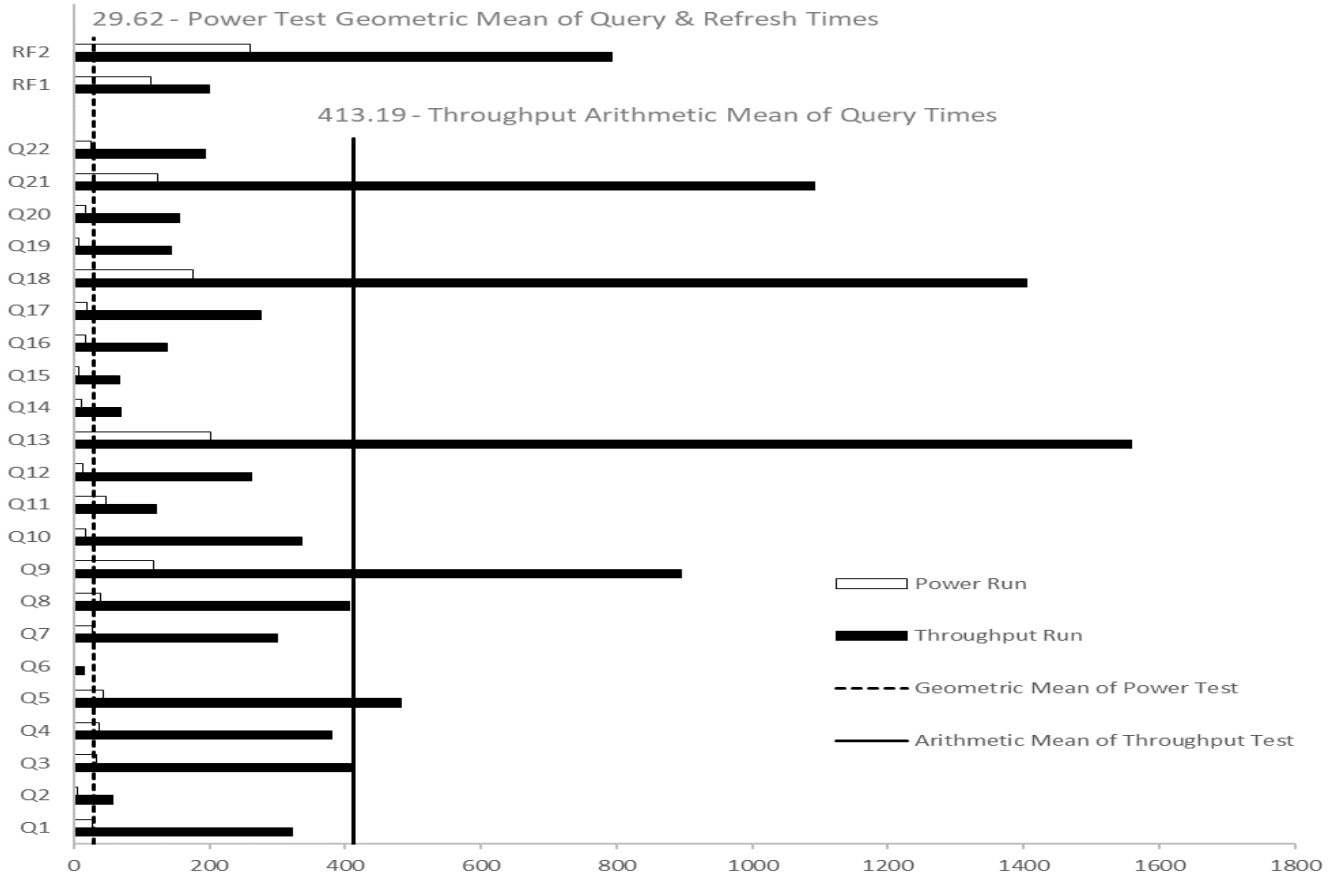
 <b>Hewlett Packard Enterprise</b>		<b>HPE ProLiant DL380 Gen10 Plus</b>		TPC-H Rev. 3.0 TPC Pricing Rev. 2.7.0	
Total System Cost		Composite Query per Hour Rating		Report Date: May 29, 2021	
<b>\$419,139 USD</b>		<b>956,701.4</b> QpH @ 10,000GB		<b>\$438.11 USD</b> \$/kQpH @ 10,000GB	
Database Size	Database Manager	Operating System	Other Software	Availability Date	
<b>10,000GB</b>	<b>Microsoft® SQL Server 2019 Enterprise Edition</b>	<b>Windows Server 2022</b>	<b>None</b>	<b>August 31, 2021</b>	



Database Load Time = 00d 17h 31m 45s	<b>Storage Redundancy Level</b>	
Load included backup: <b>Y</b>	Base Tables and Auxiliary Data Structures	<b>No RAID</b>
Total Data Storage / Database Size = <b>3.13</b>	DBMS Temporary Space	<b>No RAID</b>
Memory/Database Size = <b>41.0%</b>	OS, DBMS Software and Transaction Log	<b>RAID 1</b>

System Components	System Total
Nodes:	1
Intel Xeon-Gold 6346 @ 3.1GHz:	2
Cores/Threads:	30/64
Memory:	4,096 GiB
1.6TB NVMe Drives	12
Disk Drives (800GB SAS SSD)	2
Disk Drives (3.2TB SAS SSD)	4
2p 10/25 Gbps Nwtwork Interface Card	1
P408i-a SR SAS COntrroller	1

Total Storage: 31,292.50 GiB



## HPE ProLiant DL380 Gen10 Plus

TPC-H Rev. 3.0  
TPC Pricing Rev. 2.7.0

Report Date: May 29, 2021

Description	Price Key	Part Number	Unit Price	Qty	Extended Price	3 Yr Maint Price
<b>Server Hardware</b>						
HPE ProLiant DL380 Gen10 Plus 8LFF (CTO)	1	P05175-B21	\$2,519	1	\$2,519	
Intel Xeon-Gold 6346 3.1GHz 16-core 205W Processor for HPE	1	P36934-B21	\$4,311	2	\$8,622	
HPE 128GB Quad Rank x4 DDR4-3200 CAS-22-22-22 Load Reduced Smart	1	P06037-B21	\$6,942	32	\$222,144	
HPE ProLiant DL380 Gen10 Plus High Performance Heat Sink Kit	1	P27095-B21	\$95	2	\$190	
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	1	P38997-B21	\$495	1	\$495	
Mellanox MCX562A-ACAI Ethernet 10/25Gb 2-p SFP28 OCP3 Adapter for HPE	1	P10112-B21	\$725	1	\$725	
HPE 3 Year Foundation Care 24x7 DL380 Gen10 Service	1	H8QP7E	\$2,719	1		\$2,719
HPE USB US Keyboard/Mouse Kit	1	631341-B21	\$32	3	\$96	
HPE 42U 600x1075mm Advanced Pallet Rack	1	H6J67A	\$1,325	1	\$1,325	
HPE Basic 3Ph 11kVA/60309 16A/230V Outlets C13 C19/Vertical INTL PDU	1	H5M72A	\$329	1	\$329	
			<b>Subtotal</b>		<b>\$236,445</b>	<b>\$2,719</b>
<b>Storage</b>						
HPE Smart Array P408i-a SR Gen10 12G SAS Modular Controller	1	804331-B21	\$699	1	\$699	
HPE 800GB SAS 12G Mixed Use SFF BC S5540 SSD	1	P40573-B21	\$1,697	2	\$3,394	
HPE 3.2TB SAS 12G Mixed Use SFF BC PM1645a SSD	1	P40562-B21	\$4,907	4	\$19,628	
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM6 SSD	1	P40493-B21	\$3,016	12	\$36,192	
HPE DL38X Gen10 Plus 8NVMe CPU1/2 Cable Kit	1	P22829-B21	\$74	2	\$148	
HPE ProLiant DL380 Gen10 Plus 4-port 8NVMe SlimSAS Secondary Riser Kit	1	P35417-B21	\$535	1	\$535	
HPE DL38X Gen10 Plus Maximum Performance Fan Kit	1	P14608-B21	\$274	1	\$274	
HPE ProLiant DL300 Gen10 Plus 2U 8SFF x4 Tri-Mode 24G U.3 BC Drive Cage	1	P26931-B21	\$425	2	\$850	
			<b>Subtotal</b>		<b>\$61,720</b>	<b>\$0</b>
<b>Other</b>						
HP 21.5-Inch Screen LED-Lit Monitor Black	3	V9E67AA#AB,	\$152	3	\$456	
			<b>Subtotal</b>		<b>\$456</b>	<b>\$0</b>
<b>Server Software</b>						
SQL Server 2019 Enterprise Edition (2 core license)	2	NA	\$13,748.00	16	\$219,968	Included
Microsoft Problem Resolution Services	2	NA	\$259.00	1		\$259.00
Windows Server 2022 Standard Edition	2	NA	\$180	16	\$2,880	
			<b>Subtotal</b>		<b>\$222,848</b>	<b>\$259</b>
<b>Total Extended Price</b>					\$521,013	\$2,978
<b>Total Discounts</b>					\$104,357	\$951
<b>Price Key: 1 - HPE , 2 - Microsoft. 3 - Hewlett Packard Inc. Audited by Doug Johnson of InfoSizing (www.sizing.com)</b>					<b>Grand Total</b>	<b>\$417,112</b>
All discounts are based on US list prices and for similar quantities and configurations. A <b>35% discount</b> 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>\$419,139</b>
					<b>QpH @ 3000GB:</b>	<b>956,701.40</b>
					<b>\$ USD/kQpH @ 10000GB</b>	<b>\$438.11</b>



**Hewlett Packard  
Enterprise**

## HPE ProLiant DL380 Gen10 Plus

TPC-H Rev. 3.0  
TPC Pricing Rev. 2.7.0

Report Date:  
May 29, 2021

### Numerical Quantities

#### Measurement Results

Database Scale Factor	10,000
Total Data Storage / Database Size	3.13
Percentage Memory / Database Size	41.0%
Start of Database Load	2021-04-26 11:10:51
End of Database Load	2021-04-27 06:14:43
Database Load Time	00d 17h 31m 45s
Query Streams for Throughput Test	9
TPC-H Power	1,215,599.7
TPC-H Throughput	752,943.2
TPC-H Composite Query-per-Hour (QphH@10,000GB)	956,701.4
Total System Price over 3 Years (\$ USD)	\$419,139
TPC-H Price/Performance Metric (\$ USD / kQphH@10,000GB)	\$438.11

#### Measurement Interval

Measurement Interval in Throughput Test 9,466.85 seconds

#### Duration of Stream Execution

Power Run	Seed	Query Start Time	Total Time	RF1 Start Time	RF2 Start Time
		Query End Time	(hh:mm:ss)	RF1 End Time	RF2 End Time
	427061443	2021-04-27 13:21:23	00:16:57	2021-04-27 13:19:29	2021-04-27 13:38:20
		2021-04-27 13:38:20		2021-04-27 13:21:23	2021-04-27 13:42:40
Throughput Stream	Seed	Query Start Time	Total Time	RF1 Start Time	RF2 Start Time
		Query End Time	(hh:mm:ss)	RF1 End Time	RF2 End Time
1	427061444	2021-04-27 13:42:39	02:29:34	2021-04-27 13:42:39	2021-04-27 13:45:56
		2021-04-27 16:12:13		2021-04-27 13:45:56	2021-04-27 13:57:22
2	427061445	2021-04-27 13:42:39	02:35:54	2021-04-27 13:57:22	2021-04-27 14:00:50
		2021-04-27 16:18:33		2021-04-27 14:00:50	2021-04-27 14:14:48
3	427061446	2021-04-27 13:42:40	02:37:47	2021-04-27 14:14:48	2021-04-27 14:18:00
		2021-04-27 16:20:27		2021-04-27 14:18:00	2021-04-27 14:30:42
4	427061447	2021-04-27 13:42:40	02:20:00	2021-04-27 14:30:42	2021-04-27 14:33:50
		2021-04-27 16:02:40		2021-04-27 14:33:50	2021-04-27 14:46:23
5	427061448	2021-04-27 13:42:40	02:36:51	2021-04-27 14:46:24	2021-04-27 14:49:36
		2021-04-27 16:19:31		2021-04-27 14:49:36	2021-04-27 15:04:25
6	427061449	2021-04-27 13:42:40	02:21:51	2021-04-27 15:04:25	2021-04-27 15:07:41
		2021-04-27 16:04:31		2021-04-27 15:07:41	2021-04-27 15:20:30
7	427061450	2021-04-27 13:42:40	02:36:02	2021-04-27 15:20:30	2021-04-27 15:23:52
		2021-04-27 16:18:42		2021-04-27 15:23:52	2021-04-27 15:37:59
8	427061451	2021-04-27 13:42:40	02:36:54	2021-04-27 15:37:59	2021-04-27 15:41:42
		2021-04-27 16:19:34		2021-04-27 15:41:42	2021-04-27 15:54:51
9	427061452	2021-04-27 13:42:40	02:28:45	2021-04-27 15:54:51	2021-04-27 15:58:10
		2021-04-27 16:11:25		2021-04-27 15:58:10	2021-04-27 16:11:30

**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	Stream 9	QI Min	QI Avg	QI Max
Q1	27.19	287.5	278.97	281.63	429.71	268.91	544.58	314.86	220.77	277.94	27.19	293.21	544.58
Q2	5.13	56.13	53.83	54.33	24.99	46.55	55.08	91.55	83.53	49.17	5.13	52.03	91.55
Q3	32.99	662.1	511.83	37.42	464.3	449.49	250.74	739.38	374.39	192.72	32.99	371.54	739.38
Q4	37.03	248.85	368.16	399.18	278.28	600.04	270.36	408.52	254.88	602.3	37.03	346.76	602.3
Q5	44.39	483.11	856.07	438.36	364.33	382.27	621.07	521.85	310.99	360.1	44.39	438.25	856.07
Q6	1.7	14.89	7.39	18.69	9.02	15.52	9.86	5.92	32.83	22.86	1.7	13.87	32.83
Q7	27.61	193.77	357.83	372.74	293.36	299.03	329.24	202.89	329.94	319.55	27.61	272.6	372.74
Q8	38.55	391.33	398.53	354.85	490.83	398.94	383.61	383.03	502.18	354.36	38.55	369.62	502.18
Q9	118.41	836.27	811.49	1,365.86	617.55	506.05	643.38	1,492.01	995.21	799.96	118.41	818.62	1,492.01
Q10	17.45	379.52	467	187.88	285.25	134.02	162.49	97.02	848.96	460.33	17.45	303.99	848.96
Q11	47.78	117.95	102.61	129.63	114.14	119.36	125.33	150	64.75	176.3	47.78	114.79	176.3
Q12	13.16	178.08	295.31	16.19	124.19	480.29	467.24	81.53	583.19	137.7	13.16	237.69	583.19
Q13	201	1,939.95	1,236.28	1,331.96	1,620.19	1,926.16	1,467.84	1,615.79	1,365.45	1,523.83	201	1,422.85	1,939.95
Q14	10.47	74.16	72.17	63.27	46.52	77.85	94.56	45.03	89.67	55.8	10.47	62.95	94.56
Q15	7.28	61.02	75.64	74.81	70.13	66.06	81.86	38.63	58.08	79.49	7.28	61.3	81.86
Q16	17.86	100.75	177.13	34.78	146.6	158.19	257.67	99.13	133.38	131.97	17.86	125.75	257.67
Q17	18.91	285.31	238.55	550.05	186.13	200.3	250.1	303.49	246.85	220.27	18.91	250	550.05
Q18	175.63	1,057.91	1,767.73	1,804.06	1,205.48	1,658.58	1,161.06	1,532.26	1,373.65	1,083.01	175.63	1,281.94	1,804.06
Q19	7.83	93.78	117.16	233.49	178.47	87.91	91.74	113.16	82	289.27	7.83	129.48	289.27
Q20	17.94	125.92	143.03	186.3	152.78	137.2	165	182.33	141.69	170.13	17.94	142.23	186.3
Q21	122.95	1,186.37	777.58	1,373.81	1,067.89	1,186.04	919.57	732.77	1,141.38	1,447.54	122.95	995.59	1,447.54
Q22	25.09	197.99	238.63	157.5	229.75	211.41	157.94	210.66	179.42	169.81	25.09	177.82	238.63
RF1	113.74	195.83	207.88	191.02	188.19	192.02	195.42	202.16	222.42	199.35	113.74	190.8	222.42
RF2	260.1	685.41	838.56	762.23	753.27	889.43	769.04	846.65	788.94	799.98	260.1	739.36	889.43