
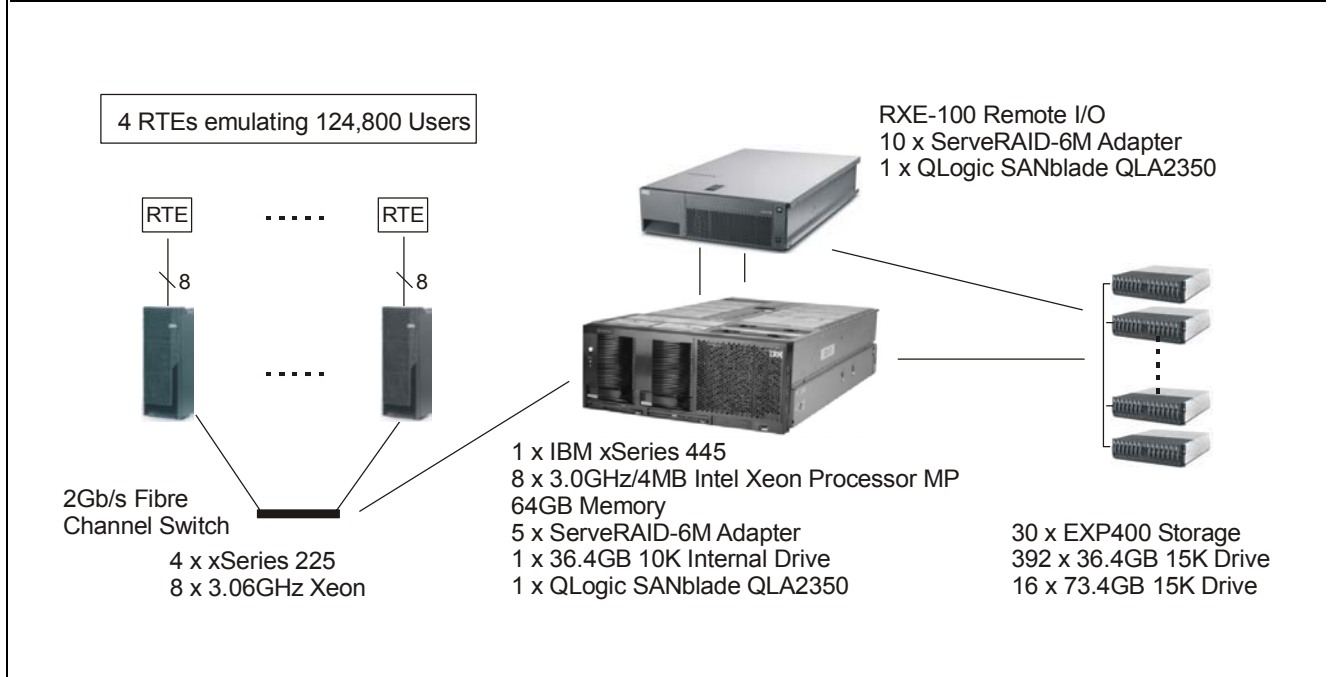


| | | | |
|---|--|--|----------------------------|
|  | IBM® @server® xSeries® 445 c/s | | TPC-C Rev. 5.2 |
| | with Microsoft® SQL Server 2000 | | Report Date: March 1, 2004 |

| | | | |
|-------------------|------------------------|----------------------|----------------------|
| Total System Cost | TPC-C Throughput | Price/Performance | Availability Date |
| \$672,287 | 156,105.72 tpmC | \$4.31 / tpmC | Aug. 31, 2004 |

| | | | | |
|--|--|--|---|-----------------|
| Database Server | Database Manager | Operating System | Other Software | Number of Users |
| Processors/Cores/Threads: 8/8/16 Intel Xeon Processor MP 3.0GHz | Microsoft SQL Server 2000 Enterprise Edition SP3 with QFE | Microsoft Windows® Server 2003 Datacenter Edition with QFE KB834628 | Microsoft Visual C++ 6.0 Professional Microsoft COM+ | 124,800 |



| System Component | Qty | Server: | Qty | Each of Four Clients: |
|--------------------------|--------|---|-------|----------------------------------|
| Processors/Cores/Threads | 8/8/16 | 3.0GHz Xeon Processor MP w/4MB L3 Cache | 2/2/4 | 3.06GHz Xeon DP w/512KB L2 Cache |
| Cache | | MP w/4MB L3 Cache | | w/512KB L2 Cache |
| Memory | 32 | 2GB ECC RDIMM | 4 | 512MB |
| Disk Controllers | 15 | ServeRAID-6M Ultra320 SCSI Adapter | 1 | Ultra320 SCSI Interface |
| Disk Drives | 1 | 36.4GB (10000 rpm) | 1 | 36.4GB Hard Disk |
| | 392 | 36.4GB (15000 rpm) | | |
| | 16 | 73.4GB (15000 rpm) | | |
| Total Storage | | 14417.08GB | | |
| Tape Drive | 1 | 20/40GB SCSI Tape Drive | | |

| IBM Corporation | IBM @server xSeries 445 c/s with Microsoft SQL Server 2000 | | | TPC-C Revision 5.2 | | | | |
|---|---|-------------------|---------|--------------------------------------|----------------------------|-----------------|--------------------|-------------------|
| | | | | | Report Date: March 1, 2004 | | | |
| Description | Part Number | Third Party Brand | Pricing | Unit Price | Quantity | Extended Price | 3-Yr. Maint. Price | |
| Server Hardware | | | | | | | | |
| xSeries 445 with: 2 x 3.0GHz/4MB Xeon Processor MP 4 x 512MB ECC RDIMM | 8870-4BX | IBM | | 1 | 26,599 | 1 | 26,599 | 3,221 |
| xSeries 3.0GHz/4MB Xeon Processor MP Upgrade | 13N0721 | IBM | | 1 | 6,599 | 6 | 39,594 | 0 |
| xSeries 445 SMP Expansion Module | 02R1870 | IBM | | 1 | 4,849 | 1 | 4,849 | 0 |
| 2GB PC2100 DDR ECC SDRAM RDIMM | 33L5040 | IBM | | 1 | 1,849 | 32 | 59,168 | 0 |
| 36.4GB 10K Ultra320 SCSI Hot-Swap Drive | 32P0726 | IBM | | 1 | 275 | 1 | 275 | 0 |
| IBM Preferred Pro Full-Size Keyboard PS/2 | 31P7415 | IBM | | 1 | 29 | 1 | 29 | 0 |
| IBM Sleek 2-Button Mouse | 28L3673 | IBM | | 1 | 19 | 1 | 19 | 0 |
| ServeRAID-6M Ultra320 SCSI Adapter | 32P0033 | IBM | | 1 | 999 | 15 | 14,985 | 0 |
| QLLogic SANBlade QLA2350 FC-VI Adapter (2 spares) | QLA2350-BK | QLLogic | | 1 | 1,995 | 4 | 7,980 | 0 |
| E54 15" (13.8" Viewable) Color Monitor | 633147N | IBM | | 1 | 119 | 1 | 119 | 90 |
| Subtotal | | | | | | 153,617 | 3,311 | |
| Server Storage | | | | | | | | |
| IBM RXE-100 Remote Expansion Enclosure | 8684-1RX | IBM | | 1 | 4,569 | 1 | 4,569 | 1,330 |
| IBM Remote I/O PCI-X 6-Slot Expansion Kit | 31P5998 | IBM | | 1 | 1,699 | 1 | 1,699 | 0 |
| IBM EXP400 Rack Storage Exp. Enclosure | 17331RU | IBM | | 1 | 3,099 | 30 | 92,970 | 22,800 |
| 36.4GB 15K Ultra320 SCSI Hot-Swap Drive | 32P0734 | IBM | | 1 | 495 | 392 | 194,040 | 0 |
| 73.4GB 15K Ultra320 SCSI Hot-Swap Drive | 32P0735 | IBM | | 1 | 769 | 16 | 12,304 | 0 |
| 3.5M Remote I/O Cable Kit | 31P6102 | IBM | | 1 | 599 | 1 | 599 | 0 |
| Netfinity 4.2M Ultra2 SCSI Cable | 03K9311 | IBM | | 1 | 105 | 30 | 3,150 | 0 |
| NetBAY42S Standard Rack | 9306421 | IBM | | 1 | 1,439 | 3 | 4,317 | 504 |
| IBM UPS 500 | 252277 | IBM | | 1 | 99 | 1 | 99 | 0 |
| IBM NetBAY Tape Enclosure | 0034B0X | IBM | | 1 | 849 | 1 | 849 | 120 |
| 20/40GB DDS/4 Tape AutoLoader | 00N7991 | IBM | | 1 | 699 | 1 | 699 | 0 |
| Enterprise Rack Setup | 06P7514 | IBM | | 1 | 400 | 3 | 1,200 | 0 |
| Enterprise Rack Configuration | 06P7515 | IBM | | 1 | 160 | 3 | 480 | 0 |
| Option Integration Fee | 58P8665 | IBM | | 1 | 110 | 3 | 330 | 0 |
| Load Non-Image Custom Ultra Image - Server | 06P7505 | IBM | | 1 | 35 | 1 | 35 | 0 |
| Subtotal | | | | | | 317,340 | 24,754 | |
| Server Software | | | | | | | | |
| Microsoft SQL Server 2000 Enterprise Edition | 810-00846 | Microsoft | | 2 | 16,541 | 8 | 132,328 | |
| Database Software Support Package | | Microsoft | | 2 | 1,950 | 3 | | 5,850 |
| IBM Preload Kit for Datacenter 2003 (1-8 Processors) | 4816-7BU | IBM | | 1 | 27,279 | 1 | 27,279 | |
| IBM Maintenance Update Subscription (1-8 Processors-1 Yr) | 4816-DBX | IBM | | 1 | 2,549 | 3 | 7,647 | |
| Support for Datacenter - MAPS 10 incidents per year | 23L9991 | | | 1 | 9000 | 3 | | 27,000 |
| Subtotal | | | | | | 167,254 | 32,850 | |
| Client Hardware | | | | | | | | |
| x225 with 3.06GHz/512KB Xeon DP, 1 x 36.4GB Drive | 8647-62X | IBM | | 1 | 1,775 | 4 | 7,100 | 1,000 |
| 3.06GHz/512KB Xeon DP Processor Upgrade | 24P8122 | IBM | | 1 | 999 | 4 | 3,996 | 0 |
| 512MB PC2100 ECC SDRAM RDIMM | 33L5038 | IBM | | 1 | 249 | 16 | 3,984 | 0 |
| QLLogic SANblade QLA 2350 FC-VI Adapter | QLA2350-BK | QLLogic | | 1 | 1,995 | 4 | 7,980 | 0 |
| NetXtreme 1000T Dual-Port Ethernet Adapter | 31P6401 | IBM | | 1 | 269 | 8 | 2,152 | 0 |
| Adaptec Quartet64 4-Port Adapter (2 spares) | ANA64044 | Adaptec | | 1 | 440 | 6 | 2,640 | 0 |
| E54 15" (13.8" Viewable) Color Monitor | 633147N | IBM | | 1 | 119 | 4 | 476 | 360 |
| Subtotal | | | | | | 28,328 | 1,360 | |
| Client Software | | | | | | | | |
| Microsoft Windows 2000 Server with COM+ | C11-00821 | Microsoft | | 2 | 738 | 4 | 2,952 | 0 |
| Microsoft Visual C++ Professional 6.0 | 254-00170 | Microsoft | | 2 | 109 | 1 | 109 | 0 |
| Subtotal | | | | | | 3,061 | 0 | |
| Network Components | | | | | | | | |
| SAN Fibre Channel 8-Port Switch | 3534F08 | IBM | | 1 | 5,250 | 1 | 5,250 | 2,300 |
| IBM Short Wave SFP Module | 19K1271 | IBM | | 1 | 499 | 2 | 998 | 0 |
| IBM 5M LC-LC Fibre Channel Cable | 19K1248 | IBM | | 1 | 129 | 6 | 774 | 0 |
| Subtotal | | | | | | 7,022 | 2,300 | |
| Total | | | | | | 676,622 | 64,575 | |
| Compsat Technology discount. | | | | | | Discount | 61,293 | 7,617 |
| 1 - Compsat Technology; 2 - Microsoft | | | | Three-Year Cost of Ownership: | | | | \$672,287 |
| Audited by Francois Raab, InfoSizing, Inc. | | | | tpmC: | | | | 156,105.72 |
| | | | | \$/tpmC: | | | | \$4.31 |
| 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 assumptions 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 benchmark specifications. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. | | | | | | | | |

Numerical Quantities Summary

MQTh, Computed Maximum Qualified Throughput: 156,105.72 tpmC

| Response Times (in seconds) | 90th Percentile | Average | Maximum |
|---|-----------------|---------------|----------------------|
| New-Order | 0.55 | 0.32 | 35.15 |
| Payment | 0.49 | 0.27 | 42.61 |
| Delivery | 0.40 | 0.20 | 5.74 |
| Stock Level | 1.06 | 0.73 | 11.45 |
| Order Status | 0.51 | 0.29 | 12.44 |
| Delivery (Deferred) | 0.18 | 0.13 | 4.11 |
| Menu | 0.40 | 0.20 | 63.56 |
| Response Time Delay Added for Emulated Components: 0.1 Seconds | | | |
| Transaction Mix (in percent of total transactions) | | | Percent |
| New-Order | | | 44.96 |
| Payment | | | 43.02 |
| Delivery | | | 4.01 |
| Stock-Level | | | 4.01 |
| Order Status | | | 4.00 |
| Keying/Think Times (in seconds) | Minimum | Average | Maximum |
| New Order | 18.00 / 0.00 | 18.02 / 12.06 | 18.06 / 120.53 |
| Payment | 3.00 / 0.00 | 3.02 / 12.05 | 3.06 / 120.53 |
| Delivery | 2.00 / 0.00 | 2.02 / 5.05 | 2.05 / 50.52 |
| Stock Level | 2.00 / 0.00 | 2.02 / 5.05 | 2.06 / 50.52 |
| Order Status | 2.00 / 0.00 | 2.02 / 10.05 | 2.06 / 100.52 |
| Test Duration | | | |
| Ramp-up time | | | 52 minutes 0 seconds |
| Measurement interval | | | 120 minutes |
| Number of checkpoints | | | 4 |
| Checkpoint interval | | | 30 minutes |
| Number of transactions (all types) completed in measurement interval | | | 43,338,961 |