



Cisco UCS C460 M4 Server

TPC-H Rev. 2.17.1
 TPC-Pricing Rev. 2.0.0

Report Date: 16-May-2016

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$634,322 USD

1,071,018.2
 QphH@3000GB

\$0.60 USD
 \$ / QphH@3000GB

Database Size

Database Manager

Operating System

Other Software

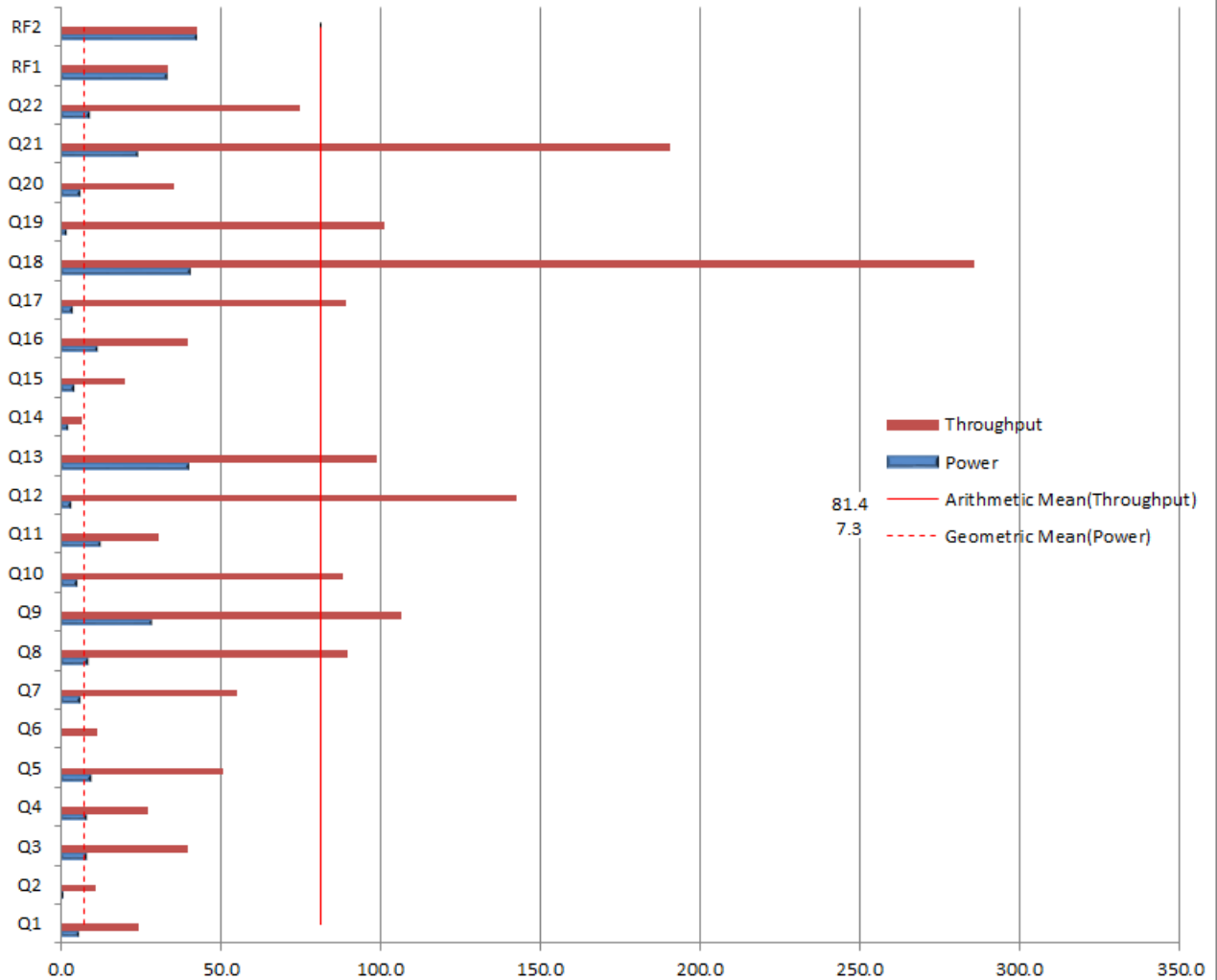
Availability Date

3000GB

Microsoft SQL Server 2016 Enterprise Edition

Windows 2012 R2 Standard Edition

1-June-2016



Database Load Time = 1h 56m 26s

Storage Redundancy Level

Load Includes Backup: Y

Base Tables and Auxiliary Data Structures

0

Total Data Storage / Database Size = 2.99

DBMS Temporary Space

0

Percentage Memory / Database Size = 102.4%

OS and DBMS Software

1

System Configuration: Cisco UCS C460 M4 Server

Processors/Cores/Threads/Model: 4/72/144 Intel Xeon E7-8890 v3 Processor (2.5 GHz, 45MB cache, 165W)

Memory: 3 TB

Storage: 8 X 400GB 2.5 inch Ent Performance 12G SAS SSD (10X endurance)

4 X UCS Rack PCIe Storage 1600 GB SanDisk SX350 Medium Endurance

Table Storage: 9.38 TB

Cisco	Cisco UCS C460 M4 Server				TPC-H Rev. 2.17.1 TPC-Pricing Rev. 2.0.0		
					Report Date: 16-May-2016		
Description	Part Number	Brand	Source	Unit Price	Qty	Extended Price	3 Year Maint. Price
Server Hardware							
UCS C460 M4 base chassis w/o CPU/DIMM/HDD	UCSC-C460-M4	Cisco	1	16,500.00	1	\$16,500.00	
3YR SNTC 24X7X40S UCS C460 M4 Server	CON-OSP-C460M4	Cisco	1	3,487.00	1		\$3,487.00
2.5GHz E7-8890 v3/165W/18C/45M Cache	UCSC-CPU-E78890D	Cisco	1	21,000.00	4	\$84,000.00	
32GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCSC-MR-1X322RU-G	Cisco	1	1,100.00	96	\$105,600.00	
UCS C460 M4 DDR4 Memory Riser with 12 DIMM slots	UCSC-MRBD2-12	Cisco	1	800.00	8	\$6,400.00	
Riser card with 5 PCIe slots	UCSC-PCIE-RSR-05	Cisco	1	500.00	2	\$1,000.00	
400GB 2.5 inch Ent Performance 12G SAS SSD (10X endurance)	UCSC-SD400G12S4-EP	Cisco	1	5,267.00	8	\$42,136.00	
1400W V2 AC Power Supply (200 - 240V) 2U & 4U C Series	UCSC-PSU2V2-1400W	Cisco	1	800.00	4	\$3,200.00	
Power Cord, 200/240V 6A North America	CAB-N5K6A-NA	Cisco	1	0.00	4	\$0.00	
Full Height PCIe slot filler for C Series	UCSC-PCIE-FLR-F	Cisco	1	0.00	6	\$0.00	
Bracket and Supercap cable for C460 M4 and 12 drive RAID	UCSC-BRCKT2-C460	Cisco	1	0.00	1	\$0.00	
CPU Heat Sink for UCS C460 M4 Rack Server	UCSC-HS-01-EX	Cisco	1	0.00	4	\$0.00	
Rail Kit for UCS C460 M4	UCSC-RAIL-4U	Cisco	1	0.00	1	\$0.00	
Cisco 12G SAS Modular Raid Controller (12 port)	UCSC-MRAIDC460	Cisco	1	1,688.00	1	\$1,688.00	
Cisco 12Gbps SAS 1GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-1GB	Cisco	1	1,217.00	1	\$1,217.00	
Cisco ONE Data Center Compute Opt Out Option	CIUCS-OPT-OUT	Cisco	1	0.00	1	\$0.00	
UCS 2.5 inch HDD blanking panel	N20-BBLKD	Cisco	1	0.00	4	\$0.00	
UCS Rack PCIe Storage 1600GB SanDisk SX350 Medium Endurance	UCSC-F-S16002	Cisco	1	18,133.00	4	\$72,532.00	
Cisco R42610 standard rack, w/side panels	RACK-UCS2	Cisco	1	3,429.00	1	\$3,429.00	
IOGEARGKM513 Spill Proof Keyboard & Mouse Combo	GKM513	Provantage	3	15.91	1	\$15.91	
ASUS 19.5" VS207D-P Widescreen LED 1600x900 VGA	VS207D-P	Provantage	3	87.71	1	\$87.71	
						Subtotal	\$337,806 \$3,487.00
	57% for hardware and 35% for services	Cisco	1				-\$192,490 -\$1,220.45
Large Purchase Discount ¹						Hardware Subtotal	\$145,315 \$2,266.55
Software							
SQL Server 2016 Enterprise Edition	NA	Microsoft	2	13,472.50	36	\$485,010.00	
Windows Server 2012 R2 Standard Edition 2 Processor License	NA	Microsoft	2	735.00	2	\$1,470.00	
Microsoft Problem Resolution Services	NA	Microsoft	2	259.00	1		\$259.00
						Software Subtotal	\$486,480.00 \$259.00
						Total	\$631,795.48 \$2,525.55
Pricing: 1=Cisco 2=Microsoft 3=Provantage;						Three-Year Cost of Ownership: \$634,322 USD	
Audited by Francois Raab from InfoSizing, Inc. (sizing.com)							
All discounts are based on US list prices and for similar quantities and configurations. The discounts are based on the overall specific components pricing from respective vendors 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: 1,071,018.2	
						\$ / QphH: \$0.60 USD	
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.							

Cisco**Cisco UCS C460 M4 Server**
TPC-H Rev. 2.17.1
TPC-Pricing Rev. 2.0.0
Report Date: 16-May-2016
Measurement Results

Database Scaling (SF/Size)	3,000
Total Data Storage/Database Size	2.99
Percentage Memory/Database Size	102.4
Start of Database Load Time	05/03/2016 22:46:50
End of Database Load Time	05/04/2016 01:18:30
Database Load Time	00d 01h 56m 26s
Query Streams for Throughput Test (S)	8
TPC-H Power	1,488,162.5
TPC-H Throughput	770,802.9
TPC-H Composite	1,071,018.2
Total System Price Over 3 Years	\$634,322
TPC-H Price/Performance Metric (\$/QpH@3000GB)	\$0.60

Measurement Interval

Measurement Interval in Throughput Test (Ts)	2,466
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Duration of stream execution:

Power Run	Seed	Query Start Time	Duration	RF1 Start Time	RF2 Start Time
		Query End Time	(sec)	RF1 End Time	RF2 End Time
	504011830	2016-05-04 02:05:28	238	2016-05-04 02:04:54	2016-05-04 02:09:26
		2016-05-04 02:09:26		2016-05-04 02:05:27	2016-05-04 02:10:08

Throughput Stream	Seed	Query Start Time	Duration	RF1 Start Time	RF2 Start Time
		Query End Time	(sec)	RF1 End Time	RF2 End Time
1	504011831	2016-05-04 02:10:07	1,760	2016-05-04 02:41:00	2016-05-04 02:41:33
		2016-05-04 02:39:27		2016-05-04 02:41:33	2016-05-04 02:42:13
2	504011832	2016-05-04 02:10:07	1,775	2016-05-04 02:42:14	2016-05-04 02:42:47
		2016-05-04 02:39:42		2016-05-04 02:42:47	2016-05-04 02:43:26
3	504011833	2016-05-04 02:10:08	1,845	2016-05-04 02:43:27	2016-05-04 02:44:00
		2016-05-04 02:40:53		2016-05-04 02:44:00	2016-05-04 02:44:41
4	504011834	2016-05-04 02:10:08	1,616	2016-05-04 02:44:42	2016-05-04 02:45:14
		2016-05-04 02:37:04		2016-05-04 02:45:14	2016-05-04 02:45:55
5	504011835	2016-05-04 02:10:08	1,825	2016-05-04 02:45:56	2016-05-04 02:46:27
		2016-05-04 02:40:33		2016-05-04 02:46:27	2016-05-04 02:47:09
6	504011836	2016-05-04 02:10:08	1,832	2016-05-04 02:47:09	2016-05-04 02:47:43
		2016-05-04 02:40:40		2016-05-04 02:47:43	2016-05-04 02:48:29
7	504011837	2016-05-04 02:10:08	1,835	2016-05-04 02:48:29	2016-05-04 02:49:06
		2016-05-04 02:40:43		2016-05-04 02:49:05	2016-05-04 02:49:51
8	504011838	2016-05-04 02:10:08	1,853	2016-05-04 02:49:51	2016-05-04 02:50:27
		2016-05-04 02:41:01		2016-05-04 02:50:27	2016-05-04 02:51:13

Cisco**Cisco UCS C460 M4
Server****TPC-H Rev. 2.17.1
TPC-Pricing Rev. 2.0.0****Report Date: 16-May-2016****TPC-H Timing Intervals (in seconds)**

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	5.7	1.0	8.0	8.1	9.3	0.3	6.1	8.3	28.4	5.3	12.1	3.1
1	23.2	17.1	25.4	25.5	60.2	12.8	86.6	97.9	74.5	124.3	36.9	211.5
2	10.6	9.5	18.8	19.0	28.5	0.7	47.3	73.5	90.2	142.1	24.3	202.0
3	112.2	13.5	9.3	13.3	22.7	17.8	32.0	71.2	208.9	110.1	46.4	71.6
4	10.8	5.7	44.9	41.8	73.5	1.2	25.9	16.4	54.3	76.0	34.4	108.0
5	27.2	14.1	110.9	23.0	67.9	15.6	39.9	154.4	42.7	13.5	40.5	141.9
6	9.4	14.6	18.0	62.0	85.9	20.1	159.3	49.8	121.9	107.2	32.1	249.4
7	7.5	11.0	90.9	21.4	46.1	15.6	77.3	170.9	234.7	85.1	29.2	94.6
8	11.5	11.8	32.0	28.8	64.7	18.6	22.5	165.2	104.1	129.4	18.1	198.8
Minimum	5.7	1.0	8.0	8.1	9.3	0.3	6.1	8.3	28.4	5.3	12.1	3.1
Average	24.2	10.9	39.8	27.0	51.0	11.4	55.2	89.7	106.6	88.1	30.4	142.3
Maximum	112.2	17.1	110.9	62.0	85.9	20.1	159.3	170.9	234.7	142.1	46.4	249.4

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	39.8	2.0	4.0	11.6	3.7	40.2	1.6	6.0	23.8	8.8	33.1	42.3
1	92.2	10.3	17.0	26.5	20.8	326.9	65.3	28.2	266.3	109.4	32.4	40.0
2	109.4	4.2	23.2	34.2	107.9	352.6	132.0	23.6	230.4	89.1	33.1	39.7
3	108.7	6.2	22.4	34.9	136.1	313.1	100.8	45.5	241.4	106.1	33.4	41.1
4	141.4	8.5	30.0	28.9	118.6	407.2	135.2	31.8	145.2	75.9	32.4	41.2
5	139.4	7.8	17.5	57.5	137.0	309.7	128.7	40.1	232.9	62.4	31.5	41.8
6	52.6	8.5	21.6	56.1	130.2	283.9	94.6	51.2	112.0	90.4	33.5	46.4
7	142.9	7.9	16.7	48.2	26.7	316.5	135.7	35.0	138.8	81.4	36.1	45.3
8	64.0	4.9	25.8	59.6	119.8	222.7	119.0	58.0	322.9	49.5	36.1	45.1
Minimum	39.8	2.0	4.0	11.6	3.7	40.2	1.6	6.0	23.8	8.8	31.5	39.7
Average	98.9	6.7	19.8	39.7	89.0	285.9	101.4	35.5	190.4	74.8	33.5	42.5
Maximum	142.9	10.3	30.0	59.6	137.0	407.2	135.7	58.0	322.9	109.4	36.1	46.4