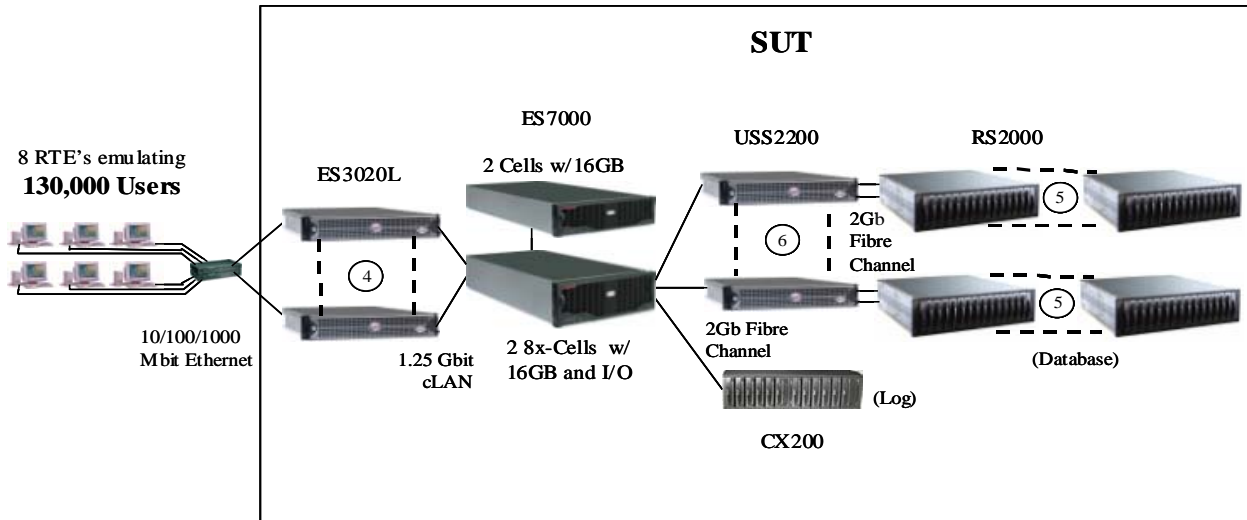


UNISYS	ES7000 Orion 540 Enterprise Server (16P)		TPC-C Rev. 5.1	
			Report Date May 16, 2003	
Total System Cost	TPC-C Throughput	Price Performance	Availability Date	
\$986,622	161,542.04 tpmC	\$6.11 / tpmC	May 30, 2003	
Processors/ Cores/Threads	Database Manager	Operating System	Other Software	Number of Users
16/16/32 Database 8/8/16 Clients	Microsoft SQL Server 2000 Enterprise Edition	Microsoft Windows Server 2003, Datacenter Edition	Windows 2000 Server w/ IIS 5.0 and COM+ Microsoft Visual C++	130,000



Clients (each of 4)

ES3020L Server

2 x 2.4GHz Intel® Xeon™
w/ 512KB L2 cache,
2 GB memory,
1 x 18GB internal disk,
2 Inbuilt 10/100/1000Mb
Ethernet (1 used),
1 x PCI cLAN controller

ES7000 Orion 540

Enterprise Server

16 x 1.5GHz Intel® Xeon™ MP
w/ 1MB L3 cache,
64 GB memory,
1 internal disk controller,
1 x 30GB internal disk,
7 x PCI Fibre Channel controllers,
4 x PCI cLAN controllers

Storage

USS2200/RS2000 & CX200

412 x 18GB + 14 x 73GB
Hot-Pluggable,
External Fibre Channel disks,
8 x FC RAID controllers

System Components	Server		Clients (each of 4)	
	Quantity		Quantity	
Processors/Cores/Threads Cache	16/16/32	1.5GHz Intel® Xeon™ MP with 1MB Level 3 Cache	2/2/4	2.4GHz Intel® Xeon™ with 512KB Level 2 Cache
Memory	4	16 GB	2	1 GB
Disk Controllers	7	PCI Fibre Channel	1	Inbuilt SCSI
	1	Inbuilt (boot media)		
Disk Drives	412	18GB FC (16.4 GB useable)	1	18GB SCSI (16.9 GB useable)
	14	73GB FC (60.4 GB useable)		
	1	30GB boot (28.0 GB useable)		
Total Storage		7.4 TB		16.9 GB
Tape / CD-ROM	1	IDE CD-ROM	1	IDE CD-ROM
Terminals	1	Console Monitor	1	Console Monitor



ES7000 Orion 540 Enterprise Server (16P)

TPC-C Rev. 5.1

Report Date
May 16, 2003

Description	Part No.	Third Party		Unit Price	Qty.	Extended Price	3 yr.Maint. Price
		Brand	Price				
Server Hardware:							
SYS: ES7000-540, 16x 1.5GHz, 128MB Cch, 64GB Mem.	ES7540161-640		1	\$166,250	1	\$166,250	\$12,384
Inbuilt Disk Controller, 1x 30GB Disk (boot media)	Included						
Sentinel System Management S/W and Media	Included						
CTRL: Fibre Channel HBA, 2-Port, 64-bit PCI	FC76222-P64		1	\$2,850	7	\$19,950	
CTRL: cLAN, PCI Host Adapter & Cable	PCI10001-CXG		1	\$755	4	\$3,020	
I/F: Monitor, 15-inch Color, Kybrd, Mse & Cable	ES70003-UIF		1	\$570	1	\$570	
Server Software:							
O/S: Windows 2003 Srvr, Datacenter Edtn, 16P, 1yr Lsub.	WND2316-TSP	2	1	\$35,112	1	\$35,112	
O/S: Windows 2003 Server, DC Lmtd Sbscrptn, 1yr.	DUS200316-TSP	2	1	\$3,192	2	\$6,384	
O/S: Windows 2003 Server DC Support, 24x7x4, 1yr.	GTS7523416-SSA	2	1	\$12,574	3		\$37,722
APP: Microsoft SQL Server 2000 Enterprise Edtn, 16P	DQL200316-LX	2	1	\$212,800	1	\$212,800	* Inc. below
SRVC: Microsoft Database Server Support Package*	PRO-PRORS-16U-01	2	2	\$1,950	3		\$5,850
Server Subtotal						\$444,086	\$55,956
Storage Hardware:							
DISK: 18GB Drive, 15Krpm, 2Gb FC, SCA	JBD201815-2F		1	\$578	412	\$238,136	Spared
DISK: 18GB Drive, 15Krpm, 2Gb FC, SCA 10% spares**	JBD201815-2F		1	\$578	42		\$24,276
DISK: 73GB Drive, 10Krpm, 2Gb FC, SCA	CXR7310-2GF		1	\$1,748	14	\$24,472	Spared
DISK: 73GB Drive, 10Krpm, 2Gb FC, SCA 10% spares**	CXR7310-2GF		1	\$1,748	2		\$3,496
RCK: FC 2Gb Storage, Standard, Copper/Copper I/F	JBD2002-SA		1	\$3,197	18	\$57,546	\$9,720
RCK: FC 2Gb Storage, Standard, Optical/Copper I/F	JBD2011-SA		1	\$3,413	12	\$40,956	\$6,912
CTRL: Symmetric Disk Virt. 2x2GHz, 512MB Mem	RMM20103-ELS		1	\$5,502	6	\$33,012	\$6,984
CTRL: USS, Fibre Channel HBA, 1-Port, 64-bit PCI	RMM20701-TAR		1	\$2,209	18	\$39,762	\$8,208
APP: Unisys Storage Sentinel 2200 SDV Software	USS10300-SW		1	\$8,550	1	\$8,550	\$4,068
APP: Storage Sentinel SDV SW, 10TB License	USS20310-LIC		1	\$46,313	1	\$46,313	
CBL: FC, Copper, HSDC2 Conn's, 0.3m	JBD20003-CCL		1	\$54	18	\$972	
CBL: FC, 50um Dupx, LC->LC Conn's, 10m	JBD2010-OCL		1	\$172	19	\$3,268	
RCK: Rack Mount Kit, Disk Enclosure	JBD2000-RMK		1	\$182	30	\$5,460	
CTRL: DPE: 2 RAID Cntrl, 1GB Cache ea., 0 Disk	CX200-DPE		1	\$19,000	1	\$19,000	\$2,988
SYS MGT: Storage, Navisphere Manager	CXN200-T3		1	\$3,800	1	\$3,800	\$744
SYS MGT: Storage, Navisphere Agent	CXN600-WIN		1	\$950	1	\$950	\$204
SWTCH: Switch, 10/100/1000Mb Ethernet	GS516-T16		1	\$2,850	1	\$2,850	
SWTCH: Switch, 8-port KVM	SWC81-SXR		1	\$1,520	2	\$3,040	\$2,232
CBL: Cable, KVM, 12 foot	CBL121-SWC		1	\$143	10	\$1,430	
KBD: Keyboard & Drawer, Rackmount	KBR28301-SXR		1	\$333	2	\$666	
MON: Display, Rackmount LCD	MON2145-LCD		1	\$2,565	2	\$5,130	
PWR: Distribution Strip, 9-Plug, 220V	SFR9-PWR		1	\$162	12	\$1,944	
CBL: Power, U.S. (Domestic), C20 - L6-20P	USE1936-LC6		1	\$86	12	\$1,032	
CAB: 36U x 19" x 41" Open Front Cabinet	HRT361941-OFT		1	\$1,425	4	\$5,700	
DOOR: 36U x 19", Rear	HRT3619-RDR		1	\$475	4	\$1,900	
PNL: 36U x 41" Side Skins, L&R HRT	HRT3641-SDS		1	\$475	4	\$1,900	
INSTL: Stabilizer Foot	RM1936-FOT		1	\$162	4	\$648	
Storage Subtotal						\$548,437	\$69,832
Client Hardware:							
SYS: ES3020L w/ 1x 2.4GHz Proc., 0MB Mem	ESL30201-240		1	\$1,557	4	\$6,228	\$5,232
PROC: 1x 2.4GHz Intel Xeon/512KB Cache	CPL3020241-512		1	\$665	4	\$2,660	
MEM: 2GB, 2x 1GB DDR DRAM PC133ECC	DIM3000022-2GB		1	\$1,598	4	\$6,392	
RCK: ESL2026 Disk Backpanel, 1x4	HBP3020101-51		1	\$265	4	\$1,060	
DISK: 18GB 10Krpm U160 3.5 Internal	HDM18110-DC4		1	\$333	4	\$1,332	
CTRL: cLAN, PCI Host Adapter & Cable	PCI10001-CXG		1	\$755	4	\$3,020	
RCK: ES3020L Universal Rack Kit	ESL3020-VRL		1	\$333	4	\$1,332	
Client Software:							
O/S: Microsoft Windows 2000 Server	C11-00821	2	2	\$738	4	\$2,952	* Inc. above
ACC: Microsoft Visual C++ Standard	254-00170	2	2	\$109	1	\$109	* Inc. above
Client Subtotal						\$25,085	\$5,232
Total						\$1,017,608	\$131,020
						(\$162,006)	

Computer Resolutions Large Volume Discount

Notes:

1. 3rd Party Brand & Pricing: 1 = CRI Product Price, Unisys Maintenance Price
2 = Microsoft
2. HW & SW maintenance figured at 24 x 7 w/ 4 hr. max. response time for spares.
3. ** = 10% spare disks added in place of onsite service.

Three Year Cost of Ownership: \$986,622
tpmC Rating: 161,542.04
\$ / tpmC: \$6.11

Benchmark results and test methodology audited by Lorna Livingtree of 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 assumption about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmarks specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank You.

Numerical Quantities Summary

MQTh, Computed Maximum Qualified Throughput: 161,542.04 tpmC**Response Times, in seconds**

Transaction	90th %ile	Average	Maximum
New-Order	0.57	0.41	36.58
Payment	0.53	0.36	29.30
Order-Status	0.54	0.37	23.20
Delivery (interactive portion)	0.42	0.27	4.31
Delivery (deferred portion)	0.28	0.21	32.27
Stock-Level	1.06	0.78	34.91
Menu	0.43	0.27	4.31

Response time delay added for emulated components, in seconds

RT Response time	0.1
Menu Response time	0.1

Transaction Mix, in percent of total transactions

New Order	44.93%
Payment	43.02%
Order-Status	4.00%
Delivery (interactive portion)	4.01%
Stock-Level	4.01%

Keying / Think Time Times, in seconds

Transaction	Minimum	Average	Maximum
New Order	18.01 / 0.00	18.01 / 12.03	18.03 / 120.31
Payment	3.01 / 0.00	3.01 / 12.03	3.03 / 120.31
Order-Status	2.01 / 0.00	2.01 / 10.07	2.03 / 100.70
Delivery (interactive portion)	2.01 / 0.00	2.01 / 5.07	2.03 / 50.61
Stock-Level	2.01 / 0.00	2.01 / 5.06	2.03 / 50.61

Test Duration

Ramp up time	90 minutes
Measurement interval (M)	120 minutes
Transactions (all types) completed during measurement interval	43,137,403
Ramp-down time	36 minutes

Checkpointing:

Number of checkpoints	4
Checkpoint interval	30 minutes