

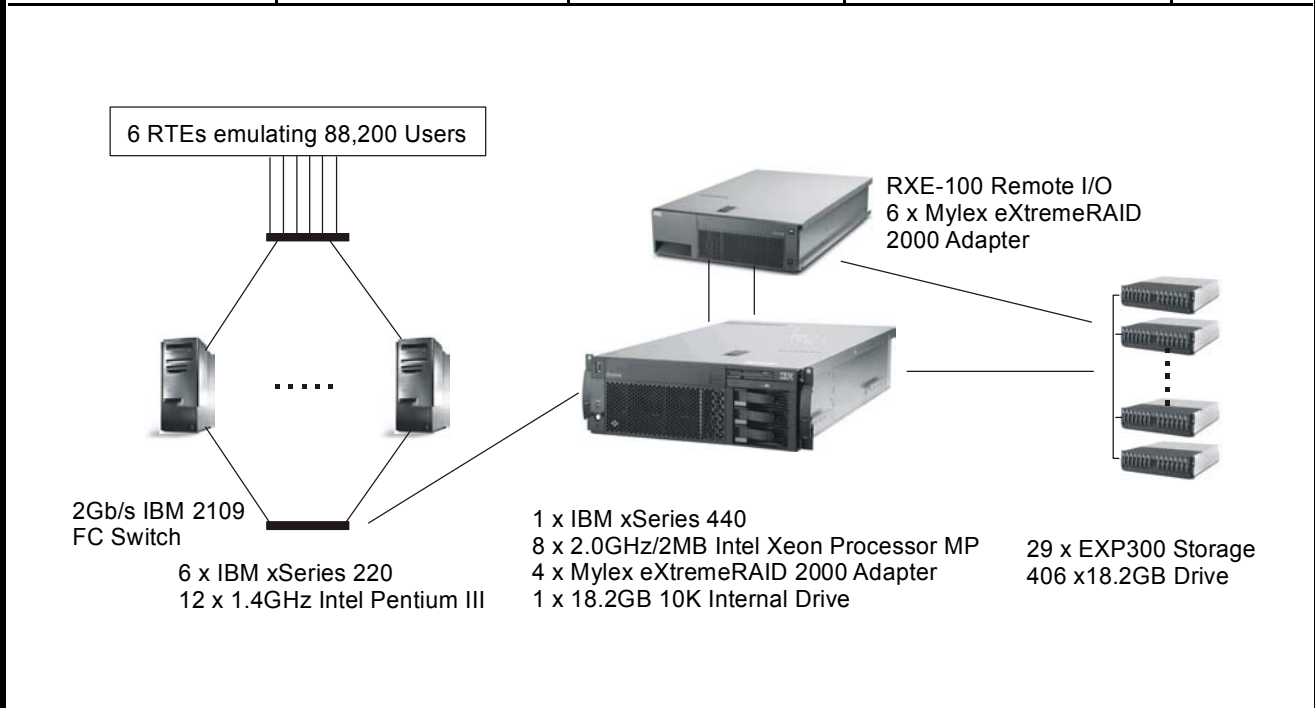
**IBM @server xSeries 440 c/s
with Microsoft SQL Server 2000**

TPC-C Rev. 5.0

Report Date: Nov. 4, 2002

| | | | |
|-------------------|------------------------|----------------------|-----------------------|
| Total System Cost | TPC-C Throughput | Price/Performance | Availability Date |
| \$750,651 | 111,024.39 tpmC | \$6.76 / tpmC | March 31, 2003 |

| Processors | Database Manager | Operating System | Other Software | Number of Users |
|--|---|---|--|-----------------|
| Server: 8 Intel® Xeon™ Processor MP 2.0GHz Clients: 12 Pentium III 1.4GHz | Microsoft® SQL Server 2000 Enterprise Edition SP3 with QFE | Microsoft Windows® .NET Datacenter Server 2003 | Microsoft Visual C++ 6.0 Win32 Microsoft COM+ | 88,200 |



| System Component | Qty | Server: | Qty | Each Client: |
|------------------|-----|--------------------------------|-----|-------------------------|
| Processors | 8 | 2.0GHz Xeon Processor | 2 | 1.4GHz Pentium III |
| Cache | | MP w/2MB L3 Cache | | w/512KB L2 Cache |
| Memory | 32 | 2GB ECC SDRAM | 3 | 256MB |
| Disk Controllers | 10 | Mylex eXtremeRAID 2000 Adapter | 1 | Ultra160 SCSI Interface |
| Disk Drives | 406 | 18.2GB (15000 rpm) | 1 | 18.2GB Hard Disk |
| | 1 | 18.2GB (10000 rpm) | | |
| Total Storage | | 6890.51GB | | |
| Tape Drive | 1 | 20/40GB SCSI Tape Drive | | |

| IBM Corporation | IBM @server xSeries 440 c/s with Microsoft SQL Server 2000 | | | TPC-C Rev. 5.0 | | | |
|---|--|-------------------|---------|--------------------------------------|-----|------------------|-----------------|
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| Description | Order Number | Third-Party Brand | Pricing | Unit Price | Qty | Ext. Price | 3-Yr. Maint.* |
| Server Hardware | | | | | | | |
| IBM @server xSeries 440 Four 2.0GHz/2MB Xeon Processor MP | 8687-7RX | IBM | 1 | \$40,299 | 1 | \$40,299 | \$3,390 |
| xSeries SMP Expansion Module | 59P5188 | IBM | 1 | 5,199 | 1 | 5,199 | 0 |
| 2.0GHz/2MB Xeon Processor MP | 59P5173 | IBM | 1 | 6,599 | 4 | 26,396 | 0 |
| 2GB PC133 ECC SDRAM RDIMM | 31P8840 | IBM | 1 | 4,999 | 32 | 159,968 | 0 |
| Mylex eXtremeRAID 2000 Adapter*** | 08P3834 | Mylex | 2 | 1,228 | 12 | 14,736 | 0 |
| 18.2GB 10K Ultra160 SCSI Drive | 06P5754 | IBM | 1 | 275 | 1 | 275 | 0 |
| QLogic 2350 Fibre Channel-VI Adapter*** | QLA2350-BK | QLogic | 3 | 2,568 | 4 | 10,272 | 0 |
| Netfinity 4.2M Ultra2 SCSI Cable | 03K9311 | IBM | 1 | 105 | 29 | 3,045 | 0 |
| IBM UPS 500 | 33L3477 | IBM | 1 | 99 | 1 | 99 | 0 |
| E54 14" (13.8" Viewable) Color Monitor* | 633147N | IBM | 1 | 139 | 1 | 139 | 90 |
| 20/40GB Internal SCSI Tape Drive | 00N7991 | IBM | 1 | 769 | 1 | 769 | 0 |
| NetBAY42 Standard Rack Cabinet | 9306421 | IBM | 1 | 1,439 | 3 | 4,317 | 900 |
| Enterprise Rack Prep Fee | o6P5756 | IBM | 1 | 400 | 1 | 400 | 0 |
| Enterprise Rack Installation Fee | 06P7515 | IBM | 1 | 160 | 1 | 160 | 0 |
| Option Integration Fee | 58P8665 | IBM | 1 | 110 | 1 | 110 | 0 |
| Image Load Fee | 06P7505 | IBM | 1 | 35 | 1 | 35 | 0 |
| Storage Hardware | | | | | | | |
| IBM EXP300 Rack Storage Enclosure* | 35311RU | IBM | 1 | 3,179 | 29 | 92,191 | 5,800 |
| 18.2GB 15K Ultra160 SCSI Drive | 06P5767 | IBM | 1 | 439 | 406 | 178,234 | 0 |
| IBM RXE-100 Remote Expansion Encl.* | 8684-1RX | IBM | 1 | 4,569 | 1 | 4,569 | 1,050 |
| IBM Remote I/O PCI-X 6-Slot Exp. Kit | 31P5998 | IBM | 1 | 1,699 | 1 | 1,699 | 0 |
| 3.5 Remote I/O Cable Kit | 31P6102 | IBM | 1 | 599 | 1 | 1,198 | 0 |
| Subtotal | | | | | | \$543,511 | \$11,230 |
| Server Software | | | | | | | |
| Microsoft SQL Server 2000 EE | 810-00846 | Microsoft | 4 | 16,541 | 8 | \$132,328 | \$0 |
| Microsoft .NET Datacenter Server 2003 | 4816-1BX | IBM | 1 | 32,995 | 1 | 32,995 | 41,850 |
| Three-Year Maintenance for Software | PROPRORS16U01 | Microsoft | 4 | 1,950 | 3 | | 5,850 |
| Subtotal | | | | | | \$165,323 | \$47,700 |
| Client Hardware | | | | | | | |
| IBM @server xSeries 220* One 256MB 133MHz ECC SDRAM | 8646-5AX | IBM | 1 | 1,409 | 6 | \$8,454 | \$4,488 |
| 1.4GHz/512KB Pentium III Processor | 25P2090 | IBM | 1 | 699 | 6 | 4,194 | 0 |
| 256MB 133MHz ECC SDRAM RDIMM | 10K0020 | IBM | 1 | 219 | 12 | 2,628 | 0 |
| 18.2GB 10K Ultra160 SCSI Drive | 06P5754 | IBM | 1 | 275 | 6 | 1,650 | 0 |
| IBM 10/100 Dual-Port Server Adapter | 06P4901 | IBM | 1 | 209 | 12 | 2,508 | 0 |
| QLogic 2350 Fibre Channel-VI Adapter*** | QLA2350-BK | QLogic | 3 | 2,568 | 6 | 15,408 | 0 |
| E54 15" (13.8" Viewable) Color Monitor* | 633147N | IBM | 1 | 139 | 6 | 834 | 540 |
| Subtotal | | | | | | \$35,676 | \$5,028 |
| Client Software | | | | | | | |
| Microsoft Windows 2000 Server w/COM+ | C11-00821 | Microsoft | 4 | 738 | 6 | 4,428 | 0 |
| Microsoft Visual C++ Professional 6.0 | 048-00317 | Microsoft | 4 | 549 | 1 | 549 | 0 |
| Subtotal | | | | | | \$4,977 | \$0 |
| User Connectivity | | | | | | | |
| SAN Fibre Channel 8-Port Switch* | 2109S08 | IBM | 1 | 16,518 | 1 | 16,518 | 2,160 |
| IBM 5M LC-LC Fibre Channel Cable | 19K1248 | IBM | 1 | 129 | 8 | 1,032 | 0 |
| Subtotal | | | | | | \$17,550 | \$2,160 |
| Total | | | | | | \$684,533 | \$66,118 |
| Large volume discount of 14% on IBM Hardware; prices will vary if purchased separately. See Microsoft quote for software discount. | | | 1 | | | (82,504) | \$0 |
| Notes: * The standard 3-year warranties on IBM hardware have been upgraded to 7x24, 4-hour response time coverage. ** Five-year warranty. *** 10% or minimum 2 spares are added in place of on-site service (products have a 5-year return-to-vendor-warranty) Pricing: 1 - IBM Corp.; 2 - Computer Giants; 3 - QLogic; 4 - Microsoft Corp. Audited by Brad Askins of InfoSizing, Inc. | | | | Three-Year Cost of Ownership: | | \$750,651 | |
| | | | | tpmC Rating: | | 111,024.39 | |
| | | | | \$ / tpmC: | | \$6.76 | |
| 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 specification. If you find that 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: | | | 111,024.39 tpmC |
| Response Times (in seconds) | Average | Maximum | 90 %-tile |
| New-Order | 0.26 | 5.20 | 0.48 |
| Payment | 0.22 | 4.17 | 0.42 |
| Delivery | 0.13 | 1.46 | 0.16 |
| Stock Level | 0.52 | 6.23 | 0.80 |
| Order Status | 0.23 | 9.88 | 0.43 |
| Delivery (Deferred) | 0.15 | 3.95 | 0.21 |
| Menu | 0.13 | 1.48 | 0.17 |
| Transaction Mix (in percent of total transactions) | | Total Occurrences | Percent |
| New-Order | | 13,322,927 | 44.95 |
| Payment | | 12,751,810 | 43.03 |
| Delivery | | 1,188,276 | 4.01 |
| Stock-Level | | 1,187,323 | 4.00 |
| Order Status | | 1,188,262 | 4.01 |
| Emulation Delay (in seconds) | | Response Time | Menu |
| New-Order | | 0.1 | 0.1 |
| Payment | | 0.1 | 0.1 |
| Delivery | | 0.1 | 0.1 |
| Stock-Level | | 0.1 | 0.1 |
| Order Status | | 0.1 | 0.1 |
| Keying/Think Times (in seconds) | Average | Minimum | Maximum |
| New Order | 18.02 / 12.05 | 18.00 / 0.00 | 18.05 / 120.51 |
| Payment | 3.02 / 12.05 | 3.00 / 0.00 | 3.05 / 120.51 |
| Delivery | 2.01 / 5.05 | 2.00 / 0.00 | 2.04 / 50.51 |
| Stock Level | 2.01 / 5.06 | 2.00/ 0.00 | 2.05 / 50.50 |
| Order Status | 2.01 / 10.04 | 2.00/ 0.00 | 2.04 / 100.51 |
| Test Duration | | | |
| Ramp-up time | | | 41 minutes |
| Measurement interval | | | 120 minutes |
| Number of transactions (all types) completed in measurement interval | | | 30,824,935 |
| Ramp-down time | | | 6 minute 45 seconds |
| Number of checkpoints in measurement interval | | | 4 |
| Checkpoint interval | | | 30 minutes |