



# HP Integrity Superdome - Itanium2/1.6 GHz/18MB iL3 - 64p/128c

TPC-H Rev 2.6.0

Report Date: June 18, 2007

Total System Cost

Composite Query per Hour Metric

Price/Performance

**\$7,048,382 USD**

**150,960.5**  
QphH@30000GB

**\$46.69 USD**  
QphH@30000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

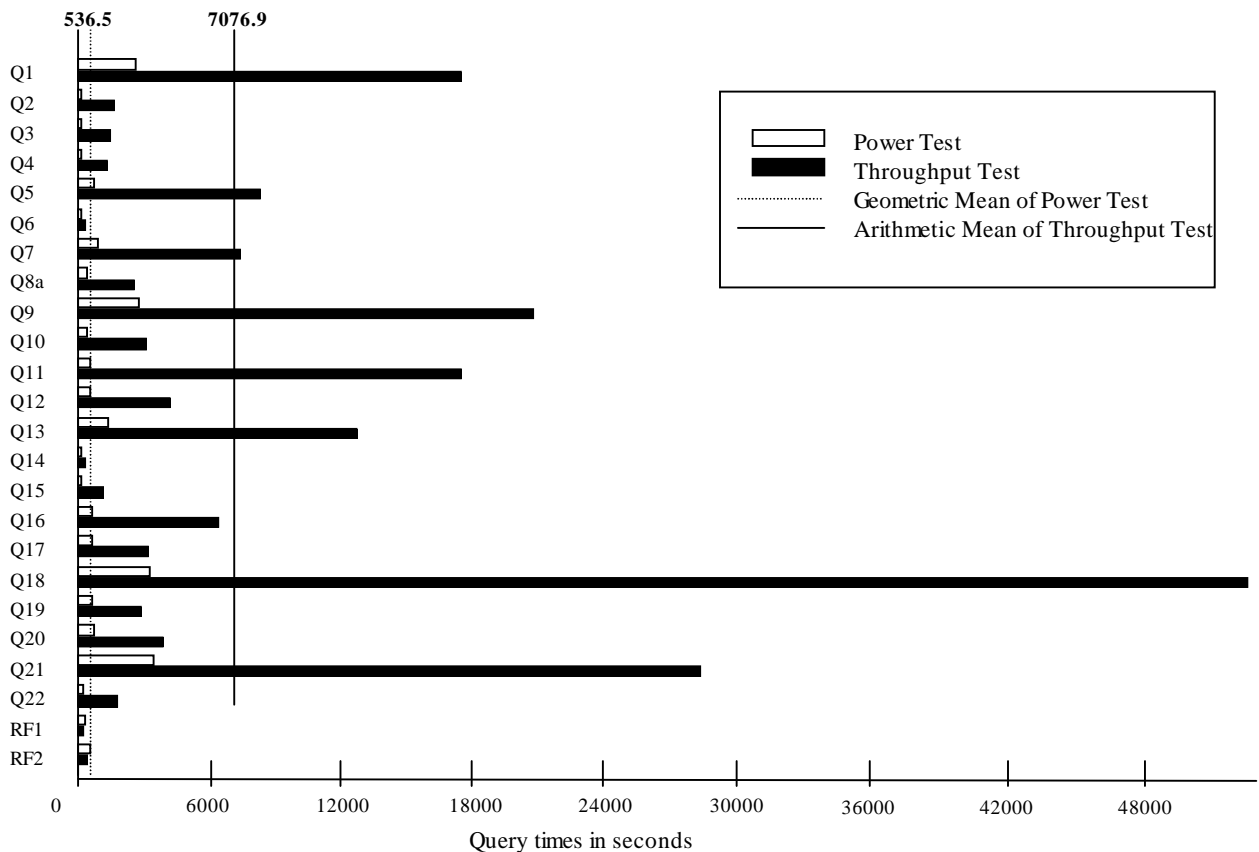
**30000 GB\***

**Oracle Database 10g  
Release 2 Enterprise  
Edition with Partitioning  
and Oracle Automatic  
Storage Management**

**HP-UX 11i v3 64-bit**

**None**

**June 18, 2007**



Database Load Time = 16:06:11

Load Includes Backup: N

Total Data Storage/Database Size = 14.96

RAID (Base Tables Only): N

RAID (Base Tables and Auxiliary Data Structures): N

RAID (All): Y

**System Configuration**

Number of Nodes: 1  
 Processors/Cores/Threads/Type: 64/128/128 / Intel Itanium2 9040 1.6GHz, 9MB iL3 cache per core  
 Memory: 1024 GB  
 Disk Drives: 1 HP Surestore Disk System 2120 with 4 36GB disks and 256 HP StorageWorks MSA 1000 (with a total of 3072 146GB 15K RPM disks)  
 Total Disk Storage: 448656GB (In this number one GB is defined as 1024\*1024\*1024 bytes)  
 Lan Controllers: 1 PCI 1000BT Lan Adapter

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



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Description	Part Number	Source	Reference Price	Qty	Extended Price	3 yr. Maint. Price
<b>Server Hardware</b>						
Superdome left chassis	A9834A, Opt 429	1	235,950	1	235,950	
Superdome right chassis	A9835A, Opt 429	1	249,950	1	249,950	
Superdome sx2000 Cell Board	A9837A	1	19,250	16	308,000	
24x7x4hr - 3 Year Svc & Support Price (Hardware and Software)						\$1,379,874
512GB Memory Bundle (128x4GB dimms)	A9857A	1	1,299,950	2	2,599,900	
12-Slot PCI-X I/O Chassis	A9836A	1	16,950	16	271,200	
Dual-Core Intel Itanium2 9040/1.6GHz/18MB L3	AB406A	1	23,000	64	1,472,000	
PCI 1000BT Lan Adapter	A6847A	1	1,325	1	1,325	
PCI-X 4GB Fibre Channel Adapter (dual port)	AB379B	1	3,495	128	447,360	
PCI Dual Channel Ultra320 SCSI Adapter	A7173A	1	795	1	795	
HPDisk System 2120	A7382A	1	995	1	995	
1-36GB LP 15K HDD	A7527A	1	966	4	3,864	
HP Universal Rack 10642 G2 Pallet Rack	AF001A	1	1,249	1	1,249	
Modular Power Dist Unit for std racks	A5137AZ	1	145	1	145	
200-240 volts North America	A5137AZ, Opt AW4	1	94	1	94	
HP Tape Array 5300 (DVD and DAT tape)	C7508B	1	729	1	729	
HP rx2620 Server (inc mem/disk/monitor/keyboard/mouse)	AB333A	1	5,315	1	5,315	
I/O Chassis Enclsoure for 12-Slot PCI-X Chassis	A9852A	1	25,750	4	103,000	
Graphite I/O expansion power subsystem	A5861D	1	34,860	2	69,720	
<b>Subtotal</b>					<b>5,771,591</b>	<b>1,379,874</b>
<b>Server Software</b>						
Oracle Database 10g Release 2 Enterprise Edition		2	10,000	64	640,000	
Named User Plus for 3 years						
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		6,000
HPUX 11i v3 Foundation Operating Environment	B9429AC	1	2,370	128	303,360	
HP-UX 11i v3 HP9000/Integrity FOE Media	BA489AA, Opt AJR	1	565	1	565	
<b>Subtotal</b>					<b>1,103,925</b>	<b>6,000</b>
<b>Storage</b>						
5m Fibre Channel Cables	221692-B22	1	82	256	20,992	
HP StorageWorks MSA 1000 (256 + 26 spares)	201723-B22	1	6,499	282	1,832,718	
3 Yr Support Price for MSA1000 and disks						Included
146GB 15K Ultra320 Hard Drive (3072 + 308 spares)	347708- B22	1	689	3,380	2,328,820	
HP Universal Rack 10642 G2 Pallet Rack	AF001A	1	1,249	28	35,222	
Modular Power Dist Unit for std racks	A5137AZ	1	145	113	16,356	
200-240 volts North America	A5137AZ, Opt AW4	1	94	113	10,603	
ProLiant Cluster HA/200 for MSA1000	252409-B22	1	4,007	1	4,007	
<b>Subtotal</b>					<b>4,248,718</b>	<b>0</b>
<b>Total</b>					<b>11,124,234</b>	<b>1,385,874</b>
Oracle Mandatory E-Business Discount on (Licenses and Support)					(161,200)	
45.3% Large Configuration Discount and Support Prepayment*					(4,555,394)	(745,132)
<b>Grand Total</b>					<b>6,407,640</b>	<b>640,742</b>

Source: 1=HP,  
2=Oracle

\*All discounts are based on US list prices and for similar quantities and configurations

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

<b>3-yr Cost of Ownership:</b>	<b>7,048,382</b>
<b>QpH@30000GB:</b>	<b>150,960.5</b>
<b>\$/QpH@30000GB:</b>	<b>46.69</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 the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.



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**Measurement Results**

Database Scaling (SF/size)	30000
Total Data Storage/Database Size	14.96
Start of Database Load Time	2007-05-24 17:50:48
End of Database Load Time	2007-05-25 09:56:59
Database Load Time	16:06:11
Query Streams for Throughput Test (S)	10
TPC-H Power	201,316.1
TPC-H Throughput	113,200.5
TPC-H Composite Query-per-Hour Metric (QphH@30000GB)	150,960.5
Total System Price Over 3 Years	7,048,382
TPC-H Price/Performance Metric (\$/QphH@30000GB)	\$47

**Measurement Intervals**

Measurement Interval in Throughput Test (Ts)	209,893
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**Duration of Stream Execution:**

Power Stream	Seed	RF1 Start Time RF1 End Time	Query Start Time Query End Time	RF2 Start Time RF2 End Time	Duration (sec)
	525095659	05/28/07 03:48:02 05/28/07 03:53:27	05/28/07 03:53:27 05/28/07 09:47:51	05/28/07 09:47:52 05/28/07 09:56:42	

Throughput Stream	Seed	Query Start Time Query End Time	Duration (sec)	RF1 Start Time RF1 End Time	RF2 Start Time RF2 End Time
1	525095660	05/28/07 09:56:43 05/30/07 16:47:05	197,422	05/30/07 18:18:03 05/30/07 18:20:52	05/30/07 18:20:52 05/30/07 18:29:18
2	525095661	05/28/07 09:56:43 05/30/07 18:18:03	202,880	05/30/07 18:29:18 05/30/07 18:32:37	05/30/07 18:32:37 05/30/07 18:41:05
3	525095662	05/28/07 09:56:43 05/30/07 16:11:41	195,298	05/30/07 18:41:05 05/30/07 18:44:24	05/30/07 18:44:24 05/30/07 18:52:56
4	525095663	05/28/07 09:56:43 05/30/07 14:44:42	190,079	05/30/07 18:52:56 05/30/07 18:56:13	05/30/07 18:56:13 05/30/07 19:04:45
5	525095664	05/28/07 09:56:43 05/30/07 16:05:09	194,906	05/30/07 19:04:45 05/30/07 19:08:03	05/30/07 19:08:03 05/30/07 19:16:34
6	525095665	05/28/07 09:56:43 05/30/07 17:25:55	199,752	05/30/07 19:16:34 05/30/07 19:19:50	05/30/07 19:19:50 05/30/07 19:28:10
7	525095666	05/28/07 09:56:43 05/30/07 12:35:55	182,352	05/30/07 19:28:10 05/30/07 19:31:26	05/30/07 19:31:26 05/30/07 19:39:52
8	525095667	05/28/07 09:56:43 05/30/07 15:53:47	194,223	05/30/07 19:39:52 05/30/07 19:43:11	05/30/07 19:43:11 05/30/07 19:51:37
9	525095668	05/28/07 09:56:43 05/30/07 14:33:27	189,403	05/30/07 19:51:37 05/30/07 19:54:55	05/30/07 19:54:55 05/30/07 20:03:18
10	525095669	05/28/07 09:56:43 05/30/07 16:57:27	198,021	05/30/07 20:03:18 05/30/07 20:06:34	05/30/07 20:06:34 05/30/07 20:14:56



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## TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8a	Q9	Q10	Q11	Q12
Stream 00	2722.3	183.4	155.0	135.1	817.2	97.3	883.1	414.7	2810.1	452.5	610.0	610.5
Stream 01	12827.2	1141.3	914.1	730.5	7797.0	254.8	7500.9	2718.7	26315.6	7854.8	2857.4	9240.7
Stream 02	17099.3	793.4	1022.8	1384.7	6324.3	392.4	7493.8	2534.4	25624.7	7392.4	21656.7	3276.5
Stream 03	18062.8	1091.5	264.2	1452.4	7788.6	166.6	8526.9	4504.9	18377.5	6881.5	24750.3	1020.8
Stream 04	19428.7	1452.8	1052.3	983.9	4118.0	121.4	9420.4	3092.8	15784.6	7202.2	11824.9	1741.1
Stream 05	18436.1	1287.4	1364.9	975.0	8323.2	374.9	8199.2	3576.5	20021.0	6501.2	6265.1	3264.5
Stream 06	17492.9	1599.6	1463.8	1319.3	8287.5	300.9	7467.0	2604.6	20728.2	3144.7	17432.3	4108.4
Stream 07	15535.2	1136.9	1212.3	1476.5	8031.1	162.9	10687.7	2225.7	17129.6	6211.9	7530.5	5343.7
Stream 08	19562.8	710.3	1095.4	997.5	6984.9	374.3	8157.5	2587.6	19921.0	6498.3	9178.6	4057.3
Stream 09	17139.7	1414.6	1156.4	958.4	7725.4	358.0	8924.2	3831.6	21261.8	6387.6	7647.3	5005.5
Stream 10	15567.9	1191.0	1170.0	242.7	1302.5	232.2	9360.4	692.4	22650.3	7035.0	3920.9	1764.4
Average	17115.3	1181.9	1071.6	1052.1	6668.2	273.8	8573.8	2836.9	20781.4	6510.9	11306.4	3882.3
Maximum	19562.8	1599.6	1463.8	1476.5	8323.2	392.4	10687.7	4504.9	26315.6	7854.8	24750.3	9240.7

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	1360.2	96.0	132.3	622.4	668.1	3348.7	668.4	804.3	3374.6	298.4	324.5	530.5
Stream 01	13143.0	249.9	1168.0	4609.2	930.7	44337.2	3842.5	1071.3	46509.8	1407.4	168.6	506.1
Stream 02	9135.3	364.7	1004.7	5658.7	5561.9	50840.8	3904.7	14415.4	15067.4	1931.2	199.0	507.9
Stream 03	8126.3	236.3	939.8	3446.1	1331.9	38816.9	1578.6	11177.8	35087.3	1669.4	199.2	512.0
Stream 04	10750.2	330.4	1102.2	4137.3	1875.4	54792.2	4112.7	1293.7	33398.5	2063.9	196.7	511.7
Stream 05	13953.5	263.5	832.3	4785.1	1120.2	40482.2	1721.3	2983.0	48115.0	2060.9	198.1	510.7
Stream 06	12707.8	322.8	1185.9	6319.9	3233.1	53230.9	2874.1	3798.9	28317.3	1810.4	196.0	499.7
Stream 07	12605.3	309.8	1148.0	5289.9	2844.1	48074.3	1791.9	3088.7	28335.6	2180.9	196.5	505.5
Stream 08	10764.8	307.0	1214.9	4876.6	1205.7	47239.9	3812.8	10288.6	32389.6	1998.4	199.6	506.0
Stream 09	12122.9	300.8	923.6	4839.3	2924.9	43725.9	1553.5	2737.4	36834.9	1630.0	197.7	502.6
Stream 10	10160.4	364.5	1958.2	5673.7	2560.1	71268.9	1476.3	3702.5	34395.9	1331.0	196.6	501.6
Average	11347.0	305.0	1147.8	4963.6	2358.8	49280.9	2666.8	5455.7	33845.1	1808.3	194.8	506.4
Maximum	13953.5	364.7	1958.2	6319.9	5561.9	71268.9	4112.7	14415.4	48115.0	2180.9	199.6	512.0