
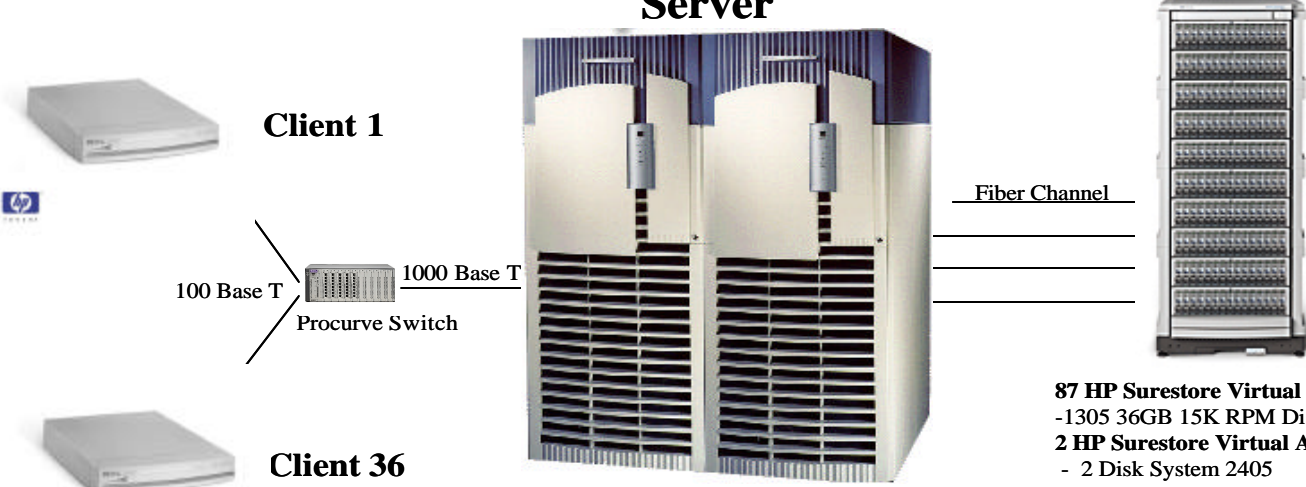


|   |  |                          |                   |                                   |
|---|--|--------------------------|-------------------|-----------------------------------|
|  | <b>HP 9000 Superdome Enterprise Server</b>       |                          |                   | TPC-C Revision 5                  |
|   |  |                          |                   | Report Date:<br>December 31, 2003 |
| Total System Cost   | TPC Throughput                                   | Price/Performance        |                   | Availability Date                 |
| <b>\$6,315,689</b>  | <b>541,673.76 tpmC</b>                           | <b>\$11.66/tpmC</b>      |                   | <b>January 30, 2004</b>           |
| Processors  | Database Manager                                 | Operating System         | Other Software    | Number of Users                   |
| <b>64 PA-RISC 8700<br/>875MHz</b>   | <b>Oracle10i Database Enterprise<br/>Edition</b> | <b>HP-UX 11.i 64-bit</b> | <b>TUXEDO 8.0</b> | <b>428,400</b>                    |

**Server**



**Client 1**

**Client 36**

**HP 9000 Superdome Enterprise Server**  
 64 - 875MHz PA-RISC 8700  
 w/.75MB I-cache/1.5MB D-cache  
 256GB Memory

**87 HP Surestore Virtual Array 7110**  
 -1305 36GB 15K RPM Disk Drives  
**2 HP Surestore Virtual Array 7410**  
 - 2 Disk System 2405  
 - 56 73GB 15K RPM Disk Drives

**Clients – 36 hp rp2470 servers**

| System Components       | Server (HP 9000 Superdome Enterprise Server) |  | each Client (36 rp2470 ) |                              |
|-------------------------|--|--|--------------------------|------------------------------|
|                         | Qty  | Type   | Qty                      | Type                         |
| <b>Processors</b>       | 64   | 875MHz PA-RISC 8700                                    | 1                        | 750MHz PA-RISC 8700          |
| <b>Cache Memory</b>     | each   | .75 MB I-cache, 1.5MB D-cache                          | each                     | .75MB I-cache/1.5 MB D-cache |
| <b>Memory</b>           | 256  | GB   | 3                        | GB                           |
| <b>Disk Controllers</b> | 30   | PCI Fibre Channel 2X                                   | 1                        | Ultra2 SCSI LVD              |
| <b>Disk Drives</b>      | 87   | Surestore Virtual Array 7110 with 1305 36GB<br>15K RPM | 1                        | 36 GB                        |
|                         | 2  | Surestore Virtual Array 7410 with 56 73GB<br>15K RPM   |                          |                              |
| <b>Total Storage</b>    | 22801.66                                     | GB   |                          |                              |
| <b>Tape Drives</b>      | 1  | DVD ROM  |                          |                              |
| <b>Terminals</b>        | 1  | Console Terminal                                       | 1                        | Console Terminal             |



# HP 9000 Superdome Enterprise Server

TPC-C Rev 5

Report Date: December 31, 2003

| Description  | Part Number         | Brand    | Price Key | US List Price   | Qty  | Price                                | 3Year Main.Price   |
|--|---------------------|----------|-----------|-----------------|------|--------------------------------------|--------------------|
| <b>Server Hardware</b>   |                     |          |           |                 |      |                                      |                    |
| Super Dome left chassis  | A5201A, Opt. 429    |          | 1         | 205,840         | 1    | 205,840                              | 187,786            |
| Super Dome right chassis   | A5202A, Opt. 429    |          | 1         | 218,435         | 1    | 218,435                              |                    |
| Memory module - 2 GB   | A5198A, Opt. 0D1    |          | 1         | 9,900           | 128  | 1,267,200                            |                    |
| I/O enclosures   | A4856A, Opt. 0D1    |          | 1         | 14,805          | 3    | 44,415                               |                    |
| PDCA Redundant Power Source  | A5800A, Opt. 0D1    |          | 1         | 578             | 2    | 1,156                                |                    |
| Cell Board with 4 PA-8700 875MHz Processors  | A6862A              |          | 1         | 10,080          | 16   | 161,280                              |                    |
| ICOD right to use processor  | A6885A Opt. 429     |          | 1         | 21,000          | 64   | 1,344,000                            | 408,000            |
| Super Dome PCI Core I/O card   | A6865A              |          | 1         | 1,045           | 1    | 1,045                                |                    |
| PCI 1000BT Lan Adapter   | A6847A, Opt. 0D1    |          | 1         | 2,135           | 1    | 2,135                                |                    |
| PCI 2GB Fibre Channel Adapter  | A6795A, Opt 0D1     |          | 1         | 2,240           | 30   | 67,200                               |                    |
| Rack Installation Kit  | A5170A, Opt. 0D1    |          | 1         | 410             | 1    | 410                                  |                    |
| DVD-ROM  | C7499A              |          | 1         | 3,503           | 1    | 3,503                                |                    |
| (includes SCSI-2 card, cables, enclosures)   |                     |          |           |                 |      |                                      |                    |
| HP9000 A500 Support Management Station   | A5570B              |          | 1         | 11,780          | 1    | 11,780                               |                    |
| (includes memory,CPU,lan card,disk,OS, etc)  |                     |          |           |                 |      |                                      |                    |
| .5m 68pin SCSI Cable   | Opt. 001            |          | 1         | 99              | 1    | 99                                   |                    |
| WSE 68pin SCSI Terminator  | Opt. 835            |          | 1         | 46              | 1    | 46                                   |                    |
| HP-UX 11.i Sys Media, CD-ROM   | B3920EA, Opt. AAF   |          | 1         | 520             | 1    | 520                                  |                    |
| Rack System/E R3000 XR UPS   | J4367A              |          | 1         | 1,948           | 21   | 40,908                               |                    |
| Surestore VA 7110 w/dual controllers 512MB cache   | A7294A              |          | 1         | 50,880          | 87   | 4,426,560                            | 366,357            |
| Bundle discount 7110**   |                     |          | 4         | (22,896)        | 87   | (1,991,952)                          |                    |
| 36GB 15K RPM FC HDD. (includes 10% sparing)  | A6193A, Opt 0D1     |          | 1         | 1,349           | 1436 | 1,937,164                            |                    |
| Bundle discount 36GB**   |                     |          | 4         | (405)           | 1436 | (581,149)                            |                    |
| 2 meter Fibre Optic Cable  | A3583A              |          | 1         | 175             | 91   | 15,925                               |                    |
| 16 meter Fibre Optic Cable   | A3531A              |          | 1         | 200             | 30   | 6,000                                |                    |
| Surestore VA7410 w/ dual controller, 1GB cache   | A6267A              |          | 1         | 77,300          | 2    | 154,600                              | 11,236             |
| Disk System 2405 with dual 2GB link cards  | A6250A              |          | 1         | 6,475           | 2    | 12,950                               | 1,040              |
| 73GB 15K RPM FC HDD. (includes 10% sparing)  | A7288A, Opt 0D1     |          | 1         | 2,619           | 62   | 162,378                              |                    |
| 8 Port Short Wave Fibre Channel Switches   | A7346A              |          | 1         | 6,599           | 30   | 197,970                              |                    |
| HP9000 Std. Rack System E41  | A4902A              |          | 1         | 1,910           | 8    | 15,280                               |                    |
| Modular Power Dist.  | A5137AZ             |          | 1         | 145             | 32   | 4,640                                |                    |
| 200-240 Volts Power Option   | A5137AZ, Opt AW4    |          | 1         | 94              | 32   | 3,008                                |                    |
|  |                     |          |           | <b>Subtotal</b> |      | <b>7,733,345</b>                     | <b>974,419</b>     |
| <b>Server Software</b>   |                     |          |           |                 |      |                                      |                    |
| Oracle10i Database Enterprise Edition for Runtime  |                     |          |           |                 |      |                                      |                    |
| HPUX 11i, Processor 3 year term for (64) processors, Unlimited Users:                    |                     | Oracle   | 2         | 1,280,000       | 1    | 1,280,000                            |                    |
| Oracle Database Server Support Package for 3 years                                       |                     |          | 2         |                 |      |                                      | 6,000              |
|  |                     |          |           | <b>Subtotal</b> |      | <b>1,280,000</b>                     | <b>6,000</b>       |
| <b>Client Hardware</b>   |                     |          |           |                 |      |                                      |                    |
| HP server rp2470   | A6890A              |          | 1         | 1,865           | 36   | 67,140                               | 151,596            |
| 750MHz PA-RISC 8700 CPU  | A6892A              |          | 1         | 4,500           | 36   | 162,000                              |                    |
| 36GB 15K HotPlug Ultra 160 SCSI Internal Disk  | A6948A              |          | 1         | 1,298           | 36   | 46,728                               |                    |
| 1GB Memory Module  | A5841A              |          | 1         | 1,900           | 108  | 205,200                              |                    |
| 100BT Lan Adapter  | A5230A              |          | 1         | 495             | 36   | 17,820                               |                    |
| HP-UX 11.i Sys Media, CD-ROM   | B3920EA, Opt. AAF   |          | 1         | 520             | 36   | 18,720                               |                    |
|  |                     |          |           | <b>Subtotal</b> |      | <b>517,608</b>                       | <b>151,596</b>     |
| <b>Client Software</b>   |                     |          |           |                 |      |                                      |                    |
| HP C/ANSI C Compiler   | B3901BA, Option AH0 |          | 1         | 1600            | 1    | 1,600                                | 170                |
| BEA Tuxedo 8.0   |                     | Bea Sys. | 3         | 1,140           | 36   | 41,040                               | 27,216             |
|  |                     |          |           | <b>Subtotal</b> |      | <b>42,640</b>                        | <b>27,386</b>      |
| <b>User Connectivity</b>   |                     |          |           |                 |      |                                      |                    |
| HP ProCurve Switch 4000M   | J4121A              |          | 1         | 2379            | 1    | 2,379                                | 588                |
| HP ProCurve Switch Gigabit-SX Module   | J4113A              |          | 1         | 1189            | 1    | 1,189                                |                    |
|  |                     |          |           | <b>Subtotal</b> |      | <b>3,568</b>                         | <b>588</b>         |
| Oracle Mandatory E-Business Discount (license and support)                               |                     |          | 2         | (321,500)       | 1    | (321,500)                            |                    |
| HP's Large configuration Discount and Support Prepayment*                                |                     |          |           |                 |      | (\$3,684,330)                        | (\$415,631)        |
| *All discounts are based on US list prices and for similar quantities and configurations |                     |          |           | <b>Total</b>    |      | <b>5,571,331</b>                     | <b>744,358</b>     |
| 1=HP 2= Oracle (Pricing Contact: MaryBeth Pierantoni (see Appendix F) 3=BEA Systems      |                     |          |           |                 |      | <b>Three Year Cost of Ownership:</b> | <b>\$6,315,689</b> |
| 4 HP's Bundle Discount (see attached Page for details)                                   |                     |          |           |                 |      | <b>tpmC Rating:</b>                  | <b>541,674</b>     |
| Audited by Lorna Livingtree for Performance Metrics, Inc.                                |                     |          |           |                 |      | <b>\$/tpmC:</b>                      | <b>\$11.66</b>     |

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.

**\*HP's Bundle Discount = Will be provided in addition to any large volume discount if quantity of VA7xxx is over 50; an additional 45% Discount on VA7xxx and additional 30% on all spindles**

| <b>Description</b>                      | <b>Part Numbe</b> | <b>Brand</b> | <b>Price<br/>Key</b> | <b>US List<br/>Price</b> | <b>Qty</b> | <b>Price</b>       |
|---|-------------------|--------------|----------------------|--------------------------|------------|--------------------|
| **Surestore VA7110 HP's Bundle Discount |                   |              | 4                    | (22,896)                 | 87         | (1,991,952)        |
| **36GB 15K FC HDD HP's Bundle Discount  |                   |              | 4                    | (405)                    | 1,436      | (581,149)          |
| <b>Total Discount</b>                   |                   |              |                      |                          |            | <b>(2,573,101)</b> |

# Numerical Quantities Summary for HP 9000 Superdome Enterprise Server

**MQTH, Computed Maximum Qualified Throughput**

**541,673.76 tpmC**

**Response Times (in seconds)**

|                                | 90th %-ile | Maximum | Average |
|--------------------------------|------------|---------|---------|
| New-Order                      | 0.50s      | 472.17s | 0.32s   |
| Payment                        | 0.49s      | 471.88s | 0.27s   |
| Order-Status                   | 0.52s      | 469.64s | 0.29s   |
| Delivery (interactive portion) | 0.15s      | 468.90s | 0.15s   |
| Delivery (deferred portion)    | 0.52s      | 470.38s | 0.29s   |
| Stock-Level                    | 0.79s      | 471.19s | 0.51s   |
| Menu                           | 0.00s      | 0.00s   | 0.000s  |

**Transaction Mix, in percent of total transactions**

|              |        |
|--------------|--------|
| New-Order    | 44.95% |
| Payment      | 43.01% |
| Order-Status | 4.01%  |
| Delivery     | 4.02%  |
| Stock-Level  | 4.01%  |

**Keying/Think Times**

|                        | Keying Time |        |        | Think Time |        |         |
|------------------------|-------------|--------|--------|------------|--------|---------|
|                        | Min         | Avg    | Max    | Min        | Avg    | Max     |
| New-Order              | 18.02s      | 18.03s | 18.19s | 0.01s      | 12.02s | 237.24s |
| Payment                | 3.01s       | 3.02s  | 3.18s  | 0.01s      | 12.02s | 224.41s |
| Order-Status           | 2.01s       | 2.02s  | 2.18s  | 0.01s      | 10.02s | 146.94s |
| Delivery (interactive) | 2.01s       | 2.02s  | 2.18s  | 0.01s      | 5.03s  | 76.03s  |
| Stock-Level            | 2.01s       | 2.02s  | 2.18s  | 0.01s      | 5.02s  | 73.1s   |

**Test Duration**

|  |                |
|--|----------------|
| Ramp up time                             | 40 minutes     |
| Measurement interval                     | 120 minutes    |
| Transactions during measurement interval | 144,605,386    |
| Ramp down time                           | 12.273 minutes |

**Checkpointing**

|   |               |
|---|---------------|
| Number of checkpoints in measurement interval | 4             |
| Checkpoint Interval                           | 29.71 minutes |