



HP Integrity Superdome

TPC-H Rev. 2.6.0
Report Date June 18 2007

Total System Cost

Composite Query per Hour Rating

Price Performance

\$2,008,168 USD

69,999.0 QphH
@ 1000G

\$28.69 USD
\$/ QphH @1000G

Database size

Database Manager

Operating System

Other Software

Availability Date

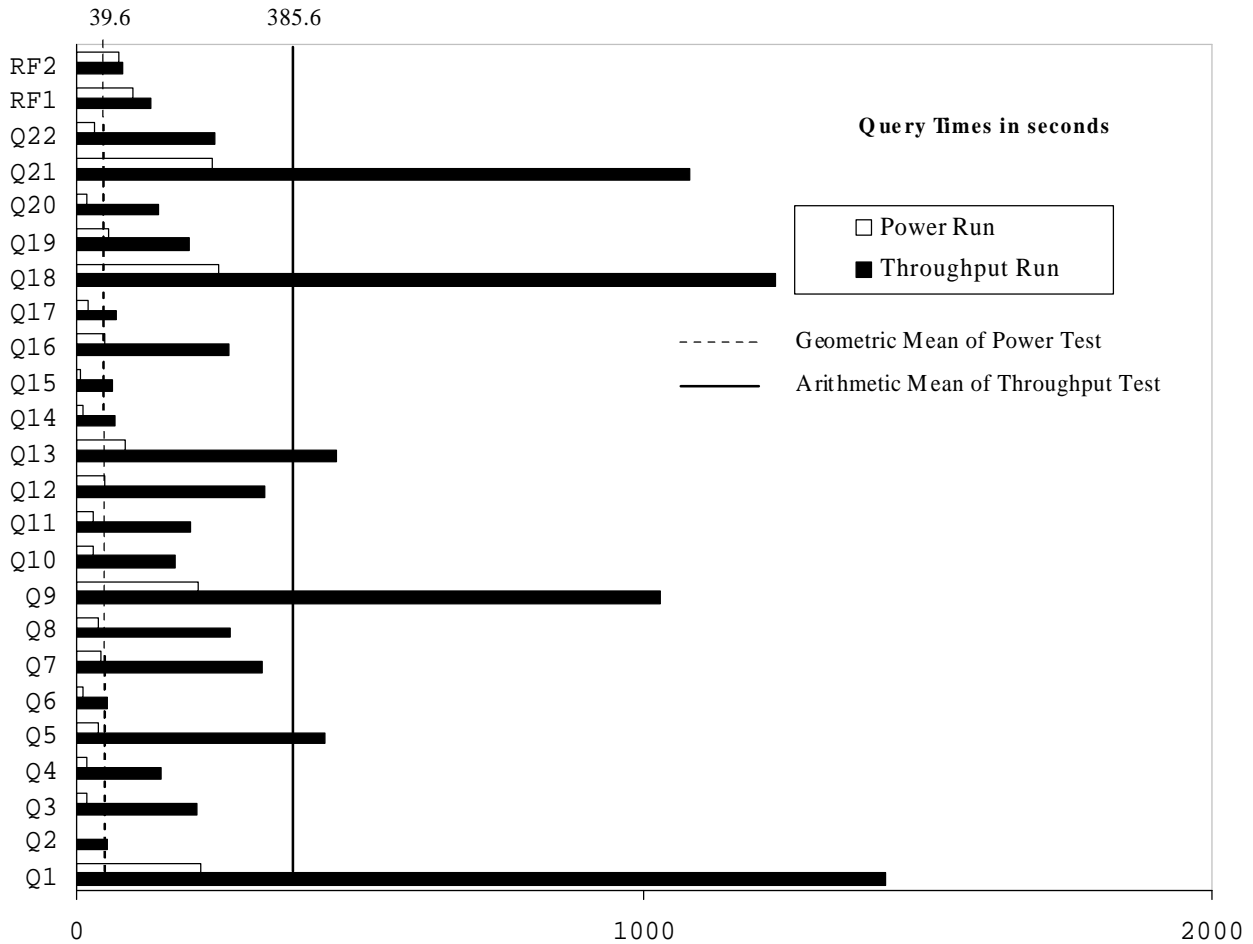
1000G

Microsoft SQL Server
2005 Enterprise
Edition for Itanium-
based systems SP2

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

MS Visual Basic
MS Visual C++
MS Resource Kit

June 18 2007



Database Load Time = 5h53m59s Load included backup: Y Total Data Storage / Database Size = 40.63
RAID(Base Tables): Y RAID(Base Tables and Auxiliary Data Structure): Y RAID(All)= Y

System configuration

Processors/Cores/Threads 32/64/64 DC Itanium 2 Processor 9050 @ 1.6GHz / 18 MB

Memory 256 GB Main Memory

Disk Controllers 49 SmartArray 6402
2 Fibre Channel Controllers (one single, one dual)

Disk Drives 4 36GB SCSI (Boot/Tools)
42 36GB SCSI (Log)
1152 36GB SCSI (DB)

Total Disk Storage 40,629.7 GB



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TPC Pricing 1.2.0**

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Description	Price Key	Part Number	Unit Price	Qty.	Extended Price	3 Yr Maint Price
HP Superdome 32p/64c Chassis	1	A9834A, Opt. 429	\$235,950	1	\$235,950	
IPF Superdome Cell Board (sx2000)	1	A9837A	\$19,250	8	\$154,000	
HP 12 Slot PCI-X Chassis for sx2000	1	A9836A	\$16,950	4	\$67,800	
3 Year Svc & Support Price (Hardware and Software)	1			1		\$667,176
HP Superdome Itanium2 1.6 GHz/18MB CPU	1	AB406A	\$23,000	32	\$736,000	
Superdome 256GB Memory Pack	1	A9856A	\$611,950	1	\$611,950	
Graphite I/O expansion power subsystem	1	A5861D	\$34,860	1	\$34,860	
12 Slot PCI I/O Enclosure	1	A9852A	\$25,750	1	\$25,750	
12 Slot PCI-X Chassis for rack expansion cabinet	1	A9836AZ	\$16,950	4	\$67,800	
HP ProCurve Switch2124	1	J4868AZ	\$279	1	\$279	\$219
HP Superdome Rack System Mgmt. Station	1	A9802B	\$6,500	1	\$6,500	
1U RackMT Display/Keyboard/Mouse	1	AB243AZ	\$3,046	1	\$3,046	
1000Base-T Gigabit Eth Adp	1	A9900A	\$486	1	\$486	
FC-HBA 2GB, 2 Channel	1	AB466A	\$2,450	1	\$2,450	
FC-HBA 2GB, 1 Channel	1	AB467A	\$1,520	1	\$1,520	
HP Smart Array Controller 6402 (incl. boot)	1	A9890A	\$1,669	49	\$81,781	
HP Dual Channel U320 SCSI Adapter	1	A7173A	\$795	1	\$795	
36GB, 15krpm Ultra3 Wide disk	1	286776-B22	\$319	1198	\$382,162	
Storageworks MSA30 SB (incl boot)	1	302969-B21	\$2,594	97	\$251,618	
Storage MSA30 Support 3yrs 24x7 4 hr incl disks	1	HA110A3 #7GT	\$1,827	97		\$177,219
SW 4000 39FT Cable All	1	150214-B21	\$114	97	\$11,058	
HP Universal Rack 10642 G2	1	AF002A	\$1,489	7	\$10,423	
HP 10642 G2 Sidepanel Kit	1	AF054A	\$359	7	\$2,513	
4 Bay Rack Support	1	HA1103A Opt 6EC	\$1,558	1		\$1,558
HP 16A High Voltage Modular PDU	1	252663-B24	\$299	21	\$6,279	
Modular Storage Array 1000	1	201723-B22	\$6,499	3	\$19,497	
MSA1000 controller	1	218231-B22	\$3,999	3	\$11,997	
MSA1000 Fibre Channel I/O Module	1	218960-B21	\$375	3	\$1,125	
Storage MAS1000 Support 3yrs 24x7 4hr incl disks	1	HA110A3 #6FG	\$3,222	3		\$9,666
5M LC to LC Cable Kit	1	221692-B22	\$82	2	\$164	
SCSI Cable 10m VHDT568 / HDTS68 Multimd	1	C2363B	\$335	1	\$335	
SCSI Terminator LVD/SE HDTS68 Multimd	1	C2364A	\$100	1	\$100	
HP C13/C14 Jumper Cord 2.5M	1	E7742A	\$25	1	\$25	
5300 Tape Array	1	C7508BZ	\$1,045	1	\$1,045	
DVD Rom drive	1	Q1592A	\$649	1	\$649	
Server Subtotal					\$2,729,957	\$855,838



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Microsoft Windows Server 2003 DC Edition 64-bit Service Pack 1	1	T2372A opt032	\$64,000	1	\$64,000	
Microsoft SQL Server 2005 Enterprise Edition	2	810-04794	\$8,487	1	\$8,487	\$245
Microsoft SQL Server 2005 Client License	2	359-01911	\$156	45	\$7,020	
Microsoft Visual C++ Standard	2	254-00170	\$109	1	\$109	
Microsoft Visual Basic	2	046-00856	\$109	1	\$109	
Server Software Subtotal					\$79,725	\$245
HP's Large Configuration Discount *					Total Extended Price	\$3,665,765
					Total Discounts	\$1,657,598

Price Key: 1-HP, 2-Microsoft
Audited by Lorna Livingtree of Performance Metrics, Inc.

3 year cost of ownership: \$2,008,168 USD

* All discounts are based on US list prices and for similar quantities and configurations. A 45.4 % discount was based on the overall specific components and support pricing from vendor 1 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 configuration.

QphH 69,999.0

\$/QphH \$28.69 USD

Sales contact: HP Sales Development, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320



Numerical Quantities

Measurement Results

Database Scale Factor	1000GB
Total Data Storage / Database Size	40.63
Start of Database Load	2007-06-09 18:22:40
End of Database Load	2007-06-10 00:16:39
Database Load Time	5h 53m 59s
Query Streams for Throughput Test	7
TPC-H Power	90,909.1
TPC-H Throughput	53,898.5
TPC-H Composite Query-per-Hour (QphH@1000GB)	69,999.0
Total System Price over 3 Years	\$2,008,168 USD
TPC-H Price/Performance Metric (USD / QphH@1000GB)	\$28.69 USD / QphH@1000GB

Measurement Interval

Measurement Interval in Throughput Test (Ts) = seconds 10286 seconds

Duration of Stream Execution

	Seed	Query Start Date/Time	Query End Date/Time	RF1 Start Date/Time	RF1 End Date/Time	RF2 Start Date/Time	RF2 End Date/Time	Duration
Stream 00	610001639	06/10/07 06/10/07	16:28:48 16:53:24	06/10/07 06/10/07	16:26:16 16:27:56	06/10/07 06/10/07	16:53:24 16:54:37	0:28:21
Stream 01	610001640	06/10/07 06/10/07	16:54:37 19:18:17	06/10/07 06/10/07	19:21:21 19:23:12	06/10/07 06/10/07	19:23:12 19:24:50	2:30:13
Stream 02	610001641	06/10/07 06/10/07	16:54:37 19:21:21	06/10/07 06/10/07	19:24:51 19:27:18	06/10/07 06/10/07	19:27:18 19:28:45	2:34:08
Stream 03	610001642	06/10/07 06/10/07	16:54:37 19:14:51	06/10/07 06/10/07	19:28:46 19:31:05	06/10/07 06/10/07	19:31:05 19:32:17	2:37:39
Stream 04	610001643	06/10/07 06/10/07	16:54:37 19:19:14	06/10/07 06/10/07	19:32:17 19:34:30	06/10/07 06/10/07	19:34:30 19:35:42	2:41:04
Stream 05	610001644	06/10/07 06/10/07	16:54:38 19:14:54	06/10/07 06/10/07	19:35:42 19:37:50	06/10/07 06/10/07	19:37:50 19:39:02	2:44:24
Stream 06	610001645	06/10/07 06/10/07	16:54:38 19:18:02	06/10/07 06/10/07	19:39:02 19:41:14	06/10/07 06/10/07	19:41:14 19:42:36	2:47:58
Stream 07	610001646	06/10/07 06/10/07	16:54:38 19:05:27	06/10/07 06/10/07	19:42:36 19:44:45	06/10/07 06/10/07	19:44:45 19:46:04	2:51:26



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TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 0	216.9	5.2	16.4	17.7	38.2	10.4	43.5	37.9
Stream 1	1453.3	39.0	328.7	41.2	837.3	37.0	584.8	164.9
Stream 2	1616.1	62.3	213.8	200.8	459.1	109.6	190.5	469.6
Stream 3	1157.3	57.2	52.9	150.2	702.9	49.1	286.3	330.6
Stream 4	1606.9	42.4	97.7	276.1	174.3	37.7	248.7	126.1
Stream 5	1557.4	91.3	101.5	132.9	183.7	61.3	282.1	187.8
Stream 6	1146.7	34.4	604.5	99.2	424.5	31.5	495.5	456.5
Stream 7	1435.3	50.7	70.1	140.8	284.7	53.8	206.0	173.7
Min Qi	1146.7	34.4	52.9	41.2	174.3	31.5	190.5	126.1
Max Qi	1616.1	91.3	604.5	276.1	837.3	109.6	584.8	469.6
Avg Qi	1424.7	53.9	209.9	148.7	438.1	54.3	327.7	272.7
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 0	215.3	26.8	29.7	49.9	83.7	11.5	8.1	49.6
Stream 1	1441.8	152.4	215.1	254.8	531.1	43.6	59.2	168.3
Stream 2	973.7	225.1	188.6	194.6	595.2	65.7	83.1	530.4
Stream 3	881.0	157.0	214.6	268.5	375.6	69.3	53.4	270.5
Stream 4	823.8	271.0	200.1	570.3	470.1	73.5	43.9	165.1
Stream 5	1031.6	125.2	172.4	459.2	410.8	86.7	57.4	213.3
Stream 6	1143.5	159.4	152.7	321.6	487.6	64.7	92.2	342.0
Stream 7	902.8	119.0	257.4	246.2	329.7	55.9	47.4	191.4
Min Qi	823.8	119.0	152.7	194.6	329.7	43.6	43.9	165.1
Max Qi	1441.8	271.0	257.4	570.3	595.2	86.7	92.2	530.4
Avg Qi	1028.3	172.7	200.1	330.7	457.2	65.6	62.4	268.7
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	21.7	248.6	54.8	19.3	238.6	32.0	100.0	72.5
Stream 1	81.6	1074.7	162.4	110.5	644.4	193.9	110.3	98.4
Stream 2	68.4	1440.2	314.8	108.4	392.3	301.5	146.9	87.3
Stream 3	76.7	1049.9	144.2	115.0	1802.8	148.7	139.4	71.1
Stream 4	46.4	1617.8	185.6	59.8	1429.8	109.7	133.1	71.1
Stream 5	85.9	1373.8	192.2	284.7	924.4	401.4	127.5	71.8
Stream 6	87.5	1029.8	159.3	109.2	1021.6	140.7	131.9	81.4
Stream 7	57.9	1029.0	225.4	212.5	1350.1	409.9	128.7	78.6
Min Qi	46.4	1029.0	144.2	59.8	392.3	109.7	110.3	71.1
Max Qi	87.5	1617.8	314.8	284.7	1802.8	409.9	146.9	98.4
Avg Qi	72.1	1230.7	197.7	142.9	1080.8	243.7	131.1	80.0