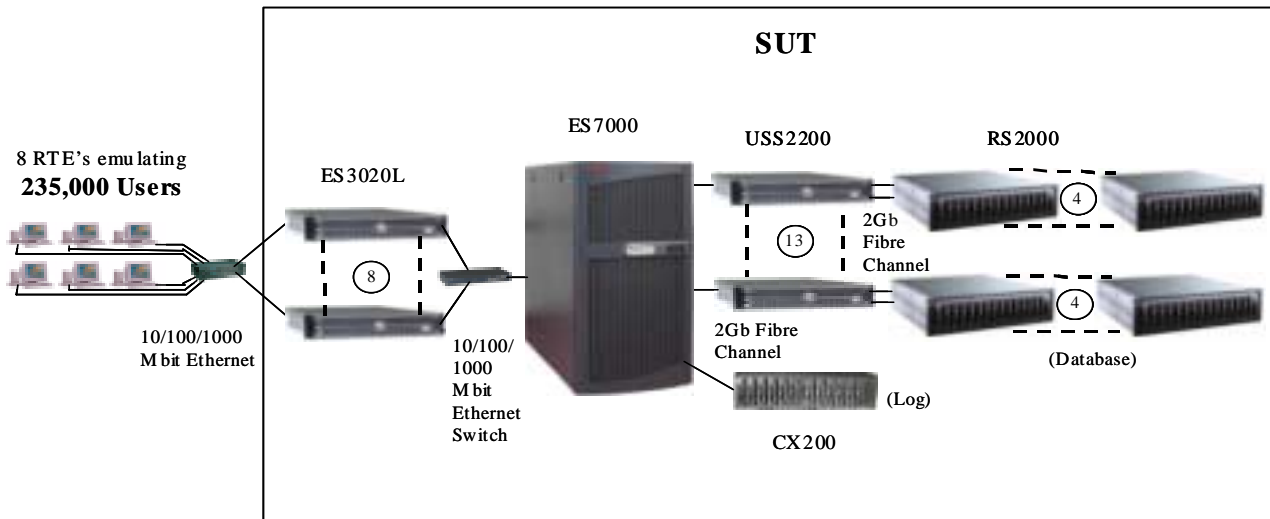


<b>UNISYS</b>		<b>ES7000 Aries 420 Enterprise Server</b>		TPC-C Rev. 5.1	
				Report Date February 9, 2004	
<b>Total System Cost</b>		<b>TPC-C Throughput</b>		<b>Price Performance</b>	
\$1,448,233		291,410.61 tpmC		\$4.97 / tpmC	
				<b>Availability Date</b>	
				April 20, 2004 *	
<b>Processors</b>		<b>Database Manager</b>		<b>Operating System</b>	
16 - Database 16 - Clients		Oracle Database 10g Enterprise Edition		Microsoft Windows Server 2003, Datacenter Edition 64-bit	
				<b>Other Software</b>	
				Windows Server 2003 w/ IIS 6.0 and COM+ Microsoft Visual C++	
				<b>Number of Users</b>	
				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		TPC-C Rev. 5.1				
	Enterprise Server		Report Date February 9, 2004				
Description	Part No.	Third Party		Unit Price	Qty.	Extended Price	3 yr.Maint. Price
		Brand	Price				
<b>Server Hardware:</b>							
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	
<b>Server Software:</b>							
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 Lmted 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, 3yr, Unlmtd Usrs		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
				<b>Server Subtotal</b>		<b>\$739,939</b>	<b>\$56,658</b>
<b>Storage Hardware:</b>							
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	CX200-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	
				<b>Storage Subtotal</b>		<b>\$749,952</b>	<b>\$75,516</b>
<b>Client Hardware:</b>							
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		\$1,397	8	\$11,176	
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
<b>Client Software:</b>							
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	
				<b>Client Subtotal</b>		<b>\$40,391</b>	<b>\$12,186</b>
				<b>Total</b>		<b>\$1,530,282</b>	<b>\$144,360</b>
Oracle Mandatory E-Business Discount (license and support)						(\$65,200)	
Computer Resolutions Inc. 13% Large Volume Discount						(\$161,209)	
<b>Notes:</b> 1. * = 10% spare disks added in place of onsite service. 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				<b>Three Year Cost of Ownership: \$1,448,233</b> <b>tpmC Rating: 291,410.61</b> <b>\$ / tpmC: \$4.97</b>			
<b>Benchmark results and test methodology audited by Lorna Livingtree of Performance Metrics, Inc.</b>							
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: 291,410.61 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	0.75	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	77,928,392
Ramp-down time	41 minutes

### Checkpointing:

Number of checkpoints	4
Checkpoint interval	29 minutes