



HP 9000 Superdome Enterprise Server

TPC-H Rev 2.0

Report Date: December 17, 2001
Updated October 29, 2002

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$8,519,084

17,908.4
QphH@3000GB

\$476
QphH@3000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

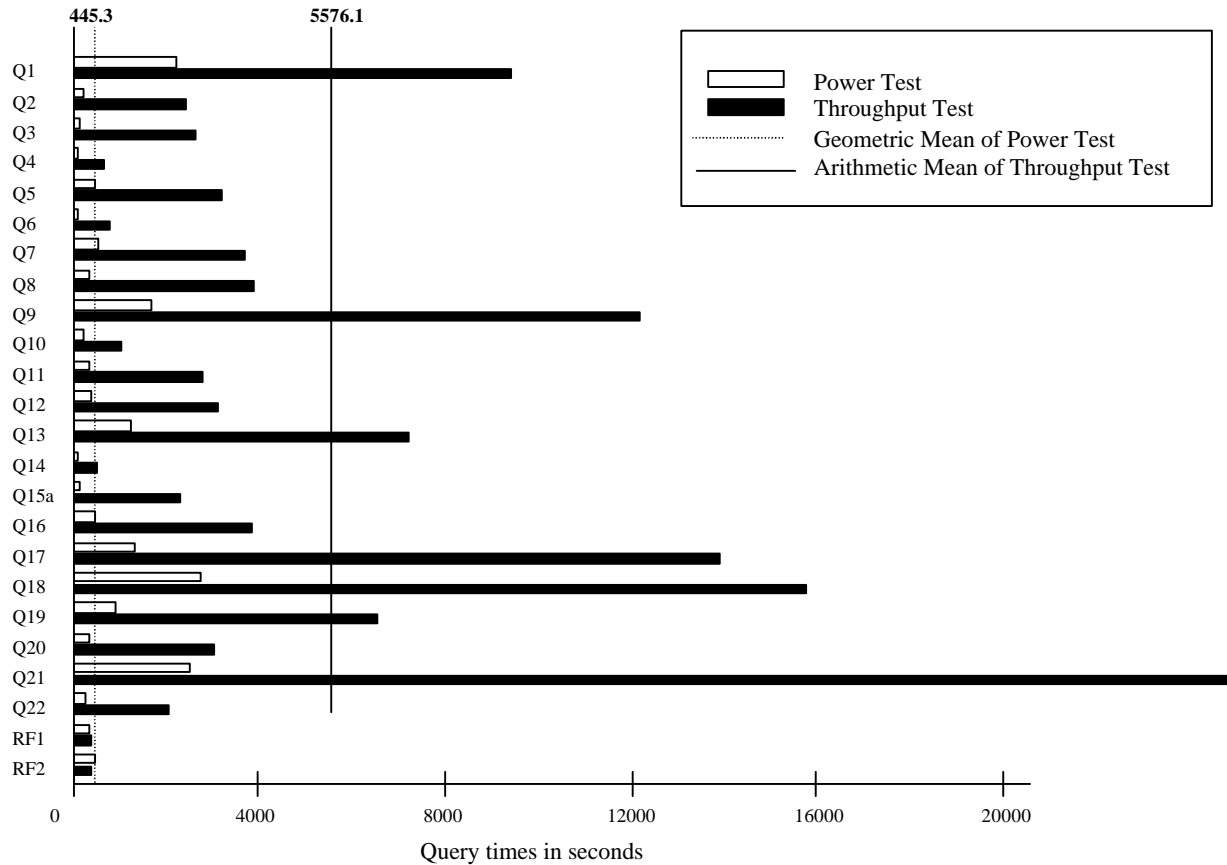
3000 GB*

**Oracle 9i Database
Enterprise Edition**

HP-UX 11.i 64-bit

None

May 15, 2002



Database Load Time = 09:22:00

Load Includes Backup: N

Total Data Storage/Database Size = 19.09

RAID (Base Tables Only): N

RAID (Base Tables and Auxiliary Data Structures): N

RAID (All): Y

System Configuration

Processors: 64 PA-RISC 8700 750MHz, .75KB I-cache, 1.5MB D-cache
 Memory: 192 GB
 Disk Drives: 1 High Availability Storage System with 3 - 9.1 10K RPM LVD disks and
 6 SureStore E Disk Array XP512 (with a total of 784 73GB 10K RPM LVD disks)
 Total Disk Storage: 57259.3GB (In this calculation one GB is defined as 1024*1024*1024 bytes)
 Lan Controllers: 1 HP 10/100 Base-T Lan Adapter

*Database Size includes only raw data (e.g. no temp, index, redundant storage space, etc.)



HP 9000 Superdome Enterprise Server

TPC-H Rev 2.0

Report Date: December 17, 2001
Updated October 29, 2002

Description	Part Number	Source	Reference Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
Super Dome left chassis (support includes hardware, services, and support)	A5201A, Opt. 429	1	205,840	1	205,840	268,626
Super Dome right chassis	A5202A, Opt. 429	1	218,435	1	218,435	
Memory module - 2 GB	A5198A, Opt. 0D1	1	14,000	96	1,344,000	
I/O enclosures	A4856A, Opt. 0D1	1	14,805	9	133,245	
PDCA Redundant Power Source	A5800A, Opt. 0D1	1	578	2	1,156	
Cell Board with 4 PA-8700 750MHz Processors	A6445A, Opt. 0D1	1	10,080	16	161,280	
ICOD right to use processor	A6441A, Opt. 104	1	23,806	64	1,523,584	403,392
Super Dome PCI Core I/O card	A6865A, Opt 1D1	1	1,045	1	1,045	
PCI Dual FWD SCSI-2 Card	A5159A, Opt 0D1	1	1,245	2	2,490	
PCI 1000BT Lan Adapter	A4926A, Opt. 0D1	1	2,135	1	2,135	
PCI Fibre Channel 2X	A5158A, Opt 0D1	1	2,240	96	215,040	
I/O Expansion Power/Utilities Subsystem	A5861A	1	34,860	1	34,860	
I/O Chassis Enclosure (ICE)	A5862A	1	25,725	1	25,725	
1.6m Expansion Cabinet	A4901A	1	1,820	1	1,820	
DVD-ROM (includes SCSI-2 card, cables, enclosures)	C7499A	1	3,503	1	3,503	
HP9000 A500 Support Management Station (includes memory,CPU,lan card,disk,OS, etc)	A5570B	1	11,780	1	11,780	
16m Fibre Channel Cable	A5277A, Opt AFY	1	160	96	15,360	
hp surestore disk system 2100	A5675A	1	700	1	700	
1-18GB FEW disk module	A6537A	1	525	3	1,575	
5m SCSI-2 Cable	C2978A	1	99	1	99	
			Subtotal		3,903,672	672,018
Server Software						
Oracle 9i Database Enterprise Edition Release 2, Named User Plus for 3 years		2	10,000	64	640,000	
Partitioning, Named user Plus for 3 years		2	2,500	64	160,000	
Oracle Database Server Support Package for 3 years		2	6,000	1	0	6,000
HP-UX 11i LTU	B9088AC, Opt AAF	1		1	0	
HP-UX 11i Media	B3920EA, Opt UM9	1		1	0	
HP-UX 11i	B3920EA, Opt OD1	1		1	0	
HP-UX 11.i Factory Integration	B3920EA, Opt AAF	1	520	1	371	
			Subtotal		800,371	6,000
Storage						
Disk Array XP512 Control Frame	A5951A	1	209,858	6	1,259,148	38,160
Additional 256 MB Shared Memory	A5963A	1	7,275	18	130,950	4,104
Additional 2 GB Cache Memory	A5962A	1	47,034	42	1,975,428	63,504
Fc Device Cable Set	A5974A	1	1,467	6	8,802	0
8-Port Fiber Channel Adapter Pairs	A5957A	1	70,267	24	1,686,408	33,984
Additional CHIP Power Supplies	A5961A	1	15,960	6	95,760	3,024
Additional Cache Platform Board	A5960A	1	7,855	6	47,130	1,440
Additional Array Control Processor	A5964A	1	27,231	18	490,158	14,688
XP512 Disk Array Frame	A5965A	1	28,643	12	343,716	10,224
73GB 10K RPM Disk Array Groups(incl spares)	A5968A	1	25,000	196	4,900,000	145,824
			Subtotal		10,937,500	314,952
			Total		15,641,543	992,970
			Oracle Mandatory E-Business Discount on (Licenses and Support)		(161,200)	
			Large Configuration Discount*		(7,420,846)	(533,383)
			Grand Total		8,059,497	459,587
<i>Notes:</i>					3-yr Cost of Ownership: \$	8,519,084
Source: 1=HP,					QpH@3000GB:	17,908.4
2=Oracle (Pricing Contact: MaryBeth Pierantoni (see Appendix G)					\$/QpH@3000GB: \$	476
*All discounts are based on US list prices and for similar quantities and configurations						

Audited By: Francois Raab for InfoSizing Inc. (www.sizing.com)

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



HP 9000 Superdome Enterprise Server

TPC-H Rev 2.0

Report Date: December 17, 2001
Updated October 29, 2002

Measurement Results

Database Scaling (SF/size)	3000
Total Data Storage/Database Size	19.09
Start of Database Load Time	2001-12-05 20:43:46
End of Database Load Time	2001-12-05 06:04:58
Database Load Time	09:22:00
Query Streams for Throughput Test (S)	8
TPC-H Power	24,251.6
TPC-H Throughput	13,224.3
TPC-H Composite Query-per-Hour Metric (QphH@3000GB)	17,908.4
Total System Price Over 3 Years	\$8,519,084
TPC-H Price/Performance Metric (\$/QphH@3000GB)	\$476

Measurement Intervals

Measurement Interval in Throughput Test (Ts)	143,735
--	---------

Duration of Stream Execution:

	SEED	Start Date/Time	End Date/Time	Duration
Stream 00	1206060458	12/6/2001 6:32:38	12/6/2001 11:28:37	4:55:59
Stream 01	1206060459	12/6/2001 11:29:34	12/7/2001 21:11:23	33:41:48
Stream 02	1206060460	12/6/2001 11:29:34	12/8/2001 1:33:30	38:03:55
Stream 03	1206060461	12/6/2001 11:29:34	12/7/2001 21:37:13	34:07:39
Stream 04	1206060462	12/6/2001 11:29:34	12/7/2001 22:05:46	34:36:11
Stream 05	1206060463	12/6/2001 11:29:34	12/7/2001 15:53:46	28:24:11
Stream 06	1206060464	12/6/2001 11:29:34	12/7/2001 22:28:25	34:58:50
Stream 07	1206060465	12/6/2001 11:29:34	12/7/2001 20:54:24	33:24:50
Stream 08	1206060466	12/6/2001 11:29:34	12/7/2001 22:48:47	35:19:12
Refresh		12/6/2001 11:29:34	12/8/2001 3:25:09	39:55:34



HP 9000 Superdome Enterprise Server

TPC-H Rev 2.0

Report Date December 17, 2001
Updated October 29, 2002

TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	2210.0	228.9	127.8	96.9	442.1	92.6	547.7	370.1	1669.9	238.6	371.8	392.6
Stream 01	11550.4	3024.2	897.4	498.2	2929.3	565.6	3446.5	3611.2	14377.0	1504.4	2957.2	2447.5
Stream 02	2198.5	3022.4	117.5	95.9	2385.7	414.8	3921.8	3268.6	13574.7	1434.9	379.7	2019.3
Stream 03	9880.6	2262.3	515.1	757.7	6229.2	654.1	3796.2	1243.7	10714.9	1599.4	3047.5	2997.6
Stream 04	10915.2	2728.3	289.4	665.3	3890.1	589.1	3408.6	3105.2	11171.0	1559.9	3126.5	2989.7
Stream 05	9330.2	2366.3	697.1	701.1	2730.7	624.1	4481.5	2747.3	12130.3	1657.3	2938.7	4014.7
Stream 06	9423.5	2460.5	2617.8	659.7	3192.4	824.9	3655.2	3900.3	12197.1	1013.9	2788.6	3087.2
Stream 07	10166.6	2408.8	868.4	666.1	2426.1	476.1	3472.5	3885.9	12317.3	1604.9	3001.4	4373.1
Stream 08	12880.0	2574.5	792.7	549.1	2936.0	577.7	3175.4	3276.7	11511.1	1727.5	489.2	4895.5
Minimum	2198.5	2262.3	117.5	95.9	2385.7	414.8	3175.4	1243.7	10714.9	1013.9	379.7	2019.3
Average	9543.1	2605.9	849.4	574.1	3339.9	590.8	3669.7	3129.9	12249.2	1512.8	2341.1	3353.1
Maximum	12880	3024.2	2617.8	757.7	6229.2	824.9	4481.5	3900.3	14377	1727.5	3126.5	4895.5

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	1264.7	83.7	162.7	460.2	1322.3	2730.3	920.8	369.1	2537.2	294.5	385.8	437.0
Stream 01	6333.9	523.6	902.7	3243.5	13048.7	17701.6	6919.1	2327.9	20484.8	2013.9	407.0	434.3
Stream 02	6569.2	526.8	712.9	3891.1	68939.1	12055.4	6680.6	279.6	2585.7	1961.9	400.4	435.7
Stream 03	6712.6	442.6	1085.5	3589.6	12213.9	16449.8	5522.5	2644.3	28333.5	2166.7	399.3	419.0
Stream 04	6680.2	498.5	731.7	2758.8	12825.9	16104.7	6314.0	1065.0	32174.6	980.0	394.7	433.6
Stream 05	5189.0	485.8	813.1	2706.1	13619.4	17569.3	6290.0	2802.0	6131.5	2226.2	403.6	437.9
Stream 06	7265.0	480.3	2327.9	3848.6	13919.4	15772.0	6531.2	3075.8	24836.4	2053.2	411.0	427.6
Stream 07	5171.3	430.9	1094.8	3742.9	12812.4	17984.1	6786.7	3017.6	21685.8	1896.9	409.6	428.2
Stream 08	6207.4	484.0	599.8	3460.5	12534.2	19899.6	5169.4	2769.4	28346.4	2296.8	412.2	443.6
Minimum	5171.3	430.9	599.8	2706.1	12213.9	12055.4	5169.4	279.6	2585.7	980.0	394.7	419.0
Average	6266.1	484.1	1033.6	3405.1	19989.1	16692.1	6276.7	2247.7	20572.3	1949.5	404.7	432.5
Maximum	7265.0	526.8	2327.9	3891.1	68939.1	19899.6	6919.1	3075.8	32174.6	2296.8	412.2	443.6