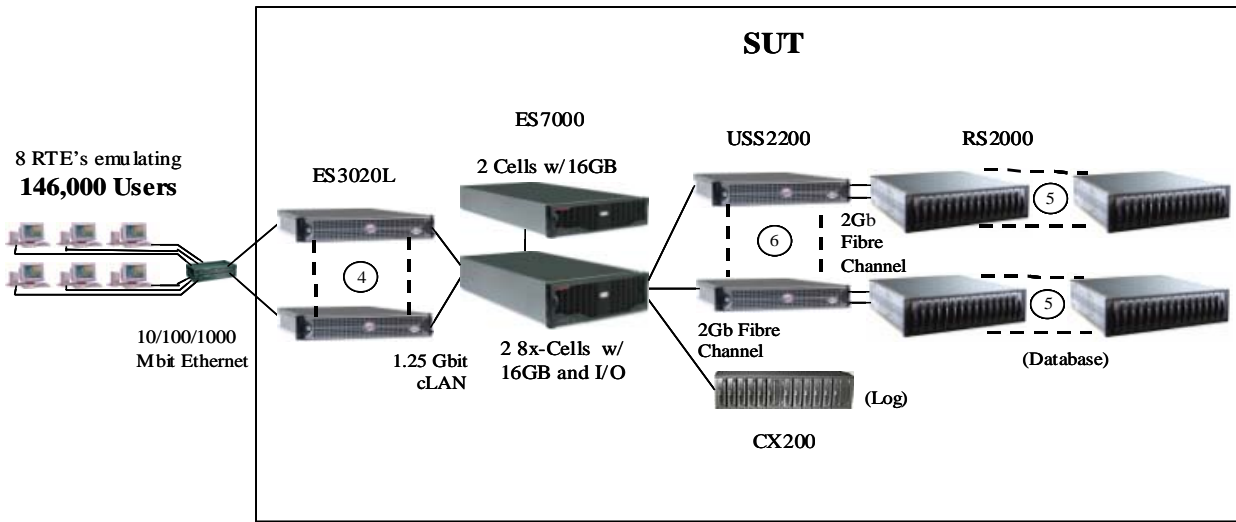


| | | | |
|--------------------------------------|---|---|--|
| UNISYS | ES7000 Orion 540 Enterprise Server (16P) | | TPC-C Rev. 5.1 |
| | | | Report Date May 2, 2003 |
| Total System Cost | TPC-C Throughput | Price Performance | Availability Date |
| \$1,059,297 | 181,280.45 tpmC | \$5.85 / tpmC | May 30, 2003 |
| Processors/ Cores/Threads | Database Manager | Operating System | Other Software |
| 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++ |
| | | | Number of Users |
| | | | 146,000 |



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 2.0GHz Intel® Xeon™ MP
w/ 2MB 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 | 2.0GHz Intel® Xeon™ MP with 2MB 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 2, 2003

| Description | Part No. | Third Party | | | Qty. | Extended Price | 3 yr. Maint. Price |
|---|------------------|-------------|-------|------------|-------------------------|--------------------|------------------------|
| | | Brand | Price | Unit Price | | | |
| Server Hardware: | | | | | | | |
| SYS: ES7000-540, 16x 2.0GHz, 128MB Cch, 64GB Mem. | ES7540163-640 | | | 1 | \$251,750 | 1 | \$251,750 |
| Inbuilt Disk Controller, 1x 30GB Disk (boot media) | Included | | | | | | \$12,384 |
| 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 Lmted 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 | | \$529,586 |
| | | | | | | | \$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 | \$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 | \$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 | \$1,103,108 | \$131,020 |
| Computer Resolutions Large Volume Discount | | | | | | (\$174,831) | |

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: \$1,059,297
tpmC Rating: 181,280.45
\$ / tpmC: \$5.85

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: 181,280.45 tpmC

Response Times, in seconds

| Transaction | 90th %ile | Average | Maximum |
|--------------------------------|-----------|---------|---------|
| New-Order | 0.62 | 0.41 | 6.55 |
| Payment | 0.56 | 0.36 | 6.56 |
| Order-Status | 0.57 | 0.37 | 5.75 |
| Delivery (interactive portion) | 0.48 | 0.29 | 3.72 |
| Delivery (deferred portion) | 0.33 | 0.23 | 5.31 |
| Stock-Level | 1.17 | 0.83 | 4.69 |
| Menu | 0.48 | 0.29 | 3.73 |

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 | 44.94% |
| Payment | 43.02% |
| Order-Status | 4.01% |
| Delivery (interactive portion) | 4.00% |
| 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 | 2.02 / 50.61 |
| Stock-Level | 2.01 / 0.00 | 2.01 / 5.06 | 2.03 / 50.61 |

Test Duration

| | |
|--|-------------|
| Ramp up time | 60 minutes |
| Measurement interval (M) | 120 minutes |
| Transactions (all types) completed during measurement interval | 48,404,471 |
| Ramp-down time | 306 minutes |

Checkpointing:

| | |
|-----------------------|------------|
| Number of checkpoints | 4 |
| Checkpoint interval | 30 minutes |