



HP Integrity rx8640

TPC-H Rev 2.6.0

Report Date: May 14th, 2007

Total System Cost

Composite Query per Hour Metric

Price/Performance

USD 1,433,521

37,813.7

QphH@3000GB

USD 38

QphH@3000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

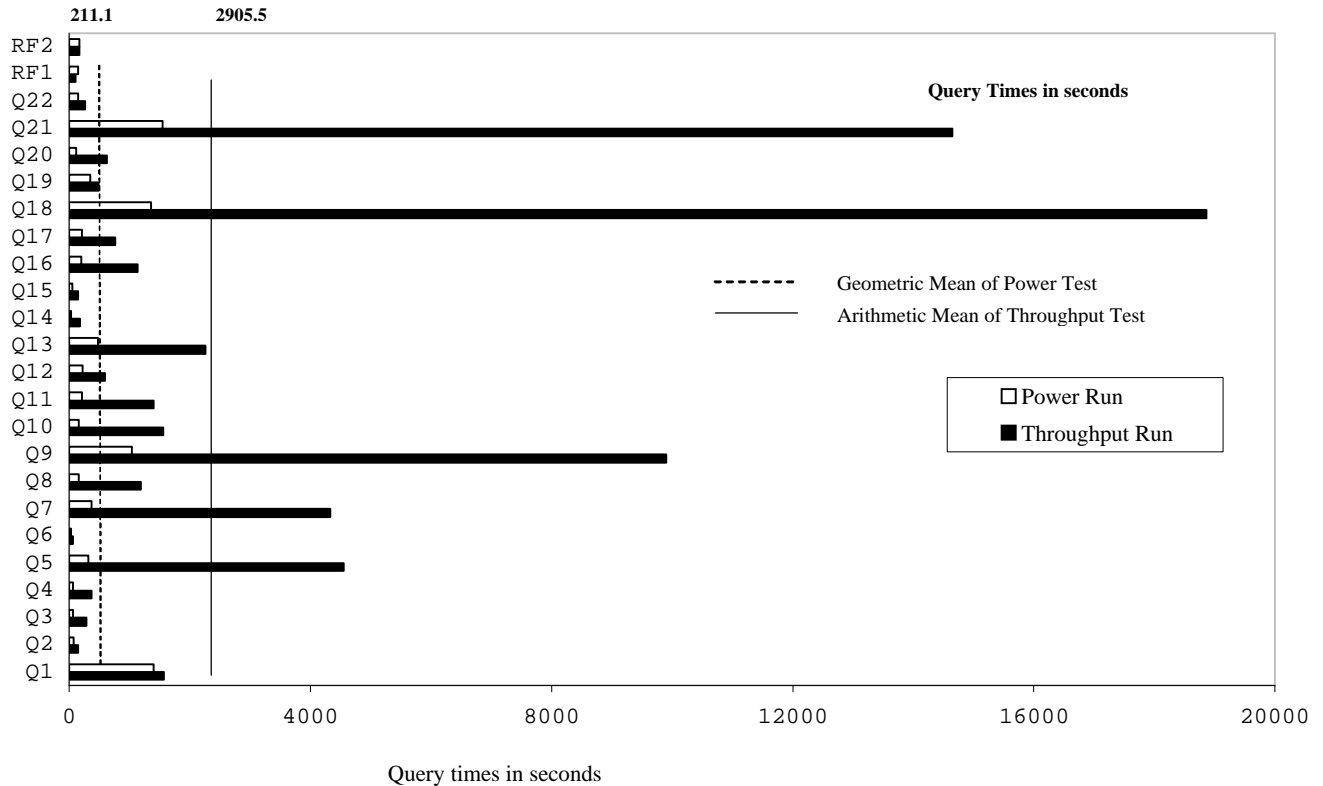
3000 GB*

**Oracle Database 10g
Release 2 Enterprise
Edition with Partitioning**

**Windows 2003
Datacenter Edition (64-
bit) SP1**

**MS Visual
C++**

14-May-07



Database Load Time = 14:15:47 | Load Includes Backup: N | Total Data Storage/Database Size = 7.70

RAID (Base Tables Only): N | RAID (Base Tables and Auxiliary Data Structures): N | RAID (All): Y

System Configuration

Processors: 16 Dual-core Intel Itanium2 Processors 9050 1.6GHz, 24MB
 Memory: 256 GB
 Disk Drives: 2 Internal disks (36GB each) disks plus
 64 HP StorageWorks MSA30 (with a total of 640 36GB 15K RPM disks)
 Total Disk Storage 23112GB (In this calculation 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
Server Hardware						
rx8640 16-way SMP Base System, incl (4) cell boards, (1) core IO, (6) power supplies, 16x1.6GHz/24MB cache						
DC Itanium II processors	AB446A #003		\$478,108	1	\$478,108	
HP Integrity rx8640 Core I/O Card	AB314A		\$5,600	1	\$5,600	
3 Year Support Price (Hardware and Software)	HA1103A		\$169,081	1		\$169,081
HP Integrity rx8640 I/O Backplane	AD160A		\$7,700	2	\$15,400	
HP 8GB (2x4GB) HD SyncDRAM Midrange Memory	AB455A		\$16,000	32	\$512,000	
HP Integrity rx8640 Sys. Expansion Unit	AB301A		\$35,785	1	\$35,785	
36GB, 15K hard disk for rx76/86	AD146A		\$1,200	2	\$2,400	
DVD+RW Drive for rx76/86	AB351B		\$850	1	\$850	
HP Smart Array Controller 6402	A9890A		\$1,669	32	\$53,408	
HP Rack Kit for rx86xx Server	J1528B		\$582	1	\$582	
HP Rack Kit for SEU Server	J1530C		\$709	1	\$709	
HP Storageworks MSA 30 SB Storage	302969-B21		\$2,829	64	\$181,056	
HP Storageworks MSA 30 SB Storage 10% Spares	302969-B21		\$2,829	6	\$16,974	
36GB, 15krpm Ultra320 Pluggable Hard Drive	286776-B22		\$269	640	\$172,160	
36GB, 15krpm Ultra320 Pluggable Hard Drive 10% Spar	286776-B22		\$269	64	\$17,216	
146GB, 10krpm U320 Pluggable Hard drive	286716-B22		\$409	2	\$818	
146GB, 10krpm U320 Pluggable Hard drive 10% Spares	286716-B22		\$409	2	\$818	
HP Universal Rack 10642 G2	AF002A		\$1,489	6	\$8,934	
HP 16A High Voltage Modular PDU	252663-B24		\$299	9	\$2,691	
ML110 G3 SATA / 17" Monitor	www.hp.com		\$1,076	1	\$1,076	
Subtotal					1,506,585	169,081
Server Software						
Microsoft Windows Server 2003, Datacenter edition (64-bit)						
	T2372A opt016		\$32,000	1	\$32,000	
Microsoft Visual C++ Standard	254-00170		\$109	1	\$109	
Oracle Database 10g Release 2 Enterprise Edition			\$10,000	16*	\$160,000	
Named User Plus for 3 years				2		
Partitioning, Named User Plus for 3 years			\$2,500	16*	\$40,000	
Oracle Database Server Support Package for 3 years:			\$2,000	3		\$6,000
Subtotal					232,109	6,000
Total					1,738,694	175,081
Oracle Mandatory E-Business Discount on (Licenses and Support)					-30,900	
Large Configuration Discount and Support Prepayment*					(449,354)	0
Grand Total					1,258,440	175,081

Source: 1= HP Sales, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320

3-yr Cost of Ownership: USD 1,433,521

2=Oracle pricing contact: MaryBeth Pierantoni, mary.beth.pierantoni@oracle.com, 916-315-5081

QphH@3000GB: 37,813.7

* 16 = 0.50 * 32. Explanation: For the purposes of counting the number of processors which require licensing, an Intel multicore chip with "n" cores shall be determined by multiplying "n" cores by a factor of 0.50.

\$/QphH@3000GB: USD 37.92

** These components are not immediately orderable. See the FDR for more information.

A 26.31% discount was based on the overall value of the specific components from HP (Price Key) in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the quotation.

Audited By: Lorna Livingtree for Performance Metrics Inc

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)	3000
Total Data Storage/Database Size	7.70
Start of Database Load Time	5/5 18:09:49
End of Database Load Time	5/6 08:25:36
Database Load Time	14:15:47
Query Streams for Throughput Test (S)	8
TPC-H Power	51,160.6
TPC-H Throughput	27,948.8
TPC-H Composite Query-per-Hour Metric (QpH@3000G)	37,813.7
Total System Price Over 3 Years	USD 1,433,521
TPC-H Price/Performance Metric (\$/QpH@3000GB)	USD 38

Measurement Intervals

Measurement Interval in Throughput Test (Ts)	68,010
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Duration of Stream Execution:

	Seed	Query Start Date/Time		RF1 Start Date/Time		RF2 Start Date/Time		Duration
		Query End Date/Time	Query End Date/Time	RF1 End Date/Time	RF1 End Date/Time	RF2 End Date/Time	RF2 End Date/Time	
Stream 00	506082536	7-May-07	16:43:49	7-May-07	16:39:55	7-May-07	19:13:14	2:32:15
		7-May-07	19:13:14	7-May-07	16:43:49	7-May-07	19:16:04	
Stream 01	506082537	7-May-07	19:16:12	8-May-07	13:32:55	8-May-07	13:34:47	18:21:23
		8-May-07	13:32:55	8-May-07	13:34:47	8-May-07	13:37:35	
Stream 02	506082538	7-May-07	19:16:12	8-May-07	13:37:35	8-May-07	13:39:23	18:26:04
		8-May-07	12:52:20	8-May-07	13:39:23	8-May-07	13:42:16	
Stream 03	506082539	7-May-07	19:16:12	8-May-07	13:42:16	8-May-07	13:44:00	18:30:41
		8-May-07	13:03:50	8-May-07	13:44:00	8-May-07	13:46:53	
Stream 04	506082540	7-May-07	19:16:12	8-May-07	13:46:53	8-May-07	13:48:34	18:35:15
		8-May-07	12:41:08	8-May-07	13:48:34	8-May-07	13:51:27	
Stream 05	506082541	7-May-07	19:16:12	8-May-07	13:51:27	8-May-07	13:53:07	18:39:47
		8-May-07	12:54:19	8-May-07	13:53:07	8-May-07	13:55:59	
Stream 06	506082542	7-May-07	19:16:12	8-May-07	13:55:59	8-May-07	13:57:42	18:44:24
		8-May-07	13:02:03	8-May-07	13:57:42	8-May-07	14:00:36	
Stream 07	506082543	7-May-07	19:16:12	8-May-07	14:00:36	8-May-07	14:02:15	18:48:57
		8-May-07	13:02:06	8-May-07	14:02:15	8-May-07	14:05:09	
Stream 08	506082544	7-May-07	19:16:12	8-May-07	14:05:09	8-May-07	14:06:51	18:53:30
		8-May-07	13:03:48	8-May-07	14:06:51	8-May-07	14:09:42	



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TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 0	1402.2	77.4	64.3	65.4	332.5	29.0	358.1	157.2
Stream 1	1405.3	128.3	217.6	74.4	4294.9	89.9	7538.4	491.8
Stream 2	1595.9	103.6	177.7	332.8	2378.8	121.4	4454.7	444.3
Stream 3	1534.1	221.3	78.5	520.5	4353.8	64.0	2565.4	3349.6
Stream 4	1706.5	157.4	204.5	180.4	6902.1	52.1	3089.6	536.1
Stream 5	1701.0	200.6	165.0	269.8	4449.2	65.9	3732.0	1261.7
Stream 6	1527.2	190.0	611.0	256.2	4766.4	63.1	3629.6	965.1
Stream 7	1526.8	166.1	321.4	230.5	4782.7	64.1	3088.3	556.4
Stream 8	2026.7	160.6	195.6	497.3	4402.7	47.3	3636.2	934.4
Min Qi	1405.3	103.6	78.5	74.4	2378.8	47.3	2565.4	444.3
Max Qi	2026.7	221.3	611.0	520.5	6902.1	121.4	7538.4	3349.6
Avg Qi	1627.9	166.0	246.4	295.2	4541.3	71.0	3966.8	1067.4
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15a	Q16
Stream 0	1180.8	157.8	203.1	310.9	476.7	37.6	51.3	201.9
Stream 1	8670.9	1209.0	2708.7	861.4	2732.5	348.5	121.2	601.4
Stream 2	8834.6	1316.7	3124.1	939.7	1740.5	334.4	93.9	960.9
Stream 3	7140.3	1169.6	2450.8	633.9	1640.4	107.6	93.6	586.3
Stream 4	7920.0	926.0	1163.9	519.9	1541.2	200.9	141.9	525.9
Stream 5	8847.4	1012.4	683.3	1071.0	3131.0	301.5	181.7	1053.3
Stream 6	7157.9	4119.8	1061.2	418.5	2780.7	136.7	105.3	2025.9
Stream 7	13846.2	1140.7	837.8	293.2	2157.2	104.9	112.0	580.3
Stream 8	7525.3	941.7	712.2	399.2	1941.3	168.4	181.0	1194.0
Min Qi	7140.3	926.0	683.3	293.2	1541.2	104.9	93.6	525.9
Max Qi	13846.2	4119.8	3124.1	1071.0	3131.0	348.5	181.7	2025.9
Avg Qi	8742.8	1479.5	1592.8	642.1	2208.1	212.8	128.8	941.0
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	214.4	1469.8	356.2	107.3	1560.0	150.8	234.0	170.0
Stream 1	559.8	15900.2	473.4	726.9	16498.4	150.3	112.8	168.0
Stream 2	2714.1	16577.5	408.8	223.7	16238.3	252.4	108.0	173.1
Stream 3	582.2	16344.9	400.4	208.2	19762.0	250.2	103.5	172.6
Stream 4	398.6	24187.7	390.6	261.3	11430.2	259.0	101.2	173.1
Stream 5	473.7	17140.1	454.8	450.4	16499.6	342.3	100.5	171.9
Stream 6	654.9	16605.2	397.2	679.3	15498.9	301.5	102.2	174.3
Stream 7	368.9	21273.0	484.5	619.4	11129.0	270.9	99.5	173.4
Stream 8	532.7	25442.1	685.8	447.3	11775.6	208.2	101.9	171.5
Min Qi	368.9	15900.2	390.6	208.2	11129.0	150.3	99.5	168.0
Max Qi	2714.1	25442.1	685.8	726.9	19762.0	342.3	112.8	174.3
Avg Qi	785.6	19183.8	461.9	452.1	14854.0	254.4	103.7	172.2