



# HP Integrity Superdome X

TPC-H Rev. 2.17.1  
 TPC Pricing Rev. 1.7.0

Report Date:  
 October 29, 2015

Total System Cost

Composite Query per Hour Rating

Price/Performance

**\$1,594,902 USD**

**680,841.7**  
 QpH @ 10000GB

**\$2.35 USD**  
 \$ / QpH @10000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

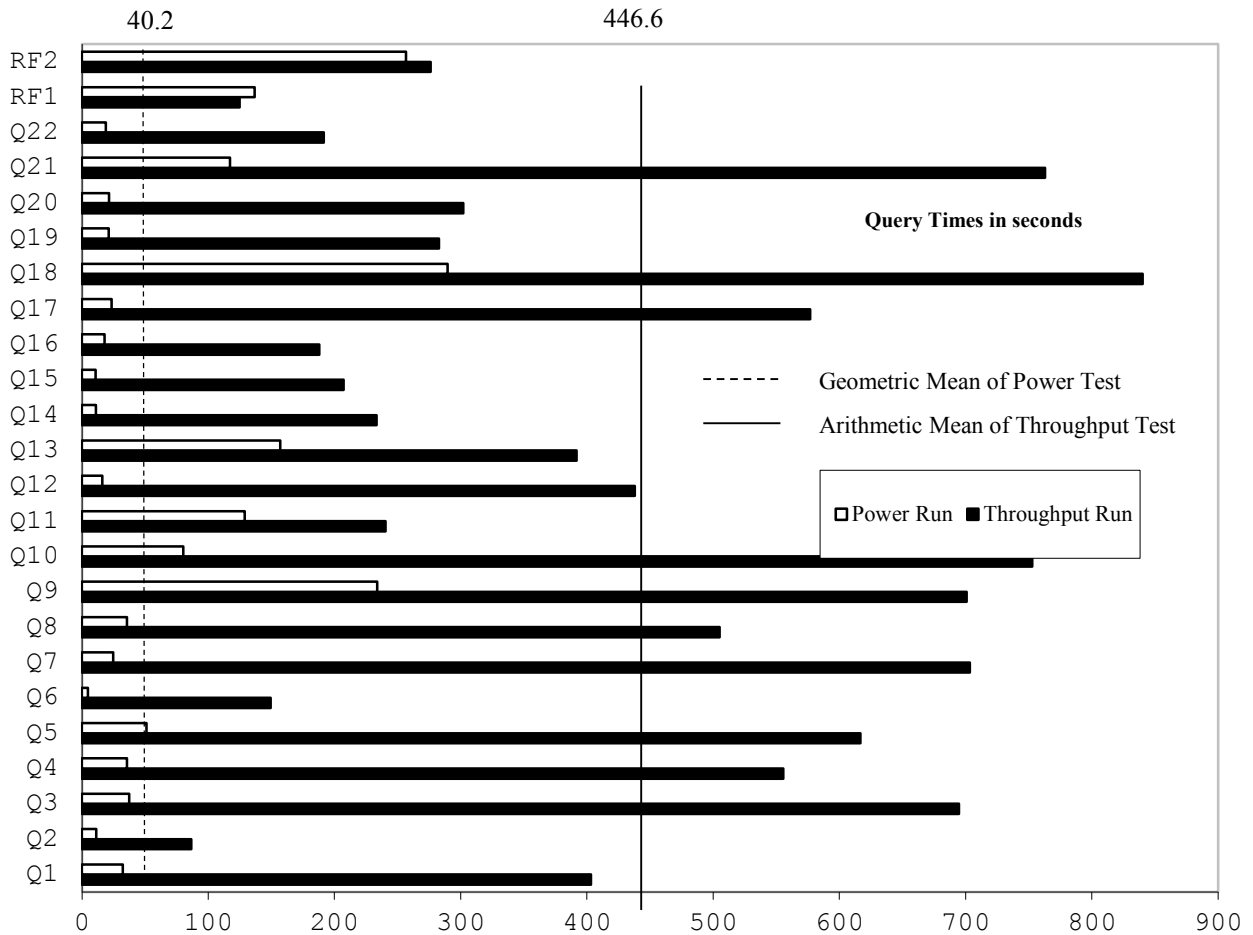
**10000GB**

**SQL Server 2014  
 Enterprise Edition**

**Windows Server 2012  
 R2 Standard Edition**

**None**

**Now**



Database Load Time = 2d 15h 25m 51s

Storage Redundancy Level

Load included backup: Y

Base Tables and Auxiliary Data Structures

0

Total Data Storage / Database Size = 8.19

DBMS Temporary Space

0

Memory/Database Size = 40.96%

OS and DBMS Software

1

System Components	System Total	Per Node
HP BL920 Gen8 Svr Blade :	4	4
Intel(R) Xeon(R) CPU E7-2890 v2 (15c/2.8Ghz / 37.5MB L3):	8	8
Cores/Threads:	120/240	120/240
Memory:	4096GB	4096GB
Network Switch (HP 6125G Ethernet Blade Switch):	1	1
Storage MSA Enclosures (MSA2040 SAN Dual FC):	5	5
Storage Enclosures (D2700 Expansion):	9	9
Storage Disk Drives (400GB 12G SAS SSD):	145	145
Storage Disk Drives (300GB 6G SAS HDD):	100	100
Total Storage:	81,985 GB	



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Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price
<b>Server Hardware</b>						
HP Superdome X Base Encl (includes Rack & 12 P/S)	1	AT1471	\$39,650	1	\$39,650	
HP 48A 208V 3PH 12 OTL NA/JP Ipd Core	1	AF535A	\$2,099	2	\$4,198	
HP BL920s Gen8 2.8GHz 30c Svr Blade	1	AT068A	\$42,900	4	\$171,600	
HP Superdome X Basic Par LTU	1	AT150A	\$950	1	\$950	
HP 10GbE Ethernet Pass-Thru Module c-Class Blade Sys	1	538113-B21	\$4,999	1	\$4,999	
HP 6125G Ethernet Blade Switch	1	658147-B21	\$1,999	1	\$1,999	
HP Superdome X 128GB (4x32) PC3-14900R (DDR3-1866)	1	B9F09A	\$4,450	32	\$142,400	
HP Ethernet 10Gb 2-port 560 FLB Adapter (Impact)	1	655639-B21	\$649	1	\$649	
HP QMH2672 16Gb FC HBA	1	710608-B21	\$1,099	8	\$8,792	
HP Brocade 16Gb/16c PP+Embedded SAN Switch	1	C8S45A	\$9,899	4	\$39,596	
HP 16Gib GBIC	1	QK724A	\$405	22	\$8,910	
HP X130 100G SFP+ LC SR 850mm Transceiver	1	JD092B	\$1,367	1	\$1,367	
HP 3y 4h 24x7 Superdome X HW Support	1	H7J34A3	\$1,274	1		\$1,274
HP iLO Adv incl 3yr TS U 1-Svr Lic	1	BD505A	\$469	4	\$1,876	
HP 17" FlatPanel Monitor	1	GV537A8	\$130	1	\$130	
HP PS/2 Keyboard And Mouse Bundle	1	RC464AA	\$39	1	\$39	
			<b>Subtotal</b>		<b>\$427,155</b>	<b>\$1,274</b>
<b>Storage</b>						
HP 42U 600x1075mm Enterprise Shock Rack	1	BW904A	\$2,199	2	\$4,398	
HP 24A High Voltage Core Only Corded PDU	1	252663-D72	\$299	4	\$1,196	
HP MSA2040 SAN Dual Controller SFF Storage	1	K2R80A	\$11,070	5	\$55,350	
HP MSA2040 SAN Dual Controller SFF Stora (10% Spares)	1	K2R80A	\$11,070	2	\$22,140	
HP MSA 2040 16Gb SW FC SFP 4 Pk	1	C8R24A	\$1,600	6	\$9,600	
HP 400GB 12G SAS ME 2.5in SC EM SSD	1	J9F37A	\$3,099	145	\$449,355	
HP 400GB 12G SAS ME 2.5in SC EM SSD (10% Spares)	1	J9F37A	\$3,099	15	\$46,485	
HP 300GB 6G SAS 15K 2.5-inch DP Enterprise 3-yr warrant	1	652611-B21	\$545	100	\$54,500	
HP 300GB 6G SAS 15K 2.5-inch DP Enterprise (10% Spares)	1	652611-B21	\$545	10	\$5,450	
HP StorageWorks D2700 Disk Enclosure	1	AJ941A	\$3,399	9	\$30,591	
HP StorageWorks D2700 Disk Enclosure (10% Spares)	1	AJ941A	\$3,399	2	\$6,798	
HP 2m Multi-mode OM3 LD/LC FC Cable	1	AJ835A	\$75	22	\$1,650	
			<b>Subtotal</b>		<b>\$687,513</b>	<b>\$0</b>
<b>Server Software</b>						
SQL Server 2014 Enterprise Edition (2 core license, 36 cores)	2	7JQ-00750	\$13,472.50	60	\$808,350	
Windows Server 2012 R2 Standard Edition (2p license)	2	P73-06284	\$735	4	\$2,940	
Windows Server 2012 R2 Client Access License	2	R18-04280	\$24.36	90	\$2,193	
Microsoft Problem Resolution Services	2	N/A	\$259	1		\$259
			<b>Subtotal</b>		<b>\$813,483</b>	<b>\$259</b>
			<b>Total Extended Price</b>		<b>\$1,928,151</b>	<b>\$1,533</b>
			<b>Total Discounts</b>		<b>\$334,400</b>	<b>\$382</b>
Price Key: 1 - HP , 2 - Microsoft <b>Audited by Francois Raab of InfoSizing, Inc. (www.sizing.com)</b>		<b>Grand Total</b>			<b>\$1,593,751</b>	<b>\$1,151</b>
All discounts are based on US list prices and for similar quantities and configurations. A 28% discount was based on the overall specific components 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.		<b>3 year cost of ownership USD:</b>				<b>\$1,594,902</b>
		<b>QpH @ 10000GB:</b>				<b>680,841.7</b>
		<b>\$ USD/QpH @ 10000GB</b>				<b>\$2.35</b>
Sales contact: HP WW Headquarters, 3000 Hanover St., Palo Alto, CA 94304-1185 (650) 857-1501 or H-P direct: 800-203-6748						
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052-6399 (425) 882 8080						
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 the stated prices are not available according to these terms, please inform at pricing@tpc.org. Thank you.						



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## Numerical Quantities

### Measurement Results

Database Scale Factor	10,000
Total Data Storage / Database Size	8.19
Percentage Memory / Database Size	40.96
Start of Database Load	2015-10-05 09:51:08
End of Database Load	2015-10-08 06:08:24
Database Load Time	02d 15h 25m 51s
Query Streams for Throughput Test	9
TPC-H Power	896,265.9
TPC-H Throughput	517,196.3
TPC-H Composite Query-per-Hour (QpH@10000GB)	680,841.7
Total System Price over 3 Years (\$ USD)	\$1,594,902
TPC-H Price/Performance Metric (\$ USD / QpH@10000GB)	\$2.35

### Measurement Interval

Measurement Interval in Throughput Test 13,782 seconds

### Duration of Stream Execution

Power Run	Seed	Query Start Time	Duration (sec)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
	1008060824	2015-10-08 11:25:07	1,381	2015-05-08 11:22:50	2015-05-08 11:48:08
		2015-10-08 11:48:08		2015-05-08 11:25:07	2015-05-08 11:52:25
Throughput Stream	Seed	Query Start Time	Duration (sec)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
1	1008060825	2015-10-08 11:52:24	10,143	2015-05-08 14:41:50	2015-05-08 14:44:05
		2015-10-08 14:41:27		2015-05-08 14:44:04	2015-05-08 14:48:31
2	1008060826	2015-10-08 11:52:24	9,867	2015-05-08 14:48:31	2015-05-08 14:50:43
		2015-10-08 14:36:51		2015-05-08 14:50:43	2015-05-08 14:55:02
3	1008060827	2015-10-08 11:52:24	9,419	2015-05-08 14:55:03	2015-05-08 14:56:57
		2015-10-08 14:29:23		2015-05-08 14:56:57	2015-05-08 15:01:20
4	1008060828	2015-10-08 11:52:24	9,814	2015-05-08 15:01:20	2015-05-08 15:03:23
		2015-10-08 14:35:58		2015-05-08 15:03:23	2015-05-08 15:07:49
5	1008060829	2015-10-08 11:52:24	10,097	2015-05-08 15:07:49	2015-05-08 15:10:10
		2015-10-08 14:40:41		2015-05-08 15:10:09	2015-05-08 15:14:57
6	1008060830	2015-10-08 11:52:24	10,155	2015-05-08 15:14:58	2015-05-08 15:16:54
		2015-10-08 14:41:39		2015-05-08 15:16:53	2015-05-08 15:21:23
7	1008060831	2015-10-08 11:52:24	10,167	2015-05-08 15:21:23	2015-05-08 15:23:29
		2015-10-08 14:41:51		2015-05-08 15:23:29	2015-05-08 15:28:25
8	1008060832	2015-10-08 11:52:24	9,692	2015-05-08 15:28:25	2015-05-08 15:30:27
		2015-10-08 14:33:56		2015-05-08 15:30:26	2015-05-08 15:35:20
9	1008060833	2015-10-08 11:52:25	9,073	2015-05-08 15:35:21	2015-05-08 15:37:19
		2015-10-08 14:23:38		2015-05-08 15:37:18	2015-05-08 15:42:06



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## TPC-H Timing Intervals (in seconds):

Quer	Strm 0	Strm 1	Strm 2	Strm 3	Strm 4	Strm 5	Strm 6	Strm 7	Strm 8	Strm 9	Min Qi	Max Qi	Avg. Qi
Q1	32.2	32.1	690.4	221.6	375.6	323.4	632.4	451.1	772.7	100.8	32.2	772.7	366.2
Q2	11.4	168.2	53.9	130.0	100.1	83.3	42.1	37.9	112.0	52.0	11.4	168.2	79.1
Q3	37.4	736.0	487.8	626.1	667.6	749.7	1042.7	602.2	884.1	457.5	37.4	1042.7	629.1
Q4	35.5	365.5	422.4	339.1	691.9	405.6	786.3	615.7	475.6	898.4	35.5	898.4	503.6
Q5	51.0	657.6	821.3	987.6	252.0	845.9	772.6	511.9	321.7	380.6	51	987.6	560.2
Q6	4.6	147.7	47.7	101.1	180.3	240.2	68.8	212.8	145.2	201.1	4.6	240.2	135
Q7	24.8	986.0	887.4	498.4	431.9	767.7	547.2	665.4	1083.3	462.9	24.8	1083.3	635.5
Q8	35.6	370.3	523.0	161.6	445.2	525.6	621.0	718.0	654.8	527.4	35.6	718	458.3
Q9	233.8	702.0	763.3	765.5	857.8	174.1	591.5	981.7	459.1	1013.1	174.1	1013.1	654.2
Q10	80.3	1026.9	451.6	812.3	822.8	981.0	131.5	504.7	1158.7	885.1	80.3	1158.7	685.5
Q11	128.8	284.6	167.1	208.2	241.1	266.5	218.6	265.7	229.7	282.2	128.8	284.6	229.3
Q12	16.2	602.2	606.1	114.4	314.4	413.3	747.5	152.7	280.6	709.8	162.0	747.5	395.7
Q13	157.0	265.0	344.8	274.2	771.5	363.8	241.5	483.2	474.8	308.0	157.0	771.5	368.4
Q14	11.0	162.2	243.5	400.3	174.3	81.7	439.2	197.1	192.8	209.4	11.0	439.2	211.2
Q15	10.7	219.5	318.7	195.4	218.3	238.1	121.2	162.9	230.6	160.9	10.7	318.7	187.6
Q16	17.9	214.9	96.1	82.4	188.9	159.7	302.7	386.4	209.5	51.5	17.9	386.4	171.0
Q17	23.4	966.1	813.8	590.7	703.2	196.4	654.0	960.9	223.2	83.8	23.4	966.1	521.6
Q18	289.7	954.7	568.7	810.6	888.6	1229.6	1085.3	618.5	716.1	690.1	289.7	1229.6	785.2
Q19	21.1	313.1	56.0	671.7	250.5	258.3	313.9	444.6	22.6	214.3	21.1	671.7	256.6
Q20	21.5	226.3	499.2	255.5	217.3	586.5	171.6	251.4	210.2	300.3	21.5	586.5	274.0
Q21	117.2	604.9	885.4	911.0	906.6	1042.2	437.0	704.8	606.7	769.1	117.2	1042.2	698.5
Q22	18.8	106.2	118.1	260.0	113.1	163.4	185.5	235.9	226.5	314.0	18.8	314.0	174.2
RF1	136.7	133.5	131.7	113.9	123.1	140.0	115.8	125.7	121.5	117.4	113.9	140.0	125.9
RF2	256.7	266.3	259.1	262.8	265.6	287.7	269.2	295.3	293.8	287.2	256.7	295.3	274.4