



HP 9000 N4000 Enterprise Server

TPC-C Revision 3.5

Report Date:
April 5, 2001

| | | | | |
|----------------------------------|---|--|-------------------|-------------------|
| Total System Cost | TPC Throughput | Price/Performance | | Availability Date |
| \$1,476,497 | 60,366.82 tpmC | \$24.46/tpmC | | Now |
| Processors | Database Manager | Operating System | Other Software | Number of Users |
| 8 PA-RISC 8600 550MHz | Sybase Adaptive Server Enterprise 12.0 | HP-UX 11.0 64-bit Extension Pack 9911 | TUXEDO 6.4 | 50,000 |

Server

Clients



50,000 users

10 HP 9000 C3600

1552MHz PA-RISC 8600
3GB Memory
w 5MB I-cache/1MB D-cache
1 9GB Internal Drive

100 Base T

1000 Base T

HP 9000 N4000 Enterprise Server

8 550MHz PA-RISC 8600
32GB Memory
w .5MB I-cache/1MB D-cache
1 9GB Internal Drive

Fibre Channel

5 SureStore E Disk Arrays FC60
- 225 18.2GB 10K RPM Disk Drives

SCSI

1 Auto Raid Array Model 12
- 14 18.2GB 10K RPM Disk Drives

| System Components | Server (HP 9000 N4000 Enterprise Server) | | Each Client (10 C3600) | |
|-------------------------|--|--|------------------------|-----------------------------|
| | Qty | Type | Qty | Type |
| Processors | 8 | 550MHz PA-RISC 8600 | 1 | 552MHz PA-RISC 8600 |
| Cache Memory | each | 0.5 MB I-cache, 1 MB D-cache | each | 0.5 MB I-cache/1 MB D-cache |
| Memory | 32 | GB | 1 | 3 GB |
| Disk Controllers | 10 | HP-PCI Fibre Channel | 1 | Ultra2 SCSI LVD |
| Disk Drives | 1 | 9.1GB Internal Drive | 1 | 9 GB disk |
| | 5 | SureStore Disk Array FC60 with 225 18.2 10K RPM drives | | |
| | 1 | HP AutoRaid Model 12H with 14 18.2 10K RPM drives | | |
| Total Storage | 3,963 | GB | | |
| Tape Drives | 1 | DVD ROM | | |
| Terminals | 1 | Console Terminal | | |



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| Description | Part Number | Brand | Price Key | Unit Price | Qty | Extended Price | 5 Yr.Maint. Price |
|--|---------------------|----------|-----------|------------|------|------------------|-------------------|
| Server Hardware | | | | | | | |
| HP 9000 N4000 Enterprise Server | A3639B | | 1 | 18,285 | 1 | 18,285 | 11,916 |
| Add'l 550 MHz PA-RISC 8600 CPUs | A5866A, Opt 0D1 | | 1 | 20,175 | 8 | 161,400 | 29,808 |
| Memory Carrier | A4882A, Opt. 0D1 | | 1 | 3,188 | 4 | 12,750 | |
| 2 GB Memory | A5864A | | 1 | 16,875 | 16 | 270,000 | |
| Processor Support Module | A5168A, Opt 0D1 | | 1 | 1,376 | 4 | 5,505 | |
| Dual Port Ultra 2 SCSI | A5150 Opt. 0D1 | | 1 | 1,260 | 1 | 1,260 | |
| 9 GB Internal Disk | A5505A, Opt 0D1 | | 1 | 975 | 1 | 975 | |
| Rack Installation Kit | A5170A, Opt. 0D1 | | 1 | 308 | 1 | 308 | |
| PCI Fibre Channel Adapter | A5158A, Opt. 0D1 | | 1 | 1,680 | 10 | 16,800 | |
| PCI 1000BT Lan Adapter | A4926A, Opt. 0D1 | | 1 | 1,601 | 1 | 1,601 | |
| HP Smart 2U Storage Enclosure | C4317A | | 1 | 338 | 1 | 338 | |
| DVD-ROM | Opt. 108 | | 1 | 487 | 1 | 487 | |
| .5m 68pin SCSI Terminator | Opt. 001 | | 1 | 74 | 1 | 74 | |
| WSE 68pin SCSI Terminator | Opt. 835 | | 1 | 34 | 1 | 34 | |
| HP-UX 11.0 Sys Media, CD-ROM | B3920EA, Opt. AAF | | 1 | 390 | 1 | 390 | |
| 5.5 kVA HP UPS Rackmount | A3589B, Opt. 0D1 | | 1 | 7,500 | 3 | 22,500 | 4,382 |
| 1.25m Field Integrated Cabinet | A4900A | | 1 | 1,575 | 1 | 1,575 | |
| Cabinet Depth Extension Kit | A5541AZ | | 1 | 0 | 1 | 0 | |
| Cabinet Rear Door | A5211AZ | | 1 | 244 | 1 | 244 | |
| Auto Raid Array Model 12 | A3700AZ | | 1 | 4,665 | 1 | 4,665 | 4,577 |
| Two 96 MB controllers with Auto Raid | Opt. 203 | | 1 | 14,070 | 1 | 14,070 | |
| 18.2 GB disk modules, 10K RPM (10% spare) | A3714A | | 1 | 1,500 | 14 | 21,000 | |
| SureStore E Disk Array FC60 | A5277AZ | | 1 | 3,870 | 5 | 19,350 | 19,875 |
| HP Rack System/E33 Inc. Rear & Foot | A4901A | | 1 | 1,680 | 5 | 8,400 | |
| Dual Controllers | A5277A, Opt 204 | | 1 | 24,060 | 5 | 120,300 | |
| SureStore E Disk System SC10 | A5294A | | 1 | 4,800 | 30 | 144,000 | |
| 16m Fibre Channel Cable | A5277A, Opt AFY | | 1 | 120 | 6 | 720 | |
| 18GB 10K RPM Disk Drive (10% spare) | A5282A | | 1 | 1,500 | 248 | 372,000 | |
| Subtotal | | | | | | 1,219,030 | 70,558 |
| Server Software | | | | | | | |
| Sybase Enterprise Adaptive Server 12.0 | Runtime | | 2 | | 1 | 150,000 | 120,000 |
| Subtotal | | | | | | 150,000 | 120,000 |
| Client Hardware | | | | | | | |
| Hewlett Packard Model C3600 Workstation | A5992 | | 1 | 6900 | 10 | 69,000 | 51,750 |
| 512 MB memory module | A4995A | | 1 | 1,725 | 50 | 86,250 | |
| 700/96 Console | C1064GX | | 1 | 413 | 1 | 413 | |
| 100BaseT PCI Lan Adapter | B5509BA | | 1 | 205 | 10 | 2,048 | |
| 9 GB LVD 10K RPM Disk | A4997A | | 1 | 619 | 10 | 6,188 | |
| Subtotal | | | | | | 163,898 | 51,750 |
| Client Software | | | | | | | |
| HP C/ANSI C Compiler | B3901BA, Option AH0 | | 1 | 1,200 | 1 | 1,200 | 1,757 |
| BEA Tuxedo 6.4 | | Bea Sys. | 3 | 3,000 | 10 | 30,000 | 24,000 |
| Subtotal | | | | | | 31,200 | 25,757 |
| User Connectivity | | | | | | | |
| (8+1) port 10Mbps Ethernet Hub, 502 spares | | I-market | 4 | 20 | 7013 | 140,260 | |
| HP ProCurve Switch 1600M | J4120A | | 1 | 1,199 | 1 | 1,199 | 588 |
| HP ProCurve Switch Gigabit-SX Module | J4113A | | 1 | 1,124 | 1 | 1,124 | |
| HP ProCurve Switch 1408 | J4097A | | 1 | 149 | 10 | 1,493 | |
| Subtotal | | | | | | 144,076 | 588 |
| Large Configuration and Prepayment Discounts | | | | | | (462,648) | (37,711) |
| Total | | | | | | 1,245,556 | 230,941 |

Notes: 1=SolarCom, 2=Sybase
3=BEA Systems, 4=I-Market

Audited by Lorna Livingtree, Performance Metrics, Inc.

| | |
|-------------------------------------|--------------------|
| Five Year Cost of Ownership: | \$1,476,497 |
| tpmC Rating: | 60,366.82 |
| \$/tpmC: | \$24.46 |

Prices used in TPC benchmarks reflect 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 the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

Numerical Quantities Summary for HP 9000 N4000 Enterprise Server

MQTH, Computed Maximum Qualified Throughput

60,366.82 tpmC

Response Times (in seconds)

| | 90th %-ile | Maximum | Average |
|--------------------------------|------------|---------|---------|
| New-Order | 2.13s | 12.32s | 1.28s |
| Payment | 2.03s | 12.12s | 1.19s |
| Order-Status | 2.08s | 11.01s | 1.23s |
| Delivery (interactive portion) | 0.08s | 1.11s | 0.07s |
| Delivery (deferred portion) | 2.75s | 12.02s | 1.86s |
| Stock-Level | 2.28s | 11.12s | 1.33s |
| Menu | 0.10s | 0.54s | 0.002s |

Transaction Mix, in percent of total transactions

| | |
|--------------|--------|
| New-Order | 44.82% |
| Payment | 43.04% |
| Order-Status | 4.05% |
| Delivery | 4.04% |
| Stock-Level | 4.04% |

Keying/Think Times

| | Keying Time | | | Think Time | | |
|------------------------|-------------|--------|--------|------------|--------|---------|
| | Min | Avg | Max | Min | Avg | Max |
| New-Order | 18.02s | 18.03s | 18.09s | 0.01s | 12.13s | 175.71s |
| Payment | 3.01s | 3.02s | 3.08s | 0.01s | 12.07s | 191.47s |
| Order-Status | 2.01s | 2.02s | 2.08s | 0.01s | 10.13s | 144.01s |
| Delivery (interactive) | 2.01s | 2.02s | 2.08s | 0.01s | 5.06s | 63.82s |
| Stock-Level | 2.01s | 2.02s | 2.06s | 0.01s | 5.06s | 64.91s |

Test Duration

| | |
|--|---------------|
| Ramp up time | 24.6 minutes |
| Measurement interval | 100 minutes |
| Transactions during measurement interval | 13,467,854 |
| Ramp down time | 5.733 minutes |

Checkpointing

| | |
|---|------------|
| Number of checkpoints in measurement interval | 4 |
| Checkpoint Interval | 25 minutes |

Reproducibility Run

| | |
|------------------|----------------|
| Throughput | 60,045.82 tpmC |
| Relative to MQTH | -0.53% |