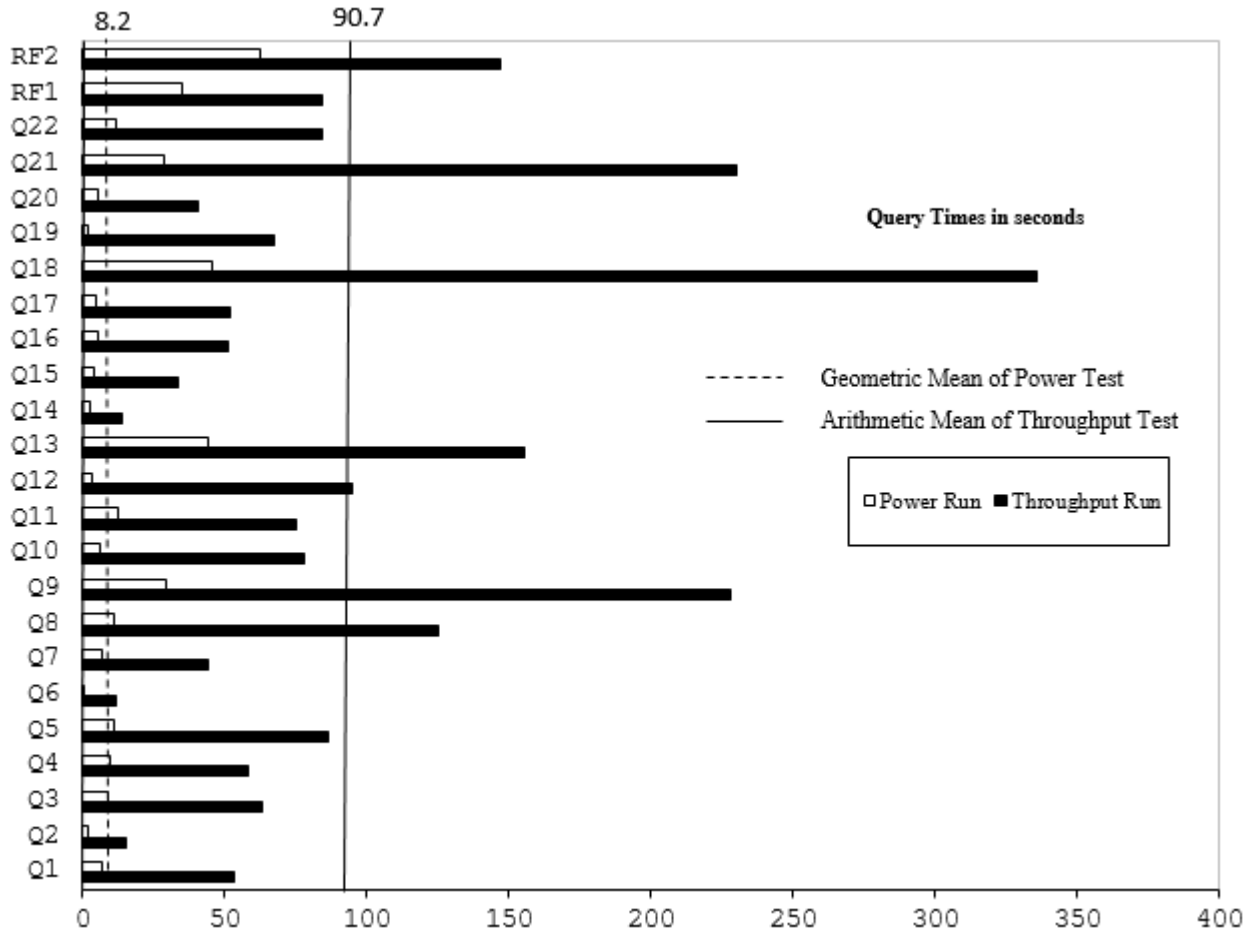
 Hewlett Packard Enterprise		HPE ProLiant DL380 Gen10		TPC-H Rev. 3.0.0 TPC Pricing Rev. 2.7.0	
Total System Cost		Composite Query per Hour Rating		Report Date: September 12, 2018	
\$501,515 USD		1,090,716.5 QphH @ 3,000GB		\$459.81 USD \$/kQphH @ 3,000GB	
Database Size	Database Manager	Operating System	Other Software	Availability Date	
3000GB	Microsoft® SQL Server 2017 Enterprise Edition	Microsoft® Windows Server 2016 Standard Edition	None	September 12, 2018	



Database Load Time = 00d 4h 5m 35s	Storage Redundancy Level	
Load included backup: Y	Base Tables and Auxiliary Data Structures	No RAID
Total Data Storage / Database Size = 5.46	DBMS Temporary Space	No RAID
Memory/Database Size = 51.2%	OS and DBMS Software	RAID 1
System Components		
	System Total	Per Node
Nodes:	1	n.a.
Intel(R) Xeon(R) Platinum 8180 @ 2.50GHz:	2	2
Cores/Threads:	56/112	56/112
Memory:	1,536GB	1,536GB
Network Interfaces (on-board GigE):	1	1
(P408i-a embedded)	1	1
(P408e-p HBA):	4	4
Storage Shelves D3710:	7	7
Storage Subsystem Disk Drives (400GB 12G SAS SSD):	35	n.a.
(300GB 6G SAS HDD):	12	n.a.
Total Storage:	16,393.8 GB	n.a.



HPE ProLiant DL380 Gen10

TPC-H Rev. 3.0.0
 TPC-H Rev. 3.0.0TPC Pricing Rev. 2.7.0

Report Date:
 September 12, 2018

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price	
Server Hardware							
HPE DL380 Gen10 8SFF CTO Server (Customer to Order)	1	868703-B21	\$2,359	1	\$2,359		
HPE DL380 Gen10 Intel® Xeon® Platinum 8180 (2.50GHz/28-core) Kit	1	871619-B21	\$18,089	1	\$18,089		
HPE DL380 Gen10 Intel® Xeon®Platinum 8180 (2.50GHz/28-core) FIO Kit	1	871619-L21	\$18,089	1	\$18,089		
HPE 64GB 4Rx4 PC4-2666V-L Kit LRDIMM	1	815101-B21	\$2,897	24	\$69,528		
HPE DL Gen10 x16 x16 GPU Rsr Kit	1	826694-B21	\$119	1	\$119		
HPE DL38X Gen10 12Gb SAS Expander	1	870549-B21	\$699	1	\$699		
HPE DL38X Gen10 High Perf Fan	1	867810-B21	\$239	1	\$239		
HPE 800W FS Univ Ht Plg LH Pwr Sply Kit	1	865428-B21	\$429	2	\$858		
HPE 3Y FC 24x7 DL380 Gen10 SVC	1	H8QP7E	\$2,448	1		\$2,448	
HPE USB US Keyboard/Mouse Kit	1	631341-B21	\$29	1	\$29		
		Subtotal			\$110,009	\$2,448	
Storage							
HPE 42U 600x1075mm Standard Pallet Rack	1	AF046A	\$799	1	\$799		
HPE 24A High Voltage Core Only Corded PDU	1	252663-D74	\$259	2	\$518		
HPE D3710 Enclosure 3-yr warranty	1	Q1J10A	\$3,399	7	\$23,793		
HPE 400GB SAS 12G MU SFF SC DS SSD 3-yr warranty	1	872374-B21	\$1,189	35	\$41,615		
HPE 300GB SAS 15K SFF SC DS HDD 3-yr warranty	1	870753-B21	\$579	12	\$6,948		
HPE Smart Array P408e-p SR Gen10 Controller 3-yr warranty	1	804405-B21	\$899	4	\$3,596		
		Subtotal			\$77,269	\$0	
Server Software							
SQL Server 2017 Enterprise Edition for Windows (2 core license, 28 cores)	2	N/A	\$13,472	.5	\$377,230		
Windows Server 2016 Standard Edition	2	N/A	\$92.00	28	\$2,576	Included	
Microsoft Problem Resolution Services	2	N/A	\$259	1		\$259	
		Subtotal			\$379,806	\$259	
		Total Extended Price			\$567,084	\$2,707	
		Total Discounts			\$67,420	\$856	
Price Key: 1 - HPE , 2 - Microsoft Audited by Francois Raab of InfoSizing (www.sizing.com)					Grand Total	\$499,664	\$1,851
All discounts are based on US list prices and for similar quantities and configurations. A 36% 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.					3 year cost of ownership USD:	\$501,515	
					QphH @ 3000GB:	1,090,716.5	
					\$ USD/kQphH @ 3000GB	\$459.81	
Sales contact: HPE WW Headquarters, 3000 Hanover St., Palo Alto, CA 94304-1185 (855)472-5233 / (800)786-7967 / (888)269-4073 (US) 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.							

Numerical Quantities

Measurement Results

Database Scale Factor	3,000
Total Data Storage / Database Size	5.46
Percentage Memory / Database Size	51.2%
Start of Database Load	2018-08-21 04:01:00
End of Database Load	2018-08-21 11:32:34
Database Load Time	00d 04h 05m 38s
Query Streams for Throughput Test	8
TPC-H Power	1,322,473.1
TPC-H Throughput	899,574.1
TPC-H Composite Query-per-Hour (QphH@3000GB)	1,090,716.5
Total System Price over 3 Years (\$ USD)	\$501,515
TPC-H Price/Performance Metric (\$ USD / kQphH@3000GB)	\$459.81

Measurement Interval

Measurement Interval in Throughput Test **2,113 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
	821113222	2018-08-21 12:18:30	260	2018-08-21 12:17:55	2018-08-21 12:22:51
		2018-08-21 12:22:50		2018-08-21 12:18:30	2018-08-21 12:23:53
Throughput Stream	Seed	Query Start Time	Duration (sec)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
1	821113223	2018-08-21 12:23:52	1,983	2018-08-21 12:23:52	2018-08-21 12:24:58
		2018-08-21 12:56:55		2018-08-21 12:24:58	2018-08-21 12:27:21
2	821113224	2018-08-21 12:23:52	2,113	2018-08-21 12:27:21	2018-08-21 12:30:16
		2018-08-21 12:59:05		2018-08-21 12:30:16	2018-08-21 12:33:08
3	821113225	2018-08-21 12:23:52	1,800	2018-08-21 12:33:09	2018-08-21 12:34:37
		2018-08-21 12:53:52		2018-08-21 12:34:37	2018-08-21 12:36:38
4	821113226	2018-08-21 12:23:52	2,053	2018-08-21 12:36:38	2018-08-21 12:37:58
		2018-08-21 12:58:05		2018-08-21 12:37:58	2018-08-21 12:39:49
5	821113227	2018-08-21 12:23:52	2,058	2018-08-21 12:39:49	2018-08-21 12:40:56
		2018-08-21 12:58:10		2018-08-21 12:40:56	2018-08-21 12:43:37
6	821113228	2018-08-21 12:23:52	2,111	2018-08-21 12:43:37	2018-08-21 12:44:43
		2018-08-21 12:59:03		2018-08-21 12:44:43	2018-08-21 12:47:42
7	821113229	2018-08-21 12:23:52	1,769	2018-08-21 12:47:42	2018-08-21 12:48:45
		2018-08-21 12:53:21		2018-08-21 12:48:45	2018-08-21 12:51:35
8	821113230	2018-08-21 12:23:52	2,085	2018-08-21 12:51:36	2018-08-21 12:52:43
		2018-08-21 12:58:37		2018-08-21 12:52:42	2018-08-21 12:54:41



HPE ProLiant DL380 Gen10

TPC-H Rev. 3.0.0
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TPC-H Timing Intervals (in seconds):

Query	Stream 0	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5	Stream 6	Stream 7	Stream 8	Min Qi	Max Qi	Avg. Qi
Q1	6.5	42.1	18.3	50.9	62.9	40.2	79.1	49.1	83.5	6.5	83.5	48.1
Q2	1.7	10.7	21.7	16.0	11.8	12.7	11.8	23.5	15.5	1.7	23.5	13.9
Q3	8.8	44.1	29.2	116.9	25.4	73.6	68.1	72.9	73.1	8.8	116.9	56.9
Q4	9.6	68.7	36.9	60.6	69.0	63.8	49.9	60.5	55.0	9.6	69.0	52.7
Q5	11.1	73.6	68.7	110.1	73.4	114.0	113.1	67.1	72.6	11.1	114.0	78.2
Q6	0.5	18.2	8.9	7.2	7.0	15.0	13.8	4.0	17.1	0.5	18.2	10.2
Q7	6.6	28.9	24.9	53.2	32.4	57.3	58.9	42.9	52.7	6.6	58.9	39.8
Q8	11.2	97.3	179.7	93.2	136.8	129.4	170.9	98.6	92.3	11.2	179.7	112.2
Q9	29.2	399.2	193.4	170.3	287.1	57.8	246.6	253.9	213.4	29.2	399.2	205.7
Q10	6.0	43.3	80.8	66.6	87.4	12.0	92.4	121.2	120.7	6.0	121.2	70.0
Q11	12.1	56.8	28.8	104.3	104.4	68.3	175.5	41.4	20.2	12.1	175.5	68.0
Q12	3.5	102.2	128.8	51.8	52.4	145.7	117.2	99.8	62.5	3.5	145.7	84.9
Q13	43.9	107.4	130.0	121.1	168.4	191.2	202.7	169.2	154.6	43.9	202.7	143.2
Q14	2.4	15.0	9.4	17.5	18.0	8.0	12.1	15.6	14.0	2.4	18.0	12.4
Q15	3.8	16.9	26.4	24.7	17.6	19.1	75.2	19.0	71.5	3.8	75.2	30.5
Q16	5.0	31.1	149.2	20.8	47.9	36.1	73.5	21.5	30.9	5.0	149.2	46.2
Q17	4.6	69.9	79.7	29.8	66.8	42.3	16.7	60.7	50.1	4.6	79.7	46.7
Q18	45.5	210.7	605.6	280.7	373.2	553.8	257.1	202.2	198.9	45.5	605.6	303.1
Q19	1.6	108.1	53.7	49.4	81.1	55.6	74.7	40.3	76.2	1.6	108.1	60.1
Q20	5.5	50.5	31.1	34.3	22.1	63.1	25.5	53.1	45.9	5.5	63.1	36.8
Q21	28.7	271.2	101.4	222.0	197.7	271.1	93.3	218.9	461.2	28.7	461.2	207.3
Q22	11.9	116	105.5	97.5	109.4	27.0	82.1	32.6	101.8	11.9	116.0	76.0
RF1	34.9	65.5	174.6	88.7	79.6	67.3	65.6	63.2	66.8	34.9	174.6	78.5
RF2	62.0	142.7	172.2	120.6	110.8	160.5	178.6	169.8	118.2	62.0	178.6	137.3