



HP Integrity rx8620

TPC-H Rev. 2.1.0

Report Date
June 07 - 2005

Total System Cost

Composite Query per Hour Rating

Price Performance

\$739,921

13,637.8 QphH @ 1000GB

**\$54/ QphH
@1000GB**

Database size

Database Manager

Operating System

Other Software

Availability Date

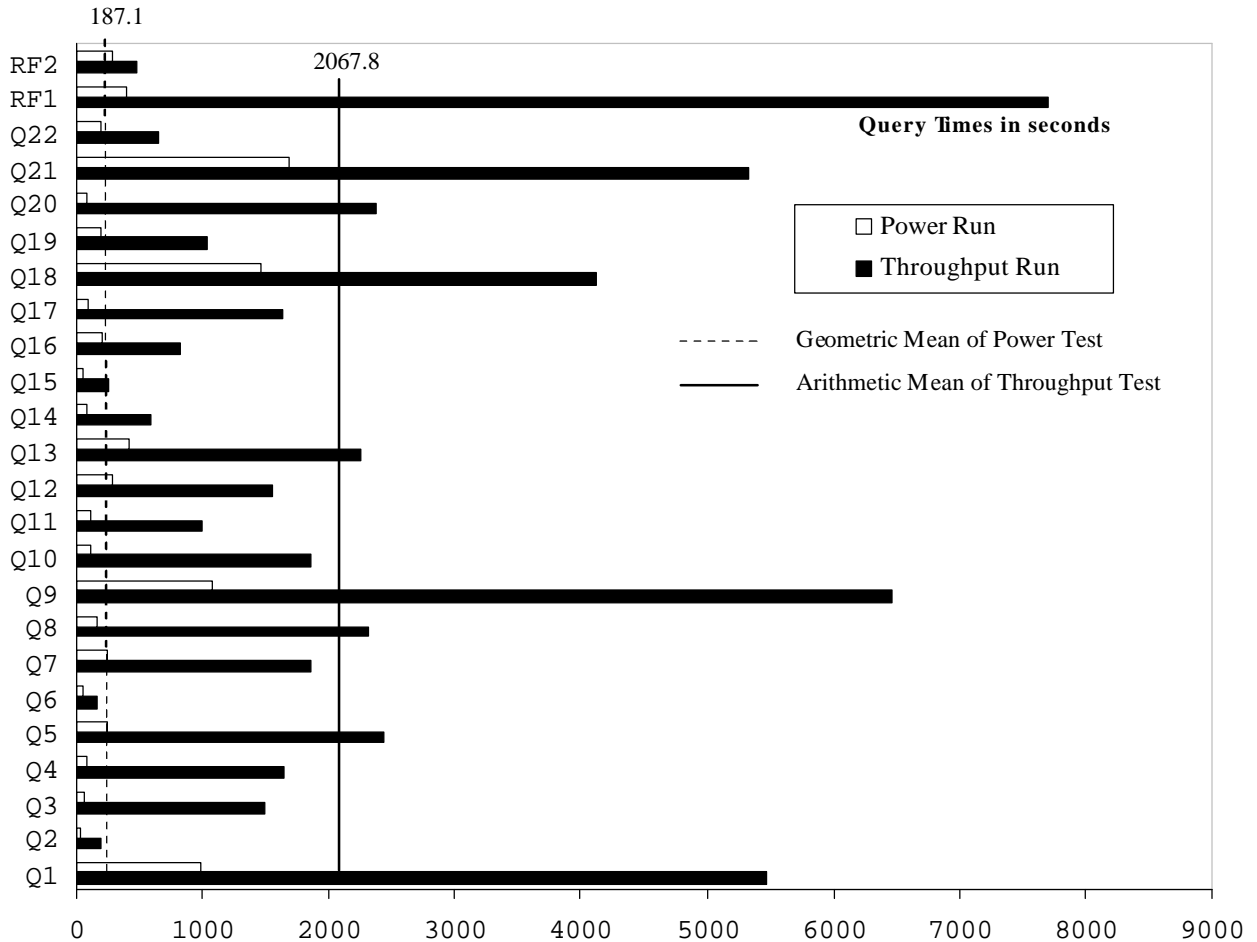
1000 GB

Microsoft SQL Server
2005 Enterprise
Edition 64-bit

Microsoft Windows
Server 2003,
Datacenter Edition
(64-bit) SP1

MS Visual Studio
MS Resource Kit

December 07 - 2005



Database Load Time = 16h58min50sec Load included backup: Y Total Data Storage / Database Size = 22.3
RAID(Base Tables): Y RAID(Base Tables and Auxiliary Data Structure): Y RAID(All)=N

System configuration

Processors	16 x 1.6 GHz Intel® Itanium2™ with 6MB Level 3 Cache
Memory	64GB Main Memory
Disk Controllers	12 SmartArray 6402 1 AB232A 2Gb Fibre Channel
Disk Drives	2 36GB SCSI (local) 6 146GB SCSI (Log) 336 72.8GB SCSI (DB)
Total Disk Storage	22,314 GB



HP Integrity rx8620

TPC-H Rev. 2.1.0

Report Date
June 07 - 2005

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price
rx8620 16-way SMP Base System, incl cell boards, core IO, power supplies, PCI-X backplane, 16x1.6ghz Intel Madison 9M processors	1	AB240A-002	\$263,995	1	\$263,995	\$154,128
HP 8GB HD SyncDRAM Midrange Memory	1	AB309A-0D1	\$14,000	8	\$112,000	
36GB, 15K hard disk for rx76/86	1	A9880A	\$1,800	2	\$3,600	
DVD+RW Drive for rx76/86	1	AB351A	\$850	1	\$850	
Server Expansion Unit: PCI-x I/O chassis	1	A6434A	\$29,995	1	\$29,995	\$2,950
core I/O for SEU	1	A7109A	\$5,000	2	\$10,000	
HP Smart Array Controller 6402	1	A9890A-0D1	\$1,669	12	\$20,028	
2Gb PCI-X FC HBA for Windows, 64-bit	1	AB232A-0D1	\$1,550	1	\$1,550	
Field Rack Mount Kit - rx86xx	1	J1528A	\$520	1	\$520	
Field Rack Mount Kit - SEU	1	J1530B	\$392	1	\$392	
MSA 30	1	302969-B21	\$2,978	24	\$71,472	
MSA1000	1	201723-B22	\$6,995	1	\$6,995	
MSA1000 Controller	1	218231-B22	\$4,290	1	\$4,290	
Support 3yrs 24x7 (MSA1000) 4hr	1	HA101A3 6FG	\$3,222	1		\$3,222
Support 3yrs 24x7 (MSA30) 4hr	1	HA101A3 7GT	\$1,827	24		\$43,848
72.8GB, 15krpm Ultra320 SCSI disk	1	286778-B22	\$569	336	\$191,184	
146GB, 10krpm disk	1	286716-B22	\$599	6	\$3,594	
HP Rack 10642 42U pallet	1	245161-B21	\$1,359	2	\$2,718	
Storage Works LC/LC 2m Cable	1	221692-B21	\$77.00	1	\$77	
HP 16A High Voltage Modular PDU	1	252663-B24	\$299	4	\$1,196	
Server Subtotal					\$724,456	\$204,148
Microsoft Windows Server 2003, Datacenter edition (64-bit)	1	T2372A opt016	\$32,000	1	\$32,000	
Microsoft SQL Server 2005 Enterprise Edition 64-bit	2	810-00561	\$7,233	1	\$7,233	\$245
Microsoft SQL Server 2005 Client License	2	359-00532	\$139	70	\$9,730	
Microsoft Visual C++	2	254-00170	\$109	1	\$109	
Server Software Subtotal					\$49,072	\$245
HP's Large Configuration Discount *	* Discounts:				\$184,231	\$53,770
Total:					\$589,297	\$150,623

Price Key: 1 - HP, 2 - Microsoft
Audited by Lorna Livingtree of Performance Metrics, Inc..
* All discounts are based on US list prices and for similar quantities and configurations

Three year cost of ownership: **\$739,921**

QpH @ 1000GB: 13,637.8
\$ / QpH @ 1000GB: 54

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



Numerical Quantities

Measurement Results

Database Scale Factor	1000GB
Total Data Storage / Database Size	22.3
Start of Database Load	00:48:53
End of Database Load	17:47:43
Database Load Time	16h 58min 50sec
Query Streams for Throughput Test	7
TPC-H Power	19,241.0
TPC-H Throughput	9,666.3
TPC-H Composite Query-per-Hour (QpH@1000GB)	13,637.8
Total System Price over 3 Years	\$739,921
TPC-H Price/Performance Metric (€/QpH@1000GB)	\$ 54 / QpH@1000GB

Measurement Interval

Measurement Interval in Throughput Test (Ts) = seconds

57354 seconds

Duration of Stream Execution

	Seed	Query Start Date/Time		RF1 Start Date/Time		RF2 Start Date/Time		Duration
		Query End Date/Time	RF1 End Date/Time	RF2 End Date/Time				
Stream 00	522174743	05/22/05	18:34:30	05/22/05	18:27:59	05/22/05	20:45:15	2:10:44
		05/22/05	20:45:14	05/22/05	18:34:29	05/22/05	20:49:53	
Stream 01	522174744	05/22/05	20:49:57	5/22/05	20:49:56	05/23/05	10:56:38	11:41:08
		05/23/05	8:31:04	5/23/05	10:56:35	05/23/05	11:03:26	
Stream 02	522174745	05/22/05	20:49:57	5/23/05	11:03:30	05/23/05	11:11:11	13:14:41
		05/23/05	10:04:38	5/23/05	11:11:10	05/23/05	11:18:20	
Stream 03	522174746	05/22/05	20:49:58	5/23/05	11:18:33	05/23/05	11:26:51	12:14:28
		05/23/05	9:04:27	5/23/05	11:26:49	05/23/05	11:34:28	
Stream 04	522174747	05/22/05	20:50:00	5/23/05	11:34:42	05/23/05	11:43:19	12:21:10
		05/23/05	9:11:09	5/23/05	11:43:14	05/23/05	11:51:46	
Stream 05	522174748	05/22/05	20:50:02	5/23/05	11:52:02	05/23/05	12:00:33	12:12:30
		05/23/05	9:02:32	5/23/05	12:00:28	05/23/05	12:08:47	
Stream 06	522174749	05/22/05	20:50:03	5/23/05	12:09:07	05/23/05	12:18:32	12:43:17
		05/23/05	9:33:20	5/23/05	12:18:19	05/23/05	12:27:22	
Stream 07	522174750	05/22/05	20:50:05	5/23/05	12:27:46	05/23/05	12:37:11	13:59:59
		05/23/05	10:50:05	5/23/05	12:37:06	05/23/05	12:45:51	



HP Integrity rx8620

TPC-H Rev. 2.1.0

Report Date
June 07 - 2005

TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 0	987.3	26.2	59.2	76.4	235.7	49.0	236.9	163.9
Stream 1	5775.0	113.2	1245.7	1088.8	1303.3	214.7	2664.8	1551.8
Stream 2	5240.4	158.2	2261.8	1526.6	1727.0	217.4	2109.2	4733.6
Stream 3	5617.6	274.3	1515.2	1157.5	5222.7	189.4	1833.9	531.5
Stream 4	5387.2	160.3	578.7	3866.9	993.4	189.4	1563.2	1694.5
Stream 5	4885.9	276.1	2624.1	1023.8	4066.8	188.2	2959.1	3680.8
Stream 6	5380.2	215.8	2118.1	1363.8	3575.8	82.2	1646.1	1736.2
Stream 7	5931.7	181.7	60.9	1455.1	241.9	48.7	248.9	2249.3
Min Qi	4885.9	113.2	60.9	1023.8	241.9	48.7	248.9	531.5
Max Qi	5931.7	276.1	2624.1	3866.9	5222.7	217.4	2959.1	4733.6
Avg Qi	5459.7	197.1	1486.3	1640.4	2447.3	161.4	1860.7	2311.1
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 0	1083.7	104.7	112.4	292.0	405.7	74.1	42.1	210.4
Stream 1	5081.7	2368.2	1804.6	2098.9	1955.1	548.8	265.5	503.3
Stream 2	3310.6	2448.2	121.9	2556.1	3643.4	1088.2	254.2	970.8
Stream 3	6015.8	1518.6	931.3	569.0	1569.9	812.4	246.7	733.6
Stream 4	4172.3	1406.7	1212.6	1849.0	2287.0	397.7	229.8	1746.6
Stream 5	1749.1	759.5	573.1	1315.9	2569.5	364.5	499.7	997.8
Stream 6	5505.7	4388.3	1695.5	2093.6	3371.4	797.4	215.5	579.8
Stream 7	19415.7	107.3	702.4	400.1	396.2	54.0	63.8	214.9
Min Qi	1749.1	107.3	121.9	400.1	396.2	54.0	63.8	214.9
Max Qi	19415.7	4388.3	1804.6	2556.1	3643.4	1088.2	499.7	1746.6
Avg Qi	6464.4	1856.7	1005.9	1554.7	2256.1	580.4	253.6	821.0
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	90.5	1455.9	193.0	76.4	1685.7	182.6	390.0	278.5
Stream 1	1141.1	2739.8	793.0	2817.6	5266.9	725.9	50799.5	408.2
Stream 2	4062.2	3948.1	677.2	4277.7	1695.5	652.8	459.5	428.2
Stream 3	2633.9	2695.0	1312.4	2579.0	5392.1	716.6	496.2	457.2
Stream 4	1014.8	3961.9	1356.4	1829.7	8189.4	382.2	512.2	507.2
Stream 5	663.1	6695.2	1489.1	603.1	5366.9	599.2	506.4	494.3
Stream 6	533.2	4777.5	1418.9	535.0	3108.2	658.8	552.4	529.3
Stream 7	1362.1	4065.7	213.4	3989.7	8222.3	773.6	560.3	519.8
Min Qi	533.2	2695.0	213.4	535.0	1695.5	382.2	459.5	408.2
Max Qi	4062.2	6695.2	1489.1	4277.7	8222.3	773.6	50799.5	529.3
Avg Qi	1630.0	4126.2	1037.2	2376.0	5320.2	644.1	7698.1	477.7