,484,000	
Oracle Incident Server Support Package for 3 years			1	62,100	3	186,300	
Sub-Total						17,712,000	186,300
Client Hardware							
X4170M2 1 x Standard PSU	X4170M2-H1-AA		1	2,699	81	218,619	
Jumper Cable Kit: 1 x 1m C13	XSR-JUMP-1MC13-N		1	23	81	1,863	
4GB (1 x 4GB) DDR3-1333	4910A		1	255	972	247,860	
146GB 10K RPM 2.5" SAS disk	RB-SS2CF-146G10K-N		1	329	162	53,298	
6Gb/s SAS Internal PCI-E HBA	SG-SAS6-INT-Z		1	419	81	33,939	
1 x Intel Xeon X5670 ATO	5921A		1	2,499	162	404,838	
Slide Rail Kit	6326A-N		1	150	81	12,150	
X4170 CPU Heatsink, XATO	5898A-N		1	0	162	0	
Sub-Total						972,567	0
Client Software							
Oracle Solaris 10 09/10	5908A		1	0	81	0	
Oracle iPlanet Web Server			1	1,000	81	81,000	
Oracle Premier Software Support			1	17,820	3	53,460	
Tuxedo CFS-R Tier 1			1	1,800	81	145,800	
Oracle Premier Support for 3 years (Tuxedo CFS-R Tier 1)			1	32,076	3	96,228	
Sub-Total						226,800	149,688

Description	Part Number	Price Source	Unit Price	Qty	Extended Price	3 yr Maint. Price	
Other Hardware							
Brocade 5300 with 8G SFP EB	SG-XSWBRO5300-8EB		1	139,995	2	279,990	
Brocade Std Switch Rack Kit	SG-XSWBRO3X50-RK-Z		1	250	4	1,000	
Brocade Power Kit N. America	SG-XSWBRO-PWR-01-Z		1	250	4	1,000	
Brocade DCX Chassis	SG-XSWBRODCX-ZP-N		1	138,999	1	138,999	
Brocade 8Gb 48 port Blade w 8Gb	SG-XSWBRO8GB-M48W8		1	88,500	7	619,500	
Brocade DCX PWR 110V NA	SG-XSWBROPWR-NA110		1	250	2	500	
SUT Mgmt system and Svc Processor Control Workstation							
Sun Fire X4170M2	X4170M2-H1-AA		1	2,699	1	2,699	
Oracle Solaris 10 09/10	5894A-N		1	0	1	0	
US PC Peripheral Kit (Keyboard / Mouse)	3701A-PC		1	50	1	50	
Express Slide rail kit	6326A		1	150	1	150	
4GB (1 x 4GB) DDR3-1333	4850A		1	255	3	765	
6Gb/s SAS Internal PCI-E HBA	SG-SAS6-INT-Z		1	419	1	419	
146GB 10K RPM 2.5" SAS disk	RB-SS2CF-146G10K-N		1	329	1	329	
DVD+/-RW SATA-based drive ATO	8325A-N		1	145	1	145	
1 x Intel Xeon E5620 ATO	5924A		1	599	1	599	
X4170 CPU Heatsink, XATO	5898A-N		1	0	1	0	
17" TFT Monitor	X7204A-N		1	219	1	219	
Sun Network 10GbE Switch 72p	X2074A-F		1	79,200	1	79,200	
Sun QSFP to 4 LC 20M cable	X2127A-20M		1	1,395	7	9,765	
Sun Rack II 42U	SR-1242E-N		1	2,849	15	42,735	
PDU 15kVA, Single Phase, LV	SR-15K-L630-N		1	1,200	8	9,600	
PDU 10kVA, Single Phase, LV	SR-10K-L630-N		1	900	4	3,600	
PDU 5kVA, Single Phase, LV	SR-5K-L630CP-N		1	350	18	6,300	
Netgear ProSafe GS724T 24 port (+10%)	1984876		2	330	19	6,270	
Tripp Lite 25' Black Cat5e cable (+10%)	324521		2	7	546	3,817	
Sub-Total						1,207,651	0
Oracle Premier Hardware Support	Q-PREM-SPRT-SYS		1	3,763,541	3	11,257,249	
Totals						49,336,712	11,593,237
Total Oracle Hardware, Software and Maintenance Discount			1			(30,401,086)	
Pricing Sources:		Notes:		Three-Year Cost of Ownership:		\$30,528,863	
1. Oracle		1s – One or more components of the measured configuration have been substituted in the priced configuration. See the FDR for details.				tpmC 30,249,688	
2. CDW						\$/tpmC 1.01 USD	
Audited by Francois Raab of InfoSizing, 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 purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing section of the TPC benchmark specifications. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.							



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Numerical Quantities Summary:

MQTh, computed Maximum Qualified Throughput 30,249,688

Response Time in Seconds	<u>90th %</u>	<u>Avg.</u>	<u>Max.</u>
New-Order	0.75	0.353	17.468
Payment	0.73	0.336	17.463
Order-Status	0.71	0.328	17.308
Delivery (Interactive)	0.66	0.292	8.872
Delivery (Deferred)	0.06	0.034	3.587
Stock-Level	0.76	0.370	17.392
Menu	0.68	0.298	8.881
Response Time delay added for emulated components		0.1	

Transaction Mix, in percent of total transactions

New-Order	44.96%
Payment	43.01%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.01%

Keying / Think Times (in seconds)

	<u>Min.</u>		<u>Avg.</u>		<u>Max.</u>	
New-Order	18.001	0.001	18.007	12.026	21.884	124.167
Payment	3.001	0.001	3.007	12.025	6.865	123.707
Order-Status	2.001	0.001	2.007	10.032	5.884	102.488
Delivery	2.001	0.001	2.007	5.042	5.881	53.640
Stock-Level	2.001	0.001	2.007	5.042	5.882	52.618

Test Duration

Ramp-up Time	1,973 seconds
Measurement Interval	7,200 seconds
Number of Checkpoints	Ongoing
Checkpoint Interval	Ongoing Incremental Checkpoints
Number of transactions (all types) completed in Measurement Interval	8,073,759,601