UNISYS

ES7000 Aries 520 Enterprise Server

Total System Cost	TPC-C Throughput	Price Performance	Availability Date
$657,533	**118,381.38** tpmC	**$5.56** / tpmC	**May 30, 2003**

Processors/ Cores/Threads	Database Manager	Operating System	Other Software	Number of Users
8/8/16 Database 8/8/8 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++	**95,000**

SUT

ES7000

USS2200   RS2000

4 RTE's emulating **95,000 Users**

ES3020L

10/100/1000 Mbit Ethernet

1.25 Gbit cLAN

2Gb Fibre Channel

2Gb Fibre Channel

(Database)

(Log)

CX200
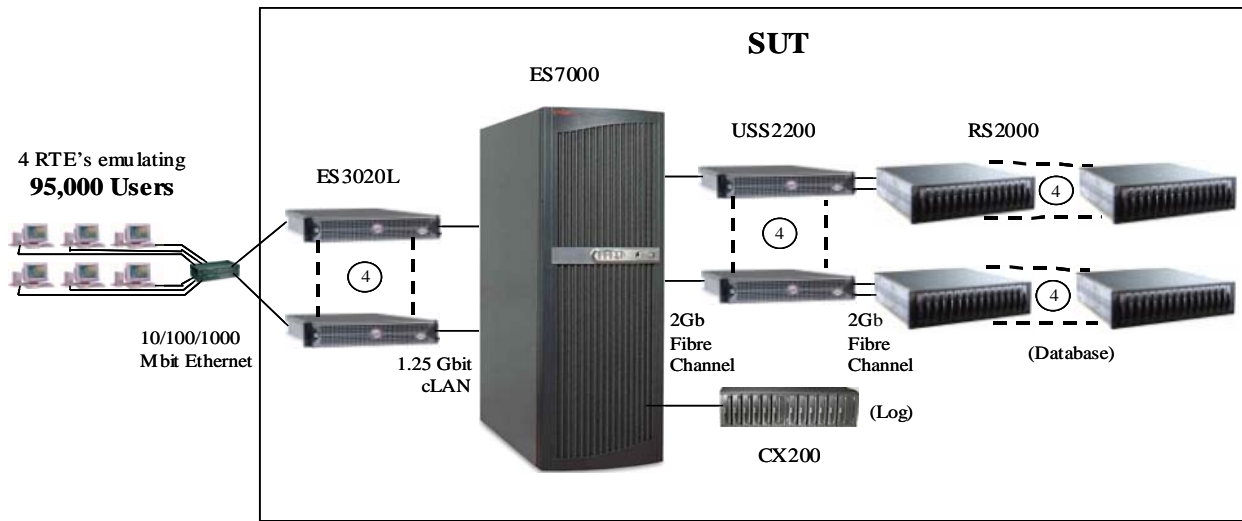
Clients (each of 4)
ES3020L Server
2 x 2.4GHz Intel® Xeon™
w/ 512KB L2 cache,
1 GB memory,
1 x 18GB internal disk,
2 Inbuilt 10/100/1000Mb
Ethernet (1 used),
1 x PCI cLAN controller

**ES7000 Aries 520
Enterprise Server**
8 x 2.0GHz Intel® Xeon™ MP
w/ 2MB L3 cache,
64 GB memory,
1 internal disk controller,
1 x 30GB internal disk,
5 x PCI Fibre Channel controllers,
4 x PCI cLAN controllers

**Storage
USS2200/RS2000 & CX200**
224 x 18GB + 10 x 73GB
Hot-Pluggable,
External Fibre Channel disks,
6 x FC RAID controllers

System Components	Quantity	Server	Quantity	Clients (each of 4)
Processors/Cores/Threads Cache	8/8/16	2.0GHz Intel® Xeon™ MP with 2MB Level 3 Cache	2/2/2	2.4GHz Intel® Xeon™ with 512KB Level 2 Cache
Memory	4	16 GB	2	512 MB
Disk Controllers	5 1	PCI Fibre Channel Inbuilt (boot media)	1	Inbuilt SCSI
Disk Drives	224 10 1	18GB FC (16.4 GB useable) 73GB FC (60.4 GB useable) 30GB boot (28.0 GB useable)	1	18GB SCSI (16.9 GB useable)
Total Storage		4.2 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 520** **Enterprise Server**	**TPC-C Rev. 5.1**
		Report Date **April 4, 2003**

Description	Part No.	Third Party Brand	Third Party Price	Unit Price	Qty.	Extended Price	3 yr.Maint. Price
Server Hardware:							
SYS: ES7000-520, 8x2.0GHz, 64MB Cache, 64GB Mem.	ES7520083-640		1	$163,200	1	$163,200	$4,980
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	$2,720	5	$13,600	
CTRL: cLAN, PCI Host Adapter & Cable	PCI10001-CXG		1	$721	4	$2,884	
I/F: Monitor, 15-inch Color, Kybrd, Mse & Cable	ES70003-UIF		1	$544	1	$544	
Server Software:							
O/S: Microsoft Windows 2003 Datacenter & SQL Package	WXQ320808-L	2	1	$116,235	1	$116,235	$28,800
SRVC: Microsoft Database Server Support Package*	PRO-PRORS-16U-01	2	2	$1,950	3		$5,850
				Server Subtotal		**$296,463**	**$39,630**
Storage Hardware:							
DISK: 18GB Drive, 15Krpm, 2Gb FC, SCA	JBD201815-2F		1	$551	224	$123,424	Spared
DISK: 18GB Drive, 15Krpm, 2Gb FC, SCA 10% spares**	JBD201815-2F		1	$551	23		$12,673
DISK: 73GB Drive, 10Krpm, 2Gb FC, SCA	CXR7310-2GF		1	$1,668	10	$16,680	Spared
DISK: 73GB Drive, 10Krpm, 2Gb FC, SCA 10% spares**	CXR7310-2GF		1	$1,668	2		$3,336
RCK: FC 2Gb Storage, Standard, Copper/Copper I/F	JBD2002-SA		1	$3,051	8	$24,408	$4,320
RCK: FC 2Gb Storage, Standard, Optical/Copper I/F	JBD2011-SA		1	$3,257	8	$26,056	$4,608
CTRL: Symmetric Disk Virt. 2x2GHz, 512MB Mem	RMM20103-ELS		1	$5,252	4	$21,008	$4,656
CTRL: USS, Fibre Channel HBA, 1-Port, 64-bit PCI	RMM20701-TAR		1	$2,108	12	$25,296	$5,472
APP: Unisys Storage Sentinel 2200 SDV Software	USS10300-SW		1	$8,160	1	$8,160	$4,068
APP: Storage Sentinel SDV SW, 5TB License	USS20305-LIC		1	$29,467	1	$29,467	
CBL: FC, Copper, HSDC2 Conn's, 0.3m	JBD20003-CCL		1	$52	8	$416	
CBL: FC, 50um Dupx, LC->LC Conn's, 10m	JBD2010-OCL		1	$164	13	$2,132	
RCK: Rack Mount Kit, Disk Enclosure	JBD2000-RMK		1	$175	16	$2,800	
CTRL: DPE: 2 RAID Cntrl, 1GB Cache ea., 0 Disk	CX200-DPE		1	$18,133	1	$18,133	$2,988
SYS MGT: Storage, Navisphere Manager	CXN200-T3		1	$3,627	1	$3,627	$744
SYS MGT: Storage, Navisphere Agent	CXN600-WIN		1	$907	1	$907	$204
SWTCH: Switch, 10/100/1000Mb Ethernet	GS516-T16		1	$2,720	1	$2,720	
SWTCH: Switch, 8-port KVM	SWC81-SXR		1	$1,451	1	$1,451	$1,116
CBL: Cable, KVM, 12 foot	CBL121-SWC		1	$136	8	$1,088	
KBD: Keyboard & Drawer, Rackmount	KBR28301-SXR		1	$317	1	$317	
MON: Display, Rackmount LCD	MON2145-LCD		1	$2,448	1	$2,448	
PWR: Distribution Strip, 9-Plug, 220V	SFR9-PWR		1	$154	4	$616	
CBL: Power, U.S. (Domestic), C20 - L6-20P	USE1936-LC6		1	$82	4	$328	
CAB: 36U x 19" x 41" Open Front Cabinet	HRT361941-OFT		1	$1,360	2	$2,720	
DOOR: 36U x 19", Rear	HRT3619-RDR		1	$453	2	$906	
PNL: 36U x 41" Side Skins, L&R HRT	HRT3641-SDS		1	$453	2	$906	
INSTL: Stablizer Foot	RM1936-FOT		1	$154	2	$308	
				Storage Subtotal		**$316,322**	**$44,185**
Client Hardware:							
SYS: ES3020L w/ 1x 2.4GHz Proc., 0MB Mem	ESL30201-240		1	$1,486	4	$5,944	$5,232
PROC:1x 2.4GHz Intel Xeon/512KB Cache	CPL3020241-512		1	$635	4	$2,540	
MEM: 1GB, 2x512MB DDR DRAM PC133ECC	DIM3000022-1GB		1	$891	4	$3,564	
RCK: ESL2026 Disk Backpanel, 1x4	HBP3020101-51		1	$253	4	$1,012	
DISK: 18GB 10Krpm U160 3.5 Internal	HDM18110-DC4		1	$317	4	$1,268	
CTRL: cLAN, PCI Host Adapter & Cable	PCI10001-CXG		1	$721	4	$2,884	
RCK: ES3020L Universal Rack Kit	ESL3020-VRL		1	$317	4	$1,268	
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		**$21,541**	**$5,232**
				Total		**$634,326**	**$89,047**
Comark Large Volume Discount						($64,727)	
Unisys Service Pre-Pay Discount							($1,113)

Notes:		
1. 3rd Party Brand & Pricing: 1 = Comark Product Price, Unisys Maintenance Price	**Three Year Cost of Ownership:**	**$657,533**
2 = Microsoft	**tpmC Rating:**	**118,381.38**
2. HW & SW maintenance figured at 24 x 7 w/ 4 hr. max. response time for spares.	**$ / tpmC:**	**$5.56**
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: **118,381.38** **tpmC**

Response Times, in seconds

Transaction	90th %ile	Average	Maximum
New-Order	0.61	0.39	5.83
Payment	0.57	0.35	5.14
Order-Status	0.59	0.37	7.53
Delivery (interactive portion)	0.39	0.23	3.59
Delivery (deferred portion)	0.25	0.20	2.41
Stock-Level	0.92	0.65	3.97
Menu	0.39	0.23	3.75

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	43.02%
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	57 minutes
Measurement interval (M)	120 minutes
Transactions (all types) completed during measurement interval	31,618,206
Ramp-down time	306 minutes

Checkpointing:

Number of checkpoints	4
Checkpoint interval	30 minutes