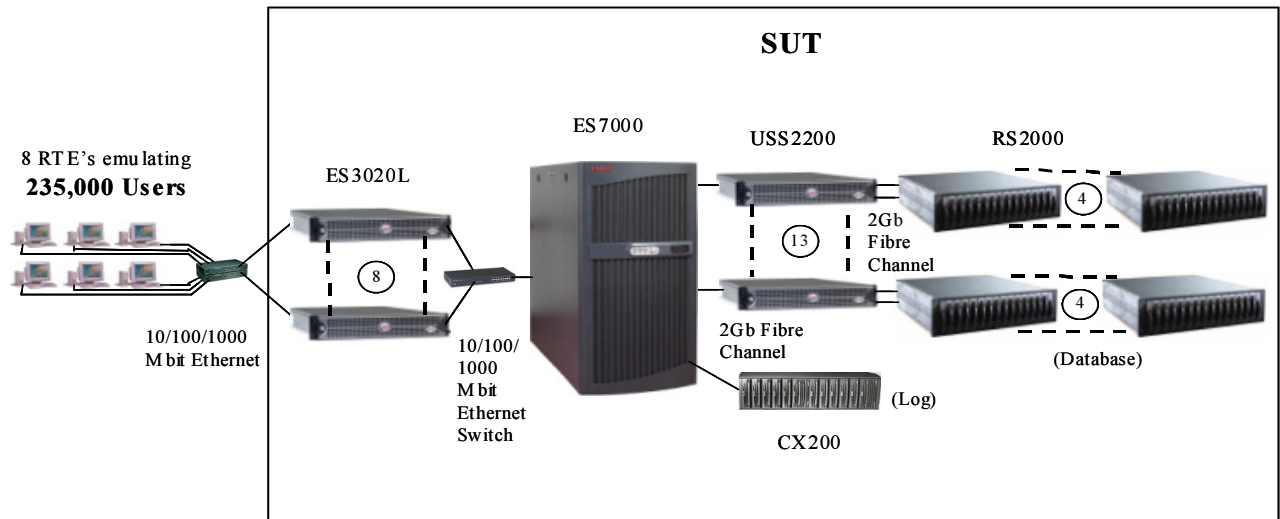


UNISYS	ES7000 Aries 420 Enterprise Server		TPC-C Rev. 5.2	
			Report Date May 11, 2004	
Total System Cost	TPC-C Throughput	Price Performance	Availability Date	
\$1,448,706	291,413 tpmC	\$4.98 / tpmC	Oct 25, 2004 *	
Processors	Database Manager	Operating System	Other Software	Number of Users
16 - Database 16 - Clients	Oracle Database 10g Enterprise Edition	Microsoft Windows Server 2003, Datacenter Edition 64-bit	Windows Server 2003 w/ IIS 6.0 and COM+ Microsoft Visual C++	235,000



Clients (each of 8)
ES3020L Server

2 x 2.4GHz Intel® Xeon™ Processor
w/ 512KB L2 cache,
2 GB memory,
1 x 18GB internal disk,
2 Inbuilt 10/100/1000Mb Ethernet controllers

**ES7000 Aries 420
Enterprise Server**

16 x 1.5GHz Intel® Itanium® 2 Processor w/ 6MB iL3 cache,
128 GB memory,
2 x 36GB SCSI disks,
1 x PCI SCSI RAID controller,
8 x PCI Fibre Channel controllers,
1 x PCI Ethernet 10/100/1000Mb controller

Storage

USS2200/RS2000 & CX200
728 x 18GB + 26 x 73GB
Hot-Pluggable,
External Fibre Channel disks,
15 x FC RAID controllers

System Components	Enterprise Server		Clients (each of 8)	
	Quantity	Type	Quantity	Type
Processors	16	1.5GHz Intel® Itanium® 2 with 6MB iL3 Cache	2	2.4GHz Intel® Xeon™ Processor, 512KB Lvl 2 Cache
Memory	16	8 GB	4	512 MB
Disk Controllers	8	PCI Fibre Channel	1	Inbuilt SCSI
	1	PCI SCSI RAID (boot media)		
Disk Drives	728	18GB FC (17.1 GB useable)	1	18GB SCSI (16.9 GB useable)
	26	73GB FC (66.6 GB useable)		
	2	36GB boot (34.3 GB useable)		
Total Storage		14.0 TB		16.9 GB
Tape / CD-ROM	1	IDE CD-ROM	1	IDE CD-ROM
Terminals	1	Console Monitor	1	Console Monitor

* All hardware available now

UNISYS	ES7000 Aries 420 Enterprise Server		TPC-C Rev. 5.2					
			Report Date May 11, 2004					
Description	Part No.	Third Party			Qty.	Extended Price	3 yr. Maint. Price	
		Brand	Price	Unit Price				
Server Hardware:								
SYS: ES7000-420, 16x 1.5GHz/6MB, 64GB Mem.	ES7420166-111		1	\$287,328	1	\$287,328	\$12,936	
1x RAID Controller, 2x 36GB Disk (boot media)	Included							
Sentinel System Management S/W and Media	Included							
MEM: 32GB Memory, 2 GB DIMMs	MEM162-32G		1	\$31,065	2	\$62,130		
MOD: I/F, 2-Port IO Module, 133MHz	MOD3133-PCI		1	\$1,805	3	\$5,415		
CTRL: Fibre Channel HBA, 2-Port, 64-bit PCI	FC76222-P64		1	\$2,850	8	\$22,800		
CTRL: Ethernet, 1000Mb, 1-Port Cu, PCI	ETH23312-P64		1	\$238	1	\$238		
I/F: Monitor, 15-inch Color, Kybrd, Mse & Cable	ES70003-UIF		1	\$570	1	\$570		
Server Software:								
O/S: Windows Srvr 2003, Datacenter Edtn, 16P, 1yr Lsub.	WND2316-TSP	2	1	\$35,112	1	\$35,112		
O/S: Windows Server 2003, DC Lmtd Sbscrptn, 1yr.	DUS200316-TSP	2	1	\$3,173	2	\$6,346		
O/S: Windows Server 2003, DC Support, 24x7x4, 1yr.	GTS7524016-SSA	2	1	\$12,574	3		\$37,722	
APP: Oracle Database 10g Ent. Edtn, Per Proc, Unlmted Usrs, 3yrs		4	4	\$20,000	16	\$320,000	Inc. below	
SRVC: Oracle Database Server Support Pkg. for 3 yrs		4	4	\$6,000	1	\$6,000	\$6,000	
				Server Subtotal		\$739,939	\$56,658	
Storage Hardware:								
DISK: 1.5TB Pkg, 84x 18GB, 15Krpm, + 10% spares *	JBD201815-P84		1	\$29,839	9	\$268,551	Spared	
DISK: 1 TB Pkg, 56x 18GB, 15Krpm, + 10% spares *	JBD201815-P56		1	\$22,642	1	\$22,642	Spared	
DISK: 73GB Drive, 10Krpm, 2Gb FC, + 10% Spares *	CXR7310-2GF		1	\$1,568	29	\$45,472	Spared	
RCK: FC 2Gb Storage, Standard, Copper/Copper I/F	JBD2002-SA		1	\$3,010	26	\$78,260	\$14,040	
RCK: FC 2Gb Storage, Standard, Optical/Copper I/F	JBD2011-SA		1	\$3,214	26	\$83,564	\$14,976	
CTRL: Symmetric Disk Virt. 2x2GHz, 512MB Mem	RMM20103-ELS		1	\$4,559	13	\$59,267	\$15,132	
CTRL: USS, Fibre Channel HBA, 1-Port, 64-bit PCI	RMM20701-TAR		1	\$1,805	39	\$70,395	\$17,784	
APP: Unisys Storage Sentinel 2200 SDV Software	USS10300-SW		1	\$5,472	1	\$5,472	\$4,068	
APP: Storage Sentinel SDV SW, 20TB License	USS20320-LIC		1	\$37,484	1	\$37,484		
CBL: FC, Copper, HSDC2 Conn's, 0.3m	JBD20003-CCL		1	\$54	26	\$1,404		
CBL: FC, Optical, LC->LC Conn's, 10m + 10% Spares *	GCFAZLL10	3	3	\$42	44	\$1,848	Spared	
RCK: Rack Mount Kit, Disk Enclosure	JBD2001-RMK		1	\$190	52	\$9,880		
CTRL: DPE: 2 RAID Cntrl, 1GB Cache ea., 0 Disk	CX200-DPE		1	\$19,000	1	\$19,000	\$2,988	
RCK: FC 2Gb Storage, Optical I/F, DAE	CX600-DAE		1	\$7,600	1	\$7,600	\$1,212	
SYS MGT: Storage, Navisphere Agent	CXN600-WIN		1	\$646	1	\$646	\$132	
SYS MGT: Storage, Navisphere Manager	CX2002-DPE		1	\$1,549	1	\$1,549	\$312	
SYS MGT: Storage, Navisphere Manager	CX200-DAE		1	\$7,695	1	\$7,695	\$1,524	
SWTCH: Switch, 10/100/1000Mb Ethernet	GS516-T16		1	\$2,850	1	\$2,850		
SWTCH: Switch, 8-port KVM	SWC81-SXR		1	\$1,520	3	\$4,560	\$3,348	
CBL: Cable, KVM, 12 foot	CBL121-SWC		1	\$143	21	\$3,003		
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	18	\$2,916		
CBL: Power, U.S. (Domestic), C20 - L6-20P	USE1936-LC6		1	\$86	18	\$1,548		
CAB: 36U x 19" x 41" Open Front Cabinet	HRT361941-OFT		1	\$1,425	6	\$8,550		
				Storage Subtotal		\$749,952	\$75,516	
Client Hardware:								
SYS: ES3020L w/ 1x 2.4GHz Proc., 0MB Mem	ESL30202-240		1	\$1,072	8	\$8,576	\$6,336	
PROC: 1x 2.4GHz Intel Xeon/512KB Cache	CPL3020242-512		1	\$532	8	\$4,256		
MEM: 2GB, 4x 512KB DIMMs DDR SDRAM	DIM3020042-2GB		1	\$1,465	8	\$11,720		
RCK: ESL2026 Disk Backpanel, 1x4	HBP3020101-51		1	\$265	8	\$2,120		
DISK: 18GB 15Krpm U320 3.5 Internal	HDP18115-DC4		1	\$333	8	\$2,664		
RCK: ES3020L Universal Rack Kit	ESL3020-VRL		1	\$333	8	\$2,664		
SWTCH: Switch, 10/100/1000Mb Ethernet	GS516-T16		1	\$2,850	1	\$2,850		
CBL: Ethernet, Cat5e, RJ45 Conn's, 10ft + 10% Spares *	GCPO888910	3	3	\$2	36	\$72	Spared	
Client Software:								
O/S: Windows Server 2003, Standard. Edition.	P73-00295	2	2	\$738	8	\$5,904	Inc. below	
ACC: Visual C++ Standard	254-00170	2	2	\$109	1	\$109	Inc. below	
SRVC: Database Server Support Package	PRO-PRORS-16U-01	2	2	\$1,950	3	\$5,850	\$5,850	
				Client Subtotal		\$40,935	\$12,186	
Total						\$1,530,826	\$144,360	
Note: All prices are effective as of the date of publication								
Oracle Mandatory E-Business Discount (license and support) - 20%							(\$65,200)	
Computer Resolutions Inc. 13% Large Volume Discount							(\$161,280)	
Notes: 1. * = 10% spare disks added in place of onsite service.					Three Year Cost of Ownership: \$1,448,706			
2. HW & SW maintenance at 24 x 7 w/ 4 hr. max. response time for spares.								
3. 3rd Party Brand & Pricing 1 = CRI Product Price, Unisys Maintenance Price 2 = Microsoft 3 = GoCables 4 = Oracle; pricing contact: MaryBeth Pierantoni, mary.beth.pierantoni@oracle.com, 916-315-5081								
					tpmC Rating: 291,413			
					\$ / tpmC: \$4.98			
Benchmark results and test methodology audited by Tom Sawyer 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: 291,413 tpmC

Response Times, in seconds

Transaction	90th %ile	Average	Maximum
New-Order	0.96	0.43	11.66
Payment	0.93	0.40	12.02
Order-Status	0.96	0.43	11.73
Delivery (interactive portion)	0.75	0.28	10.72
Delivery (deferred portion)	0.20	0.13	9.94
Stock-Level	1.00	0.45	11.22
Menu	0.76	0.29	10.98

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	44.87%
Payment	43.02%
Order-Status	4.03%
Delivery (interactive portion)	4.03%
Stock-Level	4.03%

Keying / Think Time Times, in seconds

Transaction	Minimum	Average	Maximum
New Order	18.01 / 0.00	18.01 / 12.03	18.08 / 120.31
Payment	3.01 / 0.00	3.01 / 12.03	3.08 / 120.31
Order-Status	2.01 / 0.00	2.01 / 10.08	2.06 / 100.70
Delivery (interactive portion)	2.01 / 0.00	2.01 / 5.06	2.08 / 50.61
Stock-Level	2.01 / 0.00	2.01 / 5.06	2.08 / 50.61

Test Duration

Ramp up time	83 minutes
Measurement interval (M)	120 minutes
Transactions (all types) completed during measurement interval	77,929,203
Ramp-down time	40 minutes

Checkpointing:

Number of checkpoints	4
Checkpoint interval	29 minutes