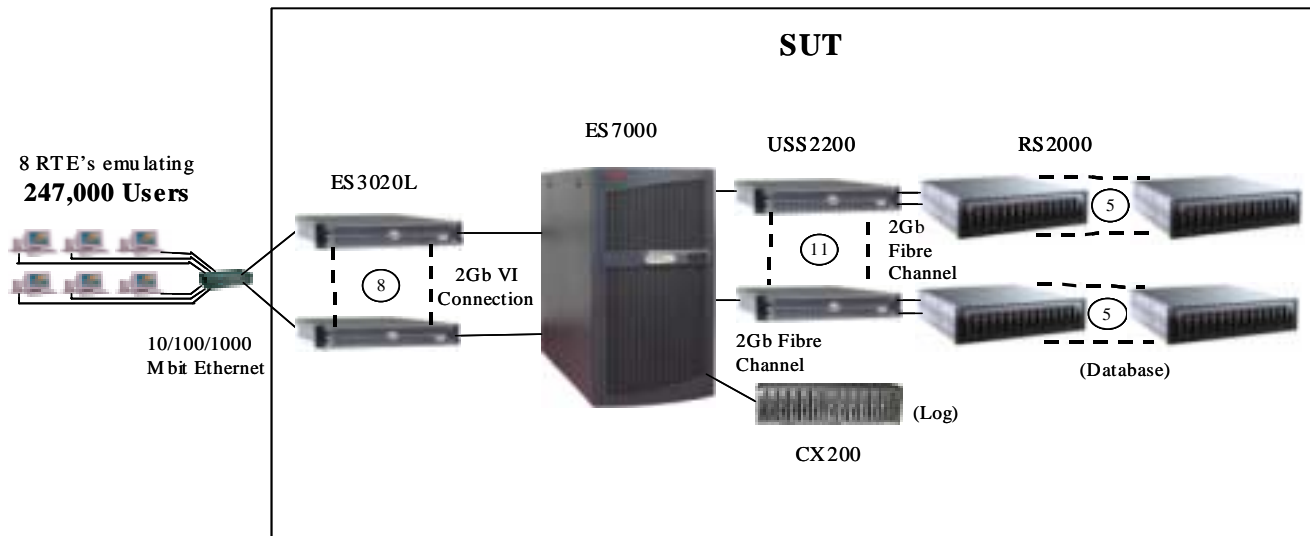


UNISYS		ES7000 Aries 420 Enterprise Server		TPC-C Rev. 5.1
				Report Date January 20, 2004
Total System Cost		TPC-C Throughput	Price Performance	Availability Date
\$1,384,981		309,036.53 tpmC	\$4.49 / tpmC	January 30, 2004
Processors	Database Manager	Operating System	Other Software	Number of Users
16 - Database 16 - Clients	Microsoft SQL Server 2000 Enterprise Edition 64-bit	Microsoft Windows Server 2003, Datacenter Edition 64-bit	Windows Server 2003 w/ IIS 6.0 and COM+ Microsoft Visual C++	247,000



Clients (each of 8)

ES3020L Server

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

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,
7 x PCI Fibre Channel controllers,
8 x PCI VI controllers

Storage

USS2200/RS2000 & CX200

770 x 18GB + 24 x 73GB
Hot-Pluggable,
External Fibre Channel disks,
13 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	2	512 MB
Disk Controllers	7	PCI Fibre Channel	1	Inbuilt SCSI
	1	PCI SCSI RAID (boot media)		
Disk Drives	770	18GB FC (17.1 GB useable)	1	18GB SCSI (16.9 GB useable)
	24	73GB FC (66.6 GB useable)		
	2	36GB boot (34.3 GB useable)		
Total Storage		13.8 TB		16.9 GB
Tape / CD-ROM	1	IDE CD-ROM	1	IDE CD-ROM
Terminals	1	Console Monitor	1	Console Monitor

UNISYS	ES7000 Aries 420 Enterprise Server		TPC-C Rev. 5.1				
			Report Date January 20, 2004				
Description	Part No.	Third Party Brand Price	Unit Price	Qty.	Extended Price	3 yr.Maint. 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	\$30,400	2	\$60,800	
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	7	\$19,950	
CTRL: VI Connection HBA , 1-Port, PCI + 10% Spares *	QLA2350-BK	3	4	\$1,559	10	\$15,590	Spared
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: 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	\$5,850
Server Subtotal					\$643,911	\$56,508	
Storage Hardware:							
DISK: 1.5TB Pkg, 84x 18GB, 15Krpm, + 10% spares *	JBD201815-P84		1	\$29,839	10	\$298,390	Spared
DISK: 18GB, 15Krpm, 2Gb FC, + 10% spares *	JBD201815-2F		1	\$578	7	\$4,046	Spared
DISK: 73GB, 10Krpm, 2Gb FC, + 10% Spares *	CXR7310-2GF		1	\$1,568	27	\$42,336	Spared
RCK: FC 2Gb Storage, Standard, Copper/Copper I/F	JBD2002-SA		1	\$3,010	33	\$99,330	\$17,820
RCK: FC 2Gb Storage, Standard, Optical/Copper I/F	JBD2011-SA		1	\$3,214	22	\$70,708	\$12,672
CTRL: Symmetric Disk Virt. 2x2GHz, 512MB Mem	RMM20103-ELS		1	\$4,559	11	\$50,149	\$12,804
CTRL: USS, Fibre Channel HBA, 1-Port, 64-bit PCI	RMM20701-TAR		1	\$1,805	33	\$59,565	\$15,048
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	33	\$1,782	
CBL: FC, Optical, LC->LC Conn's, 10m + 10% Spares *	GCFAZLL10	5	5	\$42	47	\$1,974	Spared
RCK: Rack Mount Kit, Disk Enclosure	JBD2001-RMK		1	\$190	55	\$10,450	
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	
CBL: Ethernet, Cat5e, RJ45 Conn's, 10ft + 10% Spares *	GCPO888910	5	5	\$2	15	\$30	Spared
SWTCH: Switch, 8-port KVM	SWC81-SXR		1	\$1,520	3	\$4,560	\$3,348
CBL: Cable, KVM, 12 foot	CBL121-SWC		1	\$143	19	\$2,717	
KBD: Keyboard & Drawer, Rackmount	KBR20301-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					\$747,143	\$71,928	
Client Hardware:							
SYS: ES3020L w/ 1x 2.4GHz Proc., 0MB Mem	ESL30202-240		1	\$1,204	8	\$9,632	\$6,336
PROC:1x 2.4GHz Intel Xeon/512KB Cache	CPL3020242-512		1	\$532	8	\$4,256	
MEM: 1GB, 2x 512KB DIMMs DDR SDRAM	DIM3020022-1GB		1	\$799	8	\$6,392	
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	
CTRL: VI Connection HBA , 1-Port, PCI + 10% Spares *	QLA2350-BK	3	4	\$1,559	8	\$12,472	Spared
Client Software:							
O/S: Windows Server 2003, Standard Edition	P73-00295	2	2	\$738	8	\$5,904	** Inc. above
ACC: Visual C++ Standard	254-00170	2	2	\$109	1	\$109	** Inc. above
Client Subtotal					\$46,213	\$6,336	
Total					\$1,437,267	\$134,772	
Computer Resolutions Inc. 13% Large Volume Discount						(\$187,058)	
Notes:					Three Year Cost of Ownership: \$1,384,981		
1. 3rd Party Brand & Pricing: 1 = CRI Product Price, Unisys Maintenance Price 2 = Microsoft 3 = Qlogic 4 = Compuview 5 = GoCables					tpmC Rating: 309,036.53		
2. HW & SW maintenance figured at 24 x 7 w/ 4 hr. max. response time for spares.					\$ / tpmC: \$4.49		
3. * = 10% spare disks added in place of onsite service.							
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: 309,036.53 tpmC

Response Times, in seconds

Transaction	90th %ile	Average	Maximum
New-Order	0.50	0.31	5.25
Payment	0.46	0.28	5.27
Order-Status	0.48	0.29	5.09
Delivery (interactive portion)	0.39	0.22	3.30
Delivery (deferred portion)	0.19	0.14	3.75
Stock-Level	0.95	0.59	4.48
Menu	0.39	0.22	3.31

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	44.92%
Payment	43.03%
Order-Status	4.01%
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 / 5.06	2.03 / 50.61
Stock-Level	2.01 / 0.00	2.01 / 5.06	2.03 / 50.61

Test Duration

Ramp up time	38 minutes
Measurement interval (M)	120 minutes
Transactions (all types) completed during measurement interval	82,552,239
Ramp-down time	32 minutes

Checkpointing:

Number of checkpoints	4
Checkpoint interval	30 minutes