



Dell PowerEdge R6525 using Exasol 7.1

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

Report Date
June 1, 2021

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$ 3,987,888

22,297,225.0
QphH@100000GB

\$ 178.86
\$ / kQphH@100000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

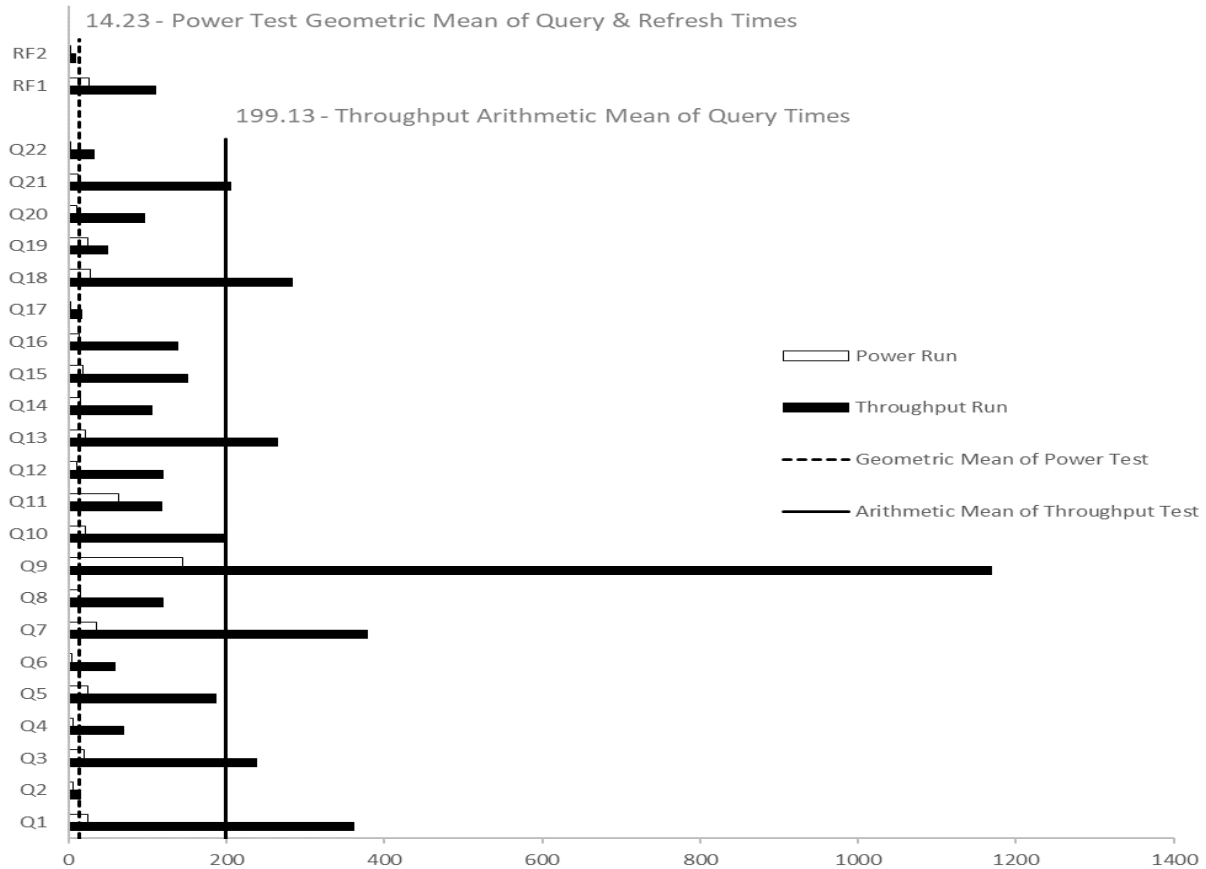
100,000GB

Exasol 7.1

**Ubuntu 20.04.2
LTS**

None

July 1, 2021



Database Load Time = 00d 09h 30m 55s
 Load Includes Backup: N
 Total Data Storage / Database Size = 1.37
 Memory to Database Size Percentage = 41.0%

Storage Redundancy Levels:

Base Tables	Level Zero
Auxiliary Data Structures	Level Zero
DBMS Temporary Space	Level Zero
OS and DBMS Software	Level One

System Configuration:

20 x Dell PowerEdge R6525 Server, each with:
 2048 GB RAM
 2 x AMD EPYC 7543 32-Core Processor (64 threads)
 2 x 480 GB SSD SATA drives
 2 x 3200 GB (3.2TB) NVMe drives

Total Storage: 137,091 GiB



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Description	Part	Key	Unit Price	Qty	Ext. Price \$	3 Yr. Maint. Price \$
SERVER COMPONENTS						
PowerEdge R6525 Server						
2.5 Chassis	379-BDTF	1	113,443.21	20	2,268,864.20	
SAS/SATA/NVMe Capable Backplane	379-BDSW	1		20		
PowerEdge R6525 Server	210-ATCF	1		20		
Trusted Platform Module 2.0	461-AAGY	1		20		
Chassis with up to 10 x 2.5" Hot Plug Hard Drives, + 2 Rear NVMe Drives (2CPU & XGMI)	321-BFNL	1		20		
AMD 7543 2.8GHz,32C/64T,256M,225W,3200	338-BZRQ	1		20		
AMD 7543 2.8GHz,32C/64T,256M,225W,3200	338-BZRU	1		20		
Additional Processor Selected	379-BDCO	1		20		
Heatsink for 1st CPU, greater than or equal to 180W (R6525)	412-AASH	1		20		
Heatsink for 2nd CPU, greater than or equal to 180W (R6525)	412-AASJ	1		20		
Performance Optimized	370-AAIP	1		20		
3200MT/s RDIMMs	370-AEVR	1		20		
No RAID	780-BCDI	1		20		
PERC H345 Controller, Front	405-AAUW	1		20		
Front PERC Mechanical Parts, rear load	750-ACFQ	1		20		
Performance BIOS Settings	384-BBBL	1		20		
UEFI BIOS Boot Mode with GPT Partition	800-BBDM	1		20		
Very High Performance Fan for 10 x 2.5" or 10 x 2.5" + 2 x 2.5" chassis	384-BCGH	1		20		
Dual, Hot-plug, Redundant Power Supply (1+1), 1400W	450-AIQZ	1		20		
Riser Config 5, 1 x 16 LP PCIe slot (CPU2)	330-BBNV	1		20		
R6525 MB,w2x1Gb LOM(BCM5720)MLK	384-BCUO	1		20		
iDRAC9,Enterprise 15G	385-BBOT	1		20		
Mellanox ConnectX-5 Dual Port 10/25GbE SFP28, OCP NIC 3.0	540-BCOF	1		20		
LCD Bezel	325-BCHG	1		20		
Dell EMC Luggage Tag (x8 or x10 chassis)	350-BBXP	1		20		
No Quick Sync	350-BBXM	1		20		
iDRAC,Legacy Password	379-BCSG	1		20		
iDRAC Group Manager, Enabled	379-BCQV	1		20		
ReadyRails Sliding Rails	770-BDMS	1		20		
BOSS Blank	403-BCID	1		20		
No Systems Documentation, No OpenManage DVD Kit	631-AACK	1		20		
PowerEdge R6525 Shipping NBIS	340-COGR	1		20		
PowerEdge R6525 Shipping Material for x4/10 Chassis	340-COXQ	1		20		
PowerEdge R6525, No CE or CCC Marking	389-DTIP	1		20		
US Order	332-1286	1		20		
Basic Next Business Day 36 Months	709-BBFM	1		20		
Prosupport Plus and 4Hr Mission Critical Initial, 36 Month(s)	865-BBNF	1		20		
On-Site Installation Declined	900-9997	1		20		
64GB RDIMM, 3200MT/s, Dual Rank	370-AEVP	1		640		
480GB SSD SATA Mix Use 6Gbps 512 2.5in Hot-plug AG Drive, 3 DWPD, 2628 TBW	400-AZUT	1		40		
3.2TB Enterprise NVMe Mixed Use AG Drive U.2 Gen4 Flex Bay	400-BKGB	1		40		
Power Cord - C13, 3M, 125V, 15A (North America, Guam, North Marianas, Philippines, Samoa, Vietnam)	450-AALV	1		40		
Mellanox ConnectX-5 EX Dual Port 40/100GbE QSFP28 Adapter, PCIe Low Profile	540-BCIX	1		20		
GCP Operations Management	929-8509	1		20		
Mellanox® Passive Copper cable, ETH 100GbE, 100Gb/s, QSFP28, 2m, Black, 30AWG, CA-N	AA319963	1	96.67	42	4,060.14	
APC NetShelter SX Deep Enclosure - Rack - cabinet - black - 24U - 19-inch	A7522217	1	1,129.99	1	1,129.99	
APC Basic Rack PDU AP9567 - 0U - 120V NEMA 5-15 Input / (14) NEMA 5-15 Output	A7541364	1	189.99	1	189.99	
ASUS VE248Q 24 Inch LED monitor - Widescreen Full HD Monitor	A6732050	1	136.99	3	410.97	
Logitech MK200 Media Keyboard and Mouse Combo	A6859396	1	24.99	3	74.97	

C2G 6ft Cat6 Snagless Unshielded (UTP) Ethernet Network Patch Cable - Black - patch cable - 6 ft - black	A7052140	1	5.99	22	\$131.78	
Dell C13 to C14, PDU Style, 250 V Power Cord, North America - 6.5 feet	450-ACHI	1	11.93	42	\$501.06	
32-port Mellanox Spectrum SN2700 - Switch - L3 - managed - 32 x 100 Gigabit QSFP28	A8628811	1	20,008.99	1	20,008.99	
Mellanox M-1 Global Support Gold Plus. 2hr committed TAC response (24x7). 3 years	A9878902	1	3,234.06	1		3,234.06
PowerSwitch S3048-ON		1	15,066.51	1	15,066.51	
Dell Networking S3048-ON, 48x 1GbE, 4x SFP+ 10GbE ports, Stacking, IO to PSU air, 1x AC PSU, DNOS 9	210-AEDM	1		1		
ProSupport Plus: Mission Critical 4-Hour 7x24 On-Site Service with Emergency Dispatch, Initial Year	802-7419	1		1		
ProSupport Plus: 7x24 HW/SW Tech Support and Assistance, 3 Year	802-7434	1		1		
ProSupport Plus: Mission Critical 4-Hour 7x24 On-Site Service with Emergency Dispatch, 2 Year Extended	802-7435	1		1		
Hardware Subtotal					2,310,438.60	3,234.06
SOFTWARE						
Exasol 100TB License (monthly subscription)		2	69,000.00	36m	2,484,000.00	
Software Subtotal					2,484,000.00	
Total					4,794,438.60	3,234.06
Large Purchase Discount (35%)*					-808,653.51	-1,131.92

Three-Year Cost of Ownership: \$ 3,987,888
QphH@100000GB: 22,297,225.0
\$/kQphH@100000GB: \$ 178.86

Price Key: 1 DELL Waseem Raja
2 Exasol Gunther Schweer sales@exasol.com

* Discount applies to all line items where Key = 1. Discount based upon total system cost as purchased by a regular customer.

Audited by Doug Johnson of InfoSizing (www.sizing.com)

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 the TPC at pricing@tpc.org. Thank you.



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Numerical Quantities

Measurement Results

Database Scale Factor	100,000 GB
Total Data Storage / Database Size	1.37
Percentage Memory / Database Size	41.0%
Start of Database Load	2021-05-01 08:45:49
End of Database Load	2021-05-01 18:16:44
Database Load Time	00d 09h 30m 55s
Query Streams for Throughput Test	11
TPC-H Power	25,291,848.9
TPC-H Throughput	19,657,172.8
TPC-H Composite Query-per-Hour Metric (QphH@100000GB)	22,297,225.0
Total System Price Over 3 Years	\$3,987,888
TPC-H Price/ Performance Metric (\$/kQphH@100000GB)	\$178.86

Measurement Interval

Measurement Interval in Throughput Test (Ts)	4,431.97 seconds
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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
	501181644	2021-05-01 18:17:16	00:08:47	2021-05-01 18:16:51	2021-05-01 18:26:03
		2021-05-01 18:26:03		2021-05-01 18:17:16	2021-05-01 18:26:05
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	501181645	2021-05-01 18:26:04	01:13:18	2021-05-01 18:26:04	2021-05-01 18:27:11
		2021-05-01 19:39:22		2021-05-01 18:27:11	2021-05-01 18:27:19
2	501181646	2021-05-01 18:26:04	01:13:00	2021-05-01 18:27:19	2021-05-01 18:28:48
		2021-05-01 19:39:04		2021-05-01 18:28:48	2021-05-01 18:28:55
3	501181647	2021-05-01 18:26:05	01:13:04	2021-05-01 18:28:55	2021-05-01 18:30:32
		2021-05-01 19:39:09		2021-05-01 18:30:32	2021-05-01 18:30:38
4	501181648	2021-05-01 18:26:04	01:13:04	2021-05-01 18:30:38	2021-05-01 18:32:24
		2021-05-01 19:39:08		2021-05-01 18:32:24	2021-05-01 18:32:30
5	501181649	2021-05-01 18:26:04	01:13:00	2021-05-01 18:32:30	2021-05-01 18:34:01
		2021-05-01 19:39:04		2021-05-01 18:34:01	2021-05-01 18:34:10
6	501181650	2021-05-01 18:26:04	01:12:44	2021-05-01 18:34:10	2021-05-01 18:36:00
		2021-05-01 19:38:48		2021-05-01 18:36:00	2021-05-01 18:36:09
7	501181651	2021-05-01 18:26:05	01:12:21	2021-05-01 18:36:09	2021-05-01 18:38:01
		2021-05-01 19:38:26		2021-05-01 18:38:01	2021-05-01 18:38:11
8	501181652	2021-05-01 18:26:04	01:13:53	2021-05-01 18:38:11	2021-05-01 18:40:16
		2021-05-01 19:39:57		2021-05-01 18:40:16	2021-05-01 18:40:27
9	501181653	2021-05-01 18:26:05	01:13:01	2021-05-01 18:40:27	2021-05-01 18:42:33
		2021-05-01 19:39:06		2021-05-01 18:42:33	2021-05-01 18:42:44
10	501181654	2021-05-01 18:26:04	01:12:53	2021-05-01 18:42:44	2021-05-01 18:45:03
		2021-05-01 19:38:57		2021-05-01 18:45:03	2021-05-01 18:45:12
11	501181655	2021-05-01 18:26:05	01:13:04	2021-05-01 18:45:12	2021-05-01 18:47:42
		2021-05-01 19:39:09		2021-05-01 18:47:42	2021-05-01 18:47:52



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TPC-H Timing Intervals (in seconds)

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	24.31	5.79	19.52	5.61	25.04	4.26	35.77	15.50	144.92	21.17	62.96	9.97
1	249.38	15.63	216.75	5.80	181.26	73.45	391.01	128.20	1,209.35	215.21	130.28	147.40
2	379.80	15.52	243.88	76.02	213.67	53.50	403.29	142.76	1,092.36	172.51	126.19	116.91
3	361.61	14.60	216.51	65.48	154.34	63.95	327.08	125.19	1,215.06	197.96	122.08	108.80
4	384.52	14.19	222.90	80.72	178.75	60.12	387.30	120.44	1,193.33	209.46	122.94	112.66
5	372.30	15.47	283.56	69.44	195.44	55.51	347.27	116.65	1,107.45	195.40	119.78	110.07
6	367.26	14.13	206.87	81.41	196.47	58.68	397.33	113.74	1,195.81	161.74	110.16	124.18
7	357.98	13.28	259.03	65.05	192.83	53.37	398.42	101.20	1,225.23	209.65	128.07	106.36
8	347.95	14.22	243.23	75.32	172.85	61.06	407.10	110.58	1,198.06	208.03	89.29	121.40
9	412.86	13.81	217.34	91.95	165.31	64.59	402.29	125.90	1,146.71	227.06	123.50	112.01
10	372.07	13.02	254.52	74.82	175.61	53.86	372.26	99.00	1,132.95	227.27	107.10	115.76
11	368.37	14.56	259.66	82.95	231.14	54.97	326.63	136.61	1,141.21	191.60	127.42	139.56
Qi Min	24.31	5.79	19.52	5.61	25.04	4.26	35.77	15.50	144.92	21.17	62.96	9.97
Qi Avg	333.20	13.69	220.31	64.55	173.56	54.78	349.65	111.31	1,083.54	186.42	114.15	110.42
Qi Max	412.86	15.63	283.56	91.95	231.14	73.45	407.10	142.76	1,225.23	227.27	130.28	147.40

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	21.56	15.93	18.78	14.28	2.78	28.23	23.84	10.19	12.57	2.41	25.61	2.00
1	281.90	117.38	175.89	175.05	19.24	258.77	51.04	115.84	210.38	28.10	66.62	7.86
2	259.38	102.15	162.73	119.20	17.74	311.14	42.51	100.72	195.06	32.01	89.30	6.35
3	271.37	121.58	155.49	132.00	12.55	313.76	48.57	104.45	216.31	33.96	97.15	6.49
4	264.04	89.26	148.82	136.87	13.43	306.33	45.72	78.92	180.98	30.95	105.48	5.88
5	294.42	110.09	136.84	139.95	17.66	310.08	40.28	99.87	207.01	33.97	91.57	8.37
6	240.33	102.22	151.43	141.58	14.62	311.94	48.86	90.82	201.35	32.30	110.36	8.96
7	262.20	105.59	127.17	142.17	15.20	234.83	43.51	87.77	180.94	30.29	111.81	10.09
8	267.68	108.65	146.88	131.58	16.57	302.97	70.30	102.08	202.91	32.55	125.09	11.06
9	213.55	102.18	164.66	123.26	16.92	290.61	48.29	84.09	196.61	36.19	125.57	11.06
10	287.18	114.21	143.29	140.66	17.22	238.54	47.79	102.23	252.98	29.15	139.32	9.28
11	272.23	95.87	148.78	139.94	18.42	231.68	49.21	97.17	221.13	34.00	149.12	10.01
Qi Min	21.56	15.93	18.78	14.28	2.78	28.23	23.84	10.19	12.57	2.41	25.61	2.00
Qi Avg	244.65	98.76	140.06	128.05	15.20	261.57	46.66	89.51	189.85	29.66	103.08	8.12
Qi Max	294.42	121.58	175.89	175.05	19.24	313.76	70.30	115.84	252.98	36.19	149.12	11.06