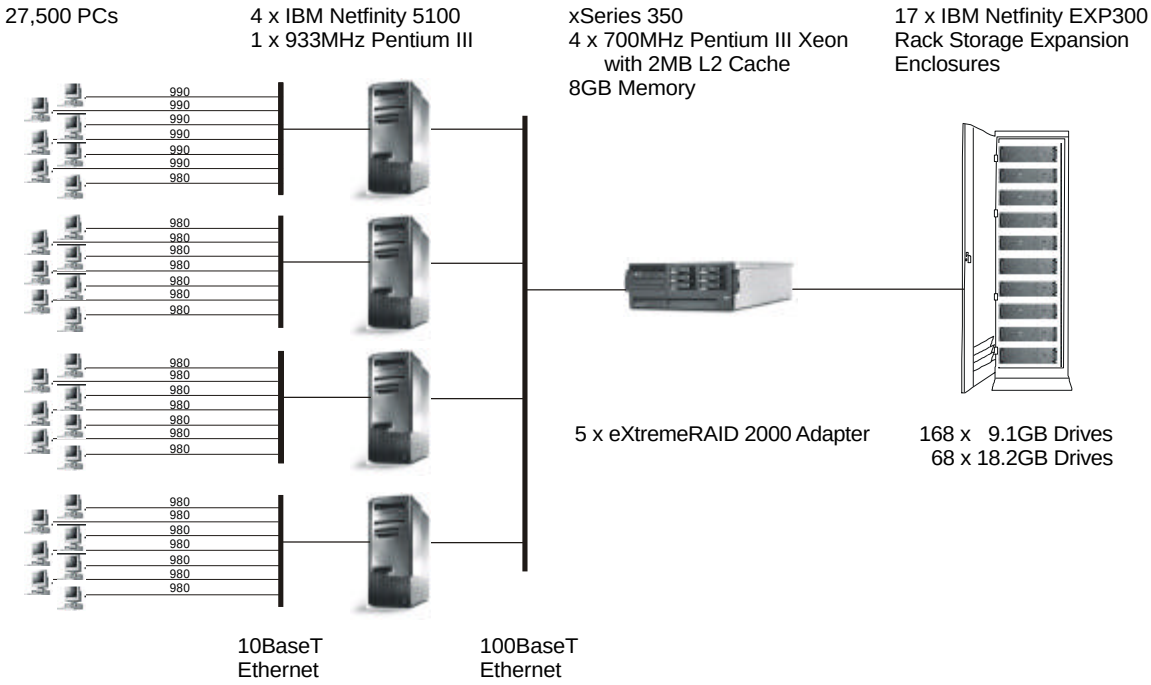
| | | |
|---|---|---|
| IBM | **IBM @server xSeries 350 c/s with Microsoft SQL Server 2000** | TPC-C Rev 5.0<br>Upgrade from Rev. 3.5<br>Report Date: April 9, 2001<br>(Original: December 12, 2000) |

| Total System Cost | TPC-C Throughput | Price/Performance | Availability Date |
|---|---|---|---|
| **$276,075** | **34,264.90 tpmC** | **$8.06 /tpmC** | **Dec. 11, 2000** |

| Processors | Database Manager | Operating System | Other Software | Number of Users |
|---|---|---|---|---|
| **4: Database<br>4: Client** | **Microsoft® SQL Server 2000 Enterprise Edition** | **Microsoft Windows® 2000 Advanced Server** | **Microsoft Visual C++ 6.0 Win32<br>Microsoft COM+** | **27,500** |




| System Component | Qty | Server | Qty | Each of Four Clients |
|---|---|---|---|---|
| **Processors** | **4** | **700MHz Pentium III Xeon w/2MB L2 Cache** | **1** | **933MHz Pentium III w/256KB L2 Cache** |
| **Memory** | **16** | **512MB** | **1** | **128MB** |
| | | | **1** | **256MB** |
| **Disk Controllers** | **5** | **Mylex eXtremeRAID 2000** | **1** | **Ultra160 SCSI Onboard** |
| **Disk Drives** | **168** | **9.1GB (15000 rpm)** | **1** | **9.1GB Hard Disk** |
| | **68** | **18.2GB (15000 rpm)** | | |
| | **1** | **9.1GB (10000rpm)** | | |
| **Total Storage** | | **2775.5GB** | | |
| **Tape Drive** | **1** | **20/40GB SCSI Tape Drive** | | |

| IBM Corporation | IBM @server xSeries 350 c/s with Microsoft SQL Server 2000 | TPC-C Rev. 5.0 Upgrade from Rev. 3.5 |
|---|---|---|
| | | Report Date: April 9, 2001 (Original: December 12, 2000) |

| Description | Order Number | Third-Party Brand | Pricing | Unit Price | Qty | Ext. Price | 3-Yr. Maint.* |
|---|---|---|---|---|---|---|---|
| **Server Hardware** | | | | | | | |
| xSeries 350 / 700MHz/2MB Pentium III Xeon' | 86825RY | | 1 | $5,369 | 1 | $5,369 | $2,495 |
| 700MHz/2MB L2 Cache Processor Upgrade | 00N7944 | | 1 | 2,879 | 3 | 8,637 | 0 |
| 512MB ECC SDRAM RDIMM Memory Kit | 33L3117 | | 1 | 749 | 15 | 11,235 | 0 |
| Netinity 9.1GB 10K Ultra160 SCSI Drive | 37L7204 | | 1 | 275 | 1 | 275 | 0 |
| Mylex eXtremeRAID 2000 Adapter** | E2000-4-32NB | Mylex | 3 | 1,872 | 7 | 13,104 | 0 |
| Netfinity 4.2M Ultra2 SCSI Cable | 03K9311 | | 1 | 105 | 18 | 1,890 | 0 |
| 10/100 Ethernet Server Adapter | 06P3601 | | 1 | 99 | 1 | 99 | 0 |
| E54 14" (13.8" Viewable) Color Monitor* | 6331N2N | | 1 | 159 | 1 | 159 | 90 |
| 20/40GB Internal SCSI Tape Drive | 00N7991 | | 1 | 769 | 1 | 769 | 0 |
| Netfinity Rack* | 9306900 | | 1 | 1,725 | 2 | 3,450 | 600 |
| Side Panel Kit | 94G6669 | | 1 | 195 | 1 | 195 | 0 |
| **Storage Hardware** | | | | | | | |
| Netfinity EXP300 Rack Storage Enclosure* | 35311RU | | 1 | 3,179 | 17 | 54,043 | 3,400 |
| 9.1GB 15K Ultra160 SCSI Drive | 19K0655 | | 1 | 405 | 168 | 68,040 | 0 |
| 18.2GB 15K Ultra160 SCSI Drive | 19K0656 | | 1 | 549 | 68 | 37,332 | 0 |
| | | | | | **Subtotal** | $204,597 | $6,585 |
| **Server Software** | | | | | | | |
| Microsoft SQL Server 2000 Enterprise Editior | 810-00846 | Microsoft | 2 | 16,541 | 4 | $66,164 | $0 |
| Microsoft Windows 2000 Advanced Server | C10-00475 | Microsoft | 2 | 2,399 | 1 | 2,399 | 0 |
| Three-Year Maintenance for Software | | Microsoft | 2 | 2,095 | 3 | | 6,285 |
| | | | | | **Subtotal** | $68,563 | $6,285 |
| **Client Hardware** | | | | | | | |
| Netfinity 5100 / 933MHz/256KB Pentium III* | 865851Y | | 1 | 1,719 | 4 | $6,876 | $5,980 |
| 9.1GB 10K Ultra160 SCSI Drive | 37L7204 | | 1 | 275 | 4 | 1,100 | 0 |
| 256MB 133MHz ECC SDRAM RDIMM | 33L3125 | | 1 | 269 | 4 | 1,076 | 0 |
| 10/100 Ethernet Server Adapter | 06P3601 | | 1 | 99 | 4 | 396 | 0 |
| E54 15" (13.8" Viewable) Color Monitor* | 6331N2N | | 1 | 159 | 4 | 636 | 360 |
| | | | | | **Subtotal** | $10,084 | $6,340 |
| **Client Software** | | | | | | | |
| Microsoft Windows 2000 Server with COM+ | C11-00821 | Microsoft | 2 | 738 | 4 | 2,952 | 0 |
| Microsoft Visual C++ Professional 6.0 Win32 | 048-00317 | Microsoft | 2 | 549 | 1 | 549 | 0 |
| | | | | | **Subtotal** | $3,501 | $0 |
| **User Connectivity** | | | | | | | |
| 8-Port 10/100Mbps Nway Fast Ethernet Switch*** | NX-DSS8 | | 4 | 25 | 7 | 175 | 0 |
| | | | | | **Subtotal** | $175 | $0 |
| | | | | | **Total** | $286,920 | $19,210 |
| **Large volume discount of 14% on IBM hardware; prices vary if purchased separately.** | | | 1 | -14% | | (30,055) | $0 |

Notes: * The standard 3-year warranties on IBM hardware has 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 - Microsoft Corp.; 3 - Mylex ; 4 - Software House International.
Audited by Bradley J. Askins of InfoSizing, Inc.

| | |
|---|---|
| **Three-Year Cost of Ownership:** | $276,075 |
| **tpmC Rating:** | 34,264.90 |
| **$ / tpmC:** | $8.06 |

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: | 34,264.90 tpmC |
| % throughput difference, reported and reproducibility runs: | 0.064% |

| Response Times (in seconds) | Average | Maximum | 90 %-tile |
|---|---|---|---|
| New-Order | 0.47 | 21.29 | 0.82 |
| Payment | 0.40 | 27.84 | 0.75 |
| Delivery | 0.13 | 7.21 | 0.16 |
| Stock Level | 1.20 | 11.88 | 1.75 |
| Order Status | 0.41 | 6.04 | 0.75 |
| Delivery (Deferred) | 0.21 | 0.89 | 0.35 |
| Menu | 0.13 | 13.46 | 0.17 |

| Transaction Mix (in percent of total transactions) | Total Occurrences | Percent |
|---|---|---|
| New-Order | 685,298 | 44.89 |
| Payment | 656,525 | 43.01 |
| Delivery | 61,504 | 4.03 |
| Stock-Level | 61,582 | 4.03 |
| Order Status | 61,643 | 4.04 |

| 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 | 18.01 / 12.05 | 18.00 / 0.00 | 18.03 / 120.51 |
| Payment | 3.02 / 12.04 | 3.00 / 0.00 | 3.03 / 120.50 |
| Delivery | 2.01 / 5.06 | 2.00 / 0.00 | 2.03 / 50.50 |
| Stock Level | 2.01 / 5.03 | 2.00 / 0.00 | 2.03 / 48.61 |
| Order Status | 2.02 / 10.06 | 2.00 / 0.00 | 2.03 / 100.50 |

| Test Duration | |
|---|---|
| Ramp-up time | 21 minutes |
| Measurement interval | 20 minutes |
| Number of transactions (all types) completed in measurement interval | 1,588,062 |
| Ramp-down time | 22 minutes |
| Number of checkpoints in measurement interval | 1 |
| Checkpoint interval | 20 minutes |