| | HP ProLiant DL580 G7<br><br>Intel Xeon E7-4870 2.40 GHz 30MB L3<br><br>C/S with 4 ProLiant DL360 G7 | TPC-E Rev 1.12.0 |
|---|---|---|
| | | TPC Pricing 1.6.0 |
| | | |
| | | Report Date<br>April 5, 2011 |

| TPC-E Throughput | Price/Performance | Availability Date | Total System Cost |
|---|---|---|---|
| 2454.51 tpsE | $291 USD/tpsE | June 20, 2011 | $713,369 USD |

### Database Server Configuration

| Operating System | Database Manager | Processor/Cores/Thread | Memory |
|---|---|---|---|
| Microsoft Windows Server 2008 R2 SP1 Enterprise Edition | Microsoft SQL Server 2008 R2 Enterprise Edition | 4/40/80<br>Intel Xeon E7-4870 EX<br>2.40 GHz 30MB L3 | 1024 Gbyte |

**Tier B: Server**
**HP ProLiant DL580 G7**

4 x Intel Xeon Processor E7-4870 2.40 GHZ
1024GB Memory

2 x HP 72GB SAS 15K SFF DP ENT HDD

HP ProCurve 2910al-24G

1Gbps Ethernet
**Database Log**

4 x HP 400GB SSD (internal)

**Storage**

11 x HP Smart Array P812/1GB
44 x HP StorageWorks D2700 Disk Enclosure
950 x 72GB 6G SAS 15K SFF DP ENT HDD
150 x 146GB 6G SAS 15K SFF DP ENT HDD

**Tier A: Clients**

4 x ProLiant DL360 G7
2 x Hex-Core Intel Xeon X5670 Processor 2.93Ghz(ea)
2 x 300GB 6G SAS 10K SFF DP(ea)
2 x Onboard 1Gbps Ethernet(ea)
1 x HP NC360T PCI-E Dual Port (ea)

| Initial Database Size | Redundancy Level: 1 | Storage |
|---|---|---|
| 11,000 GB | RAID10:Log/RAID10:Data | 950x72GB 15K, 150x146GB 15K , 4x400GB SSD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | TPC-E | 1.12.0 | | | | |
| **HP ProLiant DL580 G7** | | TPC-Pricing | 1.6.0 | | | | |
| | | Report date | 5-Apr-11 | | | | |
| | | Availability Date | 20-Jun-11 | | | | |

| Description | Part Number | Brand | Unit Price | Qty. | Extended Price | 3 Yr Maint Price |
|---|---|---|---|---|---|---|
| **Server Hardware (Tier B)** | | | | | | |
| HP DL580R07 CTO Chassis | 643086-B21 | 1 | 5,100 | 1 | 5,100 | |
| E7-4870 DL580 G7 2P FIO Kit | 643067-L21 | 1 | 11,998 | 1 | 11,998 | |
| E7-4870 DL580 G7 Kit | 643067-B21 | 1 | 5,999 | 2 | 11,998 | |
| DL580G7/DL980G7 (E7) Memory Cartridge | 644172-B21 | 1 | 200 | 4 | 800 | |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 Reg. Memory Kit | 627812-B21 | 1 | 1,899 | 64 | 121,536 | |
| HP 72GB SAS 15K SFF DP ENT HDD | 512545-B21 | 1 | 279 | 2 | 558 | |
| 512MB Flash Backed Write Cache for P410i | 534916-B21 | 1 | 429 | 1 | 429 | |
| HP Smart Array P812/1G FBWC 2-ports Int/4-ports Ext PCIe x8 SAS | 487204-B21 | 1 | 1,299 | 11 | 14,289 | |
| HP LE1851w 18.5-Inch wide Monitor | NK033AA#ABA | 1 | 159 | 1 | 159 | |
| HP PS/2 Keyboard And Mouse Bundle | RC464AA#ABA | 1 | 39 | 1 | 39 | |
| Slim 12.7mm SATA DVD Optical Kit | 481041-B21 | 1 | 90 | 1 | 90 | |
| 1200W CS Slvr Ht Plg Pwr Supply Kit | 500172-B21 | 1 | 329 | 4 | 1,316 | |
| HP 3y 4h 24x7 ProLiant DL58x HW Support ,Proliant Server DL58x | U4545E | 1 | 1,397 | 1 | | $1,397 |
| | | | Subtotal | | $168,312 | $1,397 |
| **Server Software** | | | | | | |
| SQL Server 2008 R2 Enterprise Edition, Per Processor License | 810-08527 | 2 | 19,188 | 4 | 76,752 | |
| Windows Server 2008 R2 Enterprise Edition | P72-04217 | 2 | 2,280 | 1 | 2,280 | |
| Microsoft Problem Resolution Services | N/A | 2 | 259 | 1 | | 259 |
| | | | Subtotal | | $79,032 | 259 |
| **Storage** | | | | | | |
| HP StorageWorks D2700 Disk Enclosure | AJ941A | 1 | 3,399 | 44 | 149,556 | |
| HP StorageWorks D2700 Disk Enclosure  (10% Spares) | AJ941A | 1 | 3,399 | 5 | 16,995 | |
| HP 72GB 6G SAS 15K SFF DP ENT HDD | 512545-B21 | 1 | 279 | 950 | 265,050 | |
| HP 146GB 6G SAS 15K SFF DP ENT HDD | 512547-B21 | 1 | 369 | 150 | 55,350 | |
| HP 146GB 6G SAS 15K SFF DP ENT HDD (10% Spares) | 512547-B21 | 1 | 369 | 15 | 5,535 | |
| HP 72GB 6G SAS 15K SFF DP ENT HDD (10% Spares) | 512545-B21 | 1 | 279 | 95 | 26,505 | |
| HP 400GB 6G SAS MLC SSD | 632504-B21 | 1 | 5,999 | 4 | 23,996 | |
| HP 5642 Pallet Unassembled Rack | 358254-B21 | 1 | 865 | 2 | 1,730 | |
| | | | Subtotal | | 544,717 | 0 |
| | | | | | | |
| **Client Hardware (Tier A)** | | | | | | |
| HP ProLiant DL360 G7 CTO Server | 579237-B21 | 1 | 1,441 | 4 | 5,764 | |
| HP DL360 G7 Intel Xeon X5670 (2.93Ghz/6-core/12MB/95W) Proc | 588062-B21 | 1 | 1,999 | 8 | 15,992 | |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600  Memory Kit | 500656-B21 | 1 | 110 | 24 | 2,640 | |
| HP 300GB 6G SAS 10K SFF DP ENT HDD | 507127-B21 | 1 | 409 | 8 | 3,272 | |
| HP NC360T PCI-E Dual Port Gigabit Server Adapter | 412648-B21 | 1 | 209 | 4 | 836 | |
| HP 3y 4h 24x7 ProLiant DL36x HW Support ,ProLiant DL36x | U4497E | 1 | 698 | 4 | | 2,792 |
| | | | Subtotal | | 28,504 | 2,792 |
| **Client Software** | | | | | | |
| Microsoft Windows Server 2008 R2 Standard (x64) | P73-04980 | 2 | 711 | 4 | 2,844 | |
| | | | Subtotal | | 2,844 | 0 |
| | | | | | | |
| HP ProCurve 2910al-24G Switch 24-port 10/100/1000 basic Layer 3 | J9145A#ABA | 1 | 2,609 | 2 | 5,218 | |
| 3-year, 4-hour onsite, 24x7 coverage for hardware | U4835E | 1 | 227 | 2 | | 454 |
| HP 1.2m/4ft CAT5 RJ45 M/M Ethernet Cable | C7533A | 1 | 4 | 20 | 74 | |
| | | | Subtotal | | 5,292 | 454 |
| | | | | | | |
| | | | **Total Extended Price** | | $828,701 | $4,902 |
| HP's Large Configuration Discount * | | 16.0% | **Total Discounts** | | $119,492 | $743 |
| | | | **Grand Total** | | $709,209 | $4,159 |

Pricing:  1=HP Direct 800-203-6748 2= Microsoft. Note 1: Discount based on HP Direct guidence applies to all lines where pricing = 1. Note 2: All the hardware are available to order. Note 3: The benchmark results were audited by Lorna Livingtree of Performance Metrics.

| | |
|---|---|
| **Three-year Cost of Ownership: USD** | **$713,369** |
| **tpsE** | **2,454.51** |
| **$ USD/tpsE** | **$291** |

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 the stated prices are not available according to these terms, please inform at pricing@tpc.org. Thank you.

# HP ProLiant DL580 G7
## Intel Xeon E7-4870 2.40 GHz 30MB L3

## Numerical Quantities Summary

| Reported Throughput | 2454.51 tpsE | Configured Customers: | | 1,250,000 |
|---|---|---|---|---|

| Response Times (in seconds) | Minimum | Average | 90th %tile | Maximum |
|---|---|---|---|---|
| Broker Volume | 0.00 | 0.04 | 0.07 | 0.27 |
| Customer Position | 0.00 | 0.03 | 0.05 | 20.33 |
| Market Feed | 0.00 | 0.03 | 0.05 | 20.72 |
| Market Watch | 0.00 | 0.03 | 0.06 | 1.08 |
| Security Detail | 0.00 | 0.01 | 0.03 | 0.91 |
| Trade Lookup | 0.00 | 0.40 | 0.59 | 1.85 |
| Trade Order | 0.00 | 0.07 | 0.11 | 20.60 |
| Trade Result | 0.00 | 0.07 | 0.13 | 5.54 |
| Trade Status | 0.00 | 0.02 | 0.03 | 1.44 |
| Trade Update | 0.01 | 0.45 | 0.61 | 1.87 |
| Data Maintenance | 0.00 | 0.07 | | 0.87 |

| Transaction Mix | Transaction Count | Mix % |
|---|---|---|
| Broker Volume | 8,660,046 | 4.900% |
| Customer Position | 22,975,962 | 13.000% |
| Market Feed | 1,767,263 | 1.000% |
| Market Watch | 31,812,680 | 18.000% |
| Security Detail | 24,743,211 | 14.000% |
| Trade Lookup | 14,138,665 | 8.000% |
| Trade Order | 17,850,589 | 10.100% |
| Trade Result | 17,672,529 | 9.999% |
| Trade Status | 33,580,180 | 19.000% |
| Trade Update | 3,534,402 | 2.000% |
| Data Maintenance | 120 | |
| Ramp-up Time | 0:35:54 | |
| Measurement Interval | 2:00:00 | |
| Business Recovery Time | 1:03:14 | |
| Total Number of Transactions Completed in Measurement Interval | 176,735,527 | |