



ES7000/600 Enterprise Server (16P)

TPC-C Rev. 5.4

Report Date
October 24, 2005

Total System Cost

TPC-C Throughput

Price Performance

Availability Date

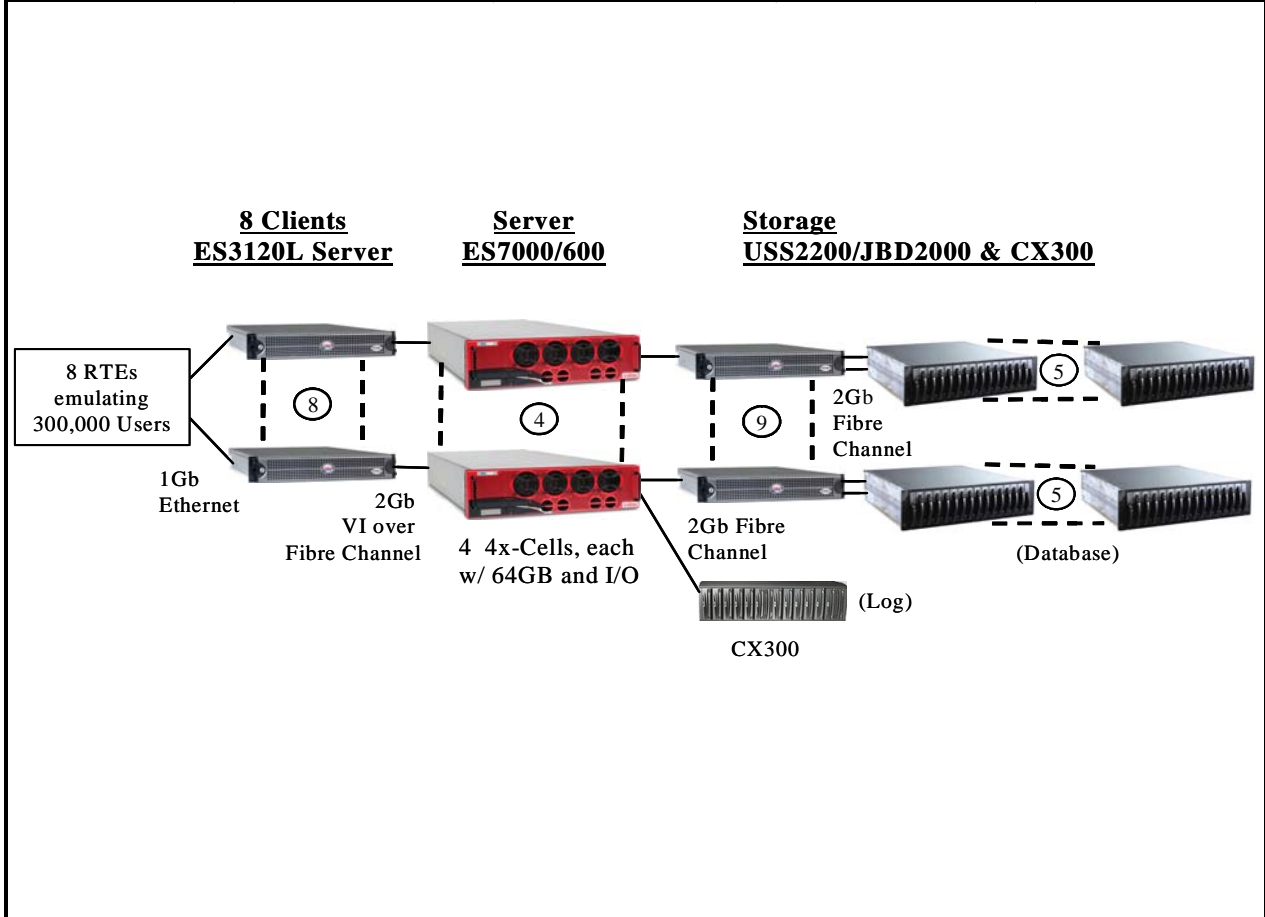
\$1,490,375 USD

376,045 tpmC

\$3.97 USD/tpmC

January 3, 2006

| Processors/ Cores/Threads | Database Manager | Operating System | Other Software | Number of Users |
|---------------------------------------|--|---|--|-----------------|
| 16/16/32 Database 16/16/32 Clients | Microsoft SQL Server 2005 Enterprise x64 Edition | Microsoft Windows Server 2003, Datacenter x64 Edition | Windows Server 2003 w/ IIS 6.0 and COM+ Microsoft Visual C++ | 300,000 |



| System Components | Qty. | Server | Qty. | Each Client (8) |
|-----------------------------------|----------------------|---|-------------|---|
| Processors/Cores/Threads Cache | 16/16/32 | 3.33GHz 64-bit Intel® Xeon™ Processor MP, 8MB Lvl 3 Cache | 2/2/4 | 3.4GHz 64-bit Intel® Xeon™ Processor, 2MB Lvl 2 Cache |
| Memory | 4 | 64 GB | 2 | 1 GB |
| Disk Controllers | 10 1 | PCI Fibre Channel PCI SAS RAID (boot) | 1 | Inbuilt SCSI |
| Disk Drives | 616 14 20 2 | 18GB FC 15K rpm 36GB FC 15K rpm 146GB FC 10K rpm 36GB SAS 10K rpm (boot media) | 1 | 36GB SCSI 15K rpm |
| Total Storage | | 12.9 TB | | 34.3 GB |
| Other | 8 4 1 | Inbuilt 1Gb NIC (0 used) PCI VI-over-FC Controller IDE DVD-R/RW; CD-R/RW | 2 1 1 | Inbuilt 1Gb NIC (1 used) PCI VI-over-FC Controller IDE CD-ROM |



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TPC Pricing 1.0.1

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| Description | Part Number | Price Source | Unit Price | Qty. | Extended Price | 3-yr.Maint. Price |
|---|----------------|--------------|------------|------|--------------------|-------------------|
| Server Hardware: | | | | | | |
| SYS: ES7000/600, 16x 3.33GHz/8MB, 32GB Mem. | ES7600163-110 | 1 | \$228,000 | 1 | \$228,000 | \$6,192 |
| MEM: 8GB Memory, 4 GB DIMMs | FAC760024-ICA | 1 | \$9,880 | 4 | \$39,520 | |
| MEM: 64GB Memory, 4 GB DIMMs | FAC7600164-64G | 1 | \$59,584 | 3 | \$178,752 | |
| CTRL: Fibre Channel HBA, 2-Port, 64-bit PCI | FC76222-P64 | 1 | \$2,850 | 10 | \$28,500 | |
| CTRL: VI-over-FC HBA, 2Gb 2-Port, 64-bit PCI | FCH752323-PCX | 1 | \$2,138 | 4 | \$8,552 | |
| KIT: 1x RAID Controller, 1x 36GB Disk (boot media) | FAC7600361-IDK | 1 | \$618 | 1 | \$618 | |
| DISK: 1x 36GB 10Krpm SAS (boot media) | HDF4036100-X25 | 1 | \$428 | 1 | \$428 | |
| I/F: Monitor, 17-inch LCD, Kybrd, Mse & Cable | ES70006-UIF | 1 | \$546 | 1 | \$546 | |
| Subtotal | | | | | \$484,916 | \$6,192 |
| Server Software: | | | | | | |
| SYS MGT: Sentinel System Management Sbscrptn, 1yr. | SEN20000-SUB | 1 | \$3,420 | 3 | \$10,260 | |
| O/S: Windows 2003 Srvr, DC x64 Edtn, 16P, 1yr Lsub. | WNX6416-TSP | 1 | \$35,112 | 1 | \$35,112 | \$17,424 |
| O/S: Windows 2003 Server, DC Lmted Sbscrptn, 1yr. | DUS200316-TSP | 1 | \$3,173 | 2 | \$6,346 | |
| APP: Microsoft SQL Server 2005 Enterprise x64 Edtn. | 810-03134 | 2 | \$23,432 | 16 | \$374,912 | ** Inc. below |
| SRVC: Microsoft Problem Resolution Services ** | | 2 | \$245 | 1 | \$245 | \$245 |
| Subtotal | | | | | \$426,630 | \$17,669 |
| Storage Hardware: | | | | | | |
| DISK: 1.5TB Pkg, 84x 18GB, 15Krpm * | JBD201815-P84 | 1 | \$28,220 | 8 | \$225,760 | Spared |
| DISK: 18GB Drive, 15Krpm, 2Gb FC, SCA * | JBD201815-2F | 1 | \$546 | 6 | \$3,276 | Spared |
| DISK: 0.5 TB Pkg, 14x 36GB, 15Krpm * | JBD203615-P14 | 1 | \$8,772 | 1 | \$8,772 | Spared |
| DISK: 36GB Drive, 15Krpm, 2Gb FC, SCA * | JBD203615-2F | 1 | \$646 | 2 | \$1,292 | Spared |
| DISK: 146GB, 10Krpm, 2Gb FC | CXR14610-2GF | 1 | \$1,435 | 20 | \$28,700 | |
| RCK: Storage Enclosure, FC 2Gb Copper/Copper I/F | JBD2002-SA | 1 | \$3,197 | 27 | \$86,319 | \$13,608 |
| RCK: Storage Enclosure, FC 2Gb Optical/Copper I/F | JBD2011-SA | 1 | \$3,413 | 18 | \$61,434 | \$9,720 |
| CTRL: Symmetric Disk Virt. 2xCPU, 512MB Mem | RMM20103-ELS | 1 | \$4,559 | 9 | \$41,031 | \$10,476 |
| CTRL: USS, Fibre Channel HBA, 1-Port, 64-bit PCI | RMM20701-TAR | 1 | \$1,805 | 27 | \$48,735 | \$12,312 |
| 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 | \$53 | 27 | \$1,431 | |
| CBL: FC, Optical, LC->LC Conn's, 10m * | GCFAZLL20 | 3 | \$38 | 31 | \$1,178 | Spared |
| RCK: Rack Mount Kit, Disk Enclosure | JBD2001-RMK | 1 | \$190 | 45 | \$8,550 | |
| CTRL: DPE, 2 RAID Cntrl, 1GB Cache ea., 0 Disk | CX300-DPE | 1 | \$13,300 | 1 | \$13,300 | \$1,404 |
| RCK: DAE Storage Enclosure, FC 2Gb Optical I/F | CXP2-FD | 1 | \$5,890 | 1 | \$5,890 | |
| SYS MGT: Storage, Navisphere Manager | CXN300-WRK | 1 | \$2,138 | 1 | \$2,138 | \$1,008 |
| SWTCH: KVM 16-Port PS/2-Cat5 | KVM9163101-SWC | 1 | \$1,805 | 2 | \$3,610 | |
| I/F: Monitor, 17-inch LCD, Kybrd, Mse & Cable | ES70004-UIF | 1 | \$665 | 2 | \$1,330 | |
| ADPTR: Cat5 to PS/2 | KVM9001301-CNV | 1 | \$114 | 17 | \$1,938 | |
| CBL: Ethernet, Cat5e, RJ45 Conn's, 10ft * | GCPO888910 | 3 | \$1 | 20 | \$20 | Spared |
| 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 | |
| Subtotal | | | | | \$600,674 | \$52,596 |
| Client Hardware: | | | | | | |
| SYS: ES3120L w/ 1x 3.4GHz Proc., 0MB Mem | ESL312002-340 | 1 | \$2,006 | 8 | \$16,048 | \$5,184 |
| PROC: 1x 3.4GHz Intel Xeon/2MB Cache | CPL3120342-2MB | 1 | \$1,196 | 8 | \$9,568 | |
| MEM: 2GB, 2x 1GB DIMMs DDR SDRAM | DIM3120021-2GB | 1 | \$864 | 8 | \$6,912 | |
| DISK: 36GB 15Krpm U320 3.5 Internal | HDP36115-DC4 | 1 | \$385 | 8 | \$3,080 | |
| RCK: ES3120L HSBP Modul & SCSI Cable | HBP3120101-MOD | 1 | \$264 | 8 | \$2,112 | |
| RCK: ES3120L Universal Rack Kit | ESL3120-VRL | 1 | \$331 | 8 | \$2,648 | |
| CTRL: VI-over-FC HBA, 2Gb 2-Port, 64-bit PCI | FCH752323-PCX | 1 | \$2,138 | 8 | \$17,104 | |
| CDR: 24x Slimline CD-ROM & Cable | CDR12243-AIS | 1 | \$41 | 8 | \$328 | |
| Subtotal | | | | | \$57,800 | \$5,184 |
| Client Software: | | | | | | |
| O/S: Windows Server 2003, Standard Edition | P73-00295 | 2 | \$719 | 8 | \$5,752 | ** Inc. above |
| ACC: Microsoft Visual C++ Standard Edition | 254-00170 | 2 | \$109 | 1 | \$109 | ** Inc. above |
| Subtotal | | | | | \$5,861 | \$0 |
| Computer Resolutions Inc. 14% Volume Cash Discount (Ext.Price where Price Source=1) | | | | | (\$167,147) | |
| Total USD | | | | | \$1,408,734 | \$81,641 |

Notes:

1. * 10% or minimum 2 spares are added in place of onsite service.
2. HW & SW maintenance at 24 x 7 w/ 4 hr. max. response time for spares.
3. Price Source: 1 = CRI Product Price, Unisys Maintenance Price
2 = Microsoft 3 = GoCables

3-Year Cost of Ownership: \$1,490,375 USD
tpmC Rating: 376,045
\$/ tpmC: \$3.97 USD

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: 376,045 tpmC

Response Times, in seconds

| Transaction | 90th %ile | Average | Maximum |
|--------------------------------|-----------|---------|---------|
| New-Order | 0.43 | 0.28 | 5.42 |
| Payment | 0.42 | 0.26 | 5.27 |
| Order-Status | 0.43 | 0.28 | 9.75 |
| Delivery (interactive portion) | 0.34 | 0.20 | 2.52 |
| Delivery (deferred portion) | 0.19 | 0.14 | 4.50 |
| Stock-Level | 0.65 | 0.44 | 2.45 |
| Menu | 0.34 | 0.21 | 2.75 |

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 | 43.03% |
| Order-Status | 4.00% |
| 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 | 18.05 / 120.31 |
| Payment | 3.01 / 0.00 | 3.01 / 12.03 | 3.03 / 120.33 |
| 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 / 5.07 | 2.03 / 50.61 |

Test Duration

| | |
|--|-------------|
| Ramp up time | 78 minutes |
| Measurement interval (M) | 120 minutes |
| Transactions (all types) completed during measurement interval | 100,438,544 |
| Ramp-down time | 40 minutes |

Checkpointing:

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