



Cisco UCS C460 M4 Server

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

Report Date: 13-Jul-2015

Total System Cost

Composite Query per Hour Metric

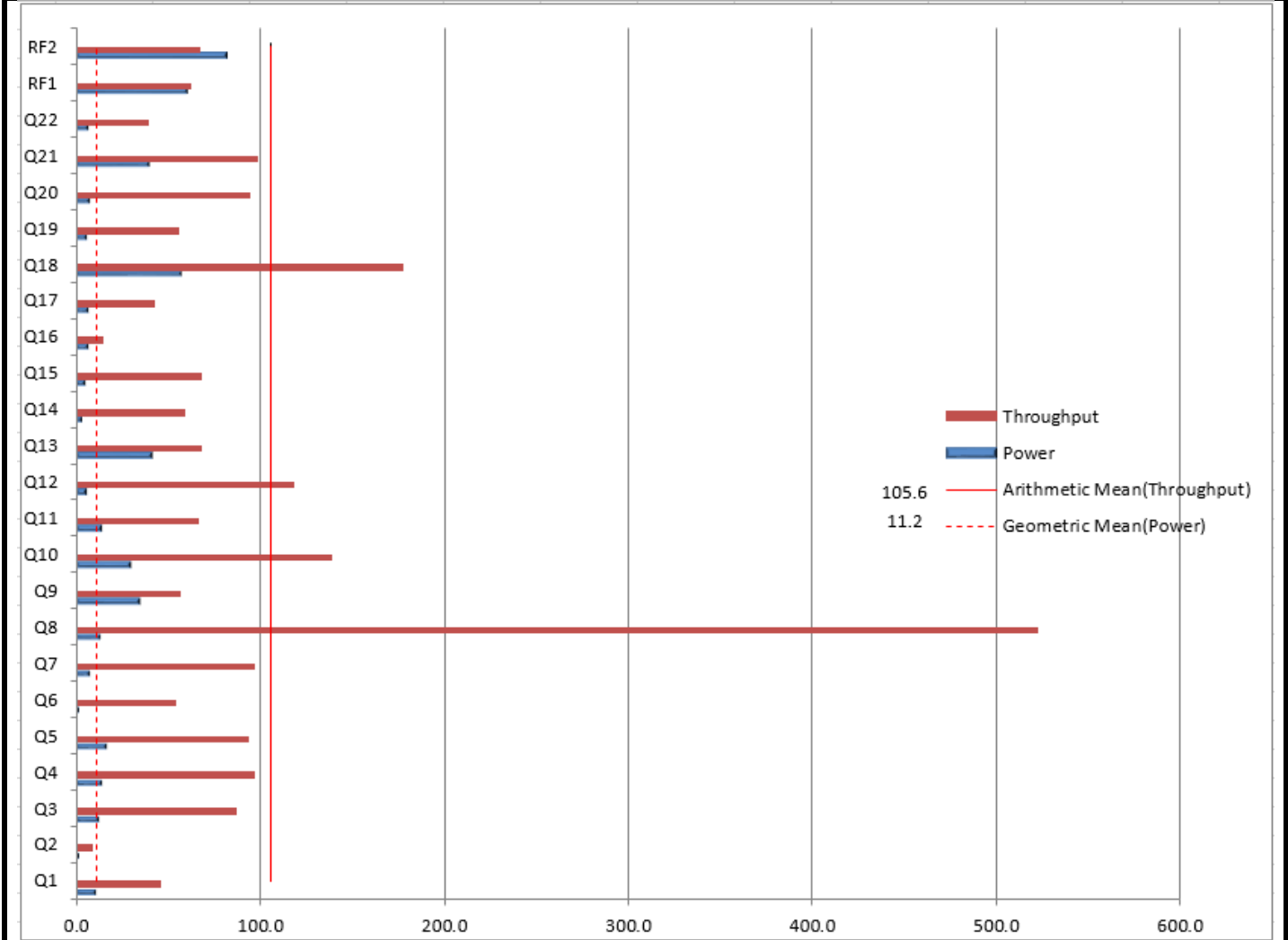
Price / Performance

\$781,536 USD

725,686.2
 QphH@3000GB

\$1.08 USD
 \$ / QphH@3000GB

Database Size	Database Manager	Operating System	Other Software	Availability Date
3000GB	Microsoft SQL Server 2014 Enterprise Edition	Windows 2012 R2 Standard Edition		13-Jul-2015



Database Load Time = 17h 44m 48s	Storage Redundancy Level	
Load Includes Backup: Y	Base Tables and Auxiliary Data Structures	0
Total Data Storage / Database Size = 6.85	DBMS Temporary Space	0
Percentage Memory / Database Size = 102%	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:	12 X 400GB 12Gb SAS 2.5 inch Enterprise performance SSD 6 X UCS 3200GB Fusion ioMemory3SX Scale line for C-Series cards
Table Storage:	24 TB

Cisco	Cisco UCS C460 M4 Server		TPC-H Rev. 2.17.1					
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Report Date: 13-JUL-2015								
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		16,500.00	1	\$16,500.00		
3YR SMARTNET 24X7X4UCS C460 M4 Server	CON-3SNTP-C460M4	Cisco		2,967.00	1		\$2,967.00	
2.5GHz E7-8890 v3/165W/18C/45M Cache	UCSC-CPU-E78890D	Cisco		21,000.00	4	\$84,000.00		
32GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v	UCSC-MR-1X322RU-G	Cisco		1,800.00	96	\$172,800.00		
UCS C460 M4 DDR4 Memory Riser with 12 DIMM slots	UCSC-MRBD2-12	Cisco		800.00	8	\$6,400.00		
Riser card with 5 PCIe slots	UCSC-PCIE-RSR-05	Cisco		500.00	2	\$1,000.00		
400GB 2.5 inch Enterprise performance 12G SAS SSD	UCS-SD400G12S2-EP	Cisco		6,299.00	12	\$75,588.00		
1400W V2 AC Power Supply for 2U & 4U C-Series Servers	UCSC-PSU2V2-1400W	Cisco		800.00	4	\$3,200.00		
Power Cord 200/240V 6A North America	CAB-N5K6A-NA	Cisco		0.00	4	\$0.00		
Full Height PCIe slot filler for C Series	UCSC-PCIE-FLR-F	Cisco		0.00	4	\$0.00		
Bracket and Supercap cable for C460 M4 and 12 drive RAID	UCSC-BRCKT2-C460	Cisco		0.00	1	\$0.00		
CPU Heat Sink for UCS C460 M4 Rack Server	UCSC-HS-01-EX	Cisco		0.00	4	\$0.00		
Rail Kit for UCS C460 M4	UCSC-RAIL-4U	Cisco		0.00	1	\$0.00		
Cisco 12G SAS Modular Raid Controller (12 port)	UCSC-MRAIDC460	Cisco		1,688.00	1	\$1,688.00		
Cisco 12Gbps SAS 1GB FBWC Cache module (Raid 0/1/5/6)	UCSC-MRAID12G-1GB	Cisco		1,217.00	1	\$1,217.00		
UCS 3200GB Fusion ioMemory3SX Scale line for C-Series	UCSC-F-FIO-3200SS	Cisco		49,200.00	6	\$295,200.00		
3YR SMARTNET 24X7X4 UCS 3200GB Fusion ioMemory3SX Scale	CON-3SNTP-FIOC32SS	Cisco		1,434.00	6		\$8,604.00	
Cisco ONE Data Center Compute Opt Out Option	C1UCS-OPT-OUT	Cisco		0.00	1	\$0.00		
Cisco R42610 standard rack w/side panels	RACK-UCS2	Cisco		3,429.00	1	\$3,429.00		
ONSITE 8XSXNBD Cisco R42610 expansion rack no side panel(36 months)	CON-OS-R42610	Cisco		267.00	6		\$1,602.00	
IOGEARGKM513 Spill Proof Keyboard & Mouse Combo	GKM513	Provantage		16.76	3	\$16.76		
ASUS 19.5" VS207D-P Widescreen LED 1600x900 VGA	VS207D-P	Provantage		88.59	3	\$88.59		
						Subtotal	\$661,127	\$13,173.00
Large Purchase Discount ¹	57% for hardware and 35% for services	Cisco			1	-\$376,843	-\$4,610.55	
						Hardware Subtotal	\$284,285	\$8,562.45
Software								
SQL Server 2014 Enterprise Edition	7JQ-00750	Microsoft		13,472.50	36	\$485,010.00		
Windows Server 2012 R2 Standard Edition 2 Processor License	P73-06284	Microsoft		735.00	2	\$1,470.00		
Windows Server 2012 R2 Client Access License	R18-04280	Microsoft		24.36	80	\$1,948.80		
Microsoft Problem Resolution Services	NA	Microsoft		259.00	2		\$259.00	
						Software Subtotal	\$488,428.80	\$259.00
						Total	\$772,713.56	\$8,821.45
Pricing: 1=Cisco 2=Microsoft 3=Provantage;						Three-Year Cost of Ownership: \$781,536 USD		
Audited by Francois Raab from InfoSizing, Inc. (sizing.com)						QpH: 725,686.2		
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.						\$/ QpH: \$1.08 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

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 Report Date: 13-Jul-2015

Measurement Results

Database Scaling (SF/Size)	3,000
Total Data Storage/Database Size	6.85
Percentage Memory/Database Size	102
Start of Database Load Time	07/03/2015 15:53:51
End of Database Load Time	07/04/2015 09:38:39
Database Load Time	00d 17h 44m 48s
Query Streams for Throughput Test (S)	8
TPC-H Power	961,093.5
TPC-H Throughput	547,938.9
TPC-H Composite	725,686.2
Total System Price Over 3 Years	\$781,536
TPC-H Price/Performance Metric (\$/QpH@3000GB)	\$1.08

Measurement Interval

Measurement Interval in Throughput Test (Ts)	3,469
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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
	704093839	2015-07-04 10:50:06	334	2015-07-04 10:49:06	2015-07-04 10:55:39
		2015-07-04 10:55:40		2015-07-04 10:50:07	2015-07-04 10:57:01

Throughput Stream	Seed	Query Start Time	Duration	RF1 Start Time	RF2 Start Time
		Query End Time	(sec)	RF1 End Time	RF2 End Time
1	704093840	2015-07-04 10:57:00	2,281	2015-07-04 11:37:40	2015-07-04 11:38:44
		2015-07-04 11:35:01		2015-07-04 11:38:44	2015-07-04 11:39:51
2	704093841	2015-07-04 10:57:00	2,401	2015-07-04 11:39:51	2015-07-04 11:40:57
		2015-07-04 11:37:01		2015-07-04 11:40:57	2015-07-04 11:42:01
3	704093842	2015-07-04 10:57:00	2,232	2015-07-04 11:42:01	2015-07-04 11:43:02
		2015-07-04 11:34:12		2015-07-04 11:43:02	2015-07-04 11:44:08
4	704093843	2015-07-04 10:57:00	2,339	2015-07-04 11:44:08	2015-07-04 11:45:08
		2015-07-04 11:35:59		2015-07-04 11:45:08	2015-07-04 11:46:06
5	704093844	2015-07-04 10:57:01	2,359	2015-07-04 11:46:07	2015-07-04 11:47:06
		2015-07-04 11:36:20		2015-07-04 11:47:06	2015-07-04 11:48:17
6	704093845	2015-07-04 10:57:01	2,439	2015-07-04 11:48:17	2015-07-04 11:49:17
		2015-07-04 11:37:40		2015-07-04 11:49:17	2015-07-04 11:50:22
7	704093846	2015-07-04 10:57:01	2,222	2015-07-04 11:50:22	2015-07-04 11:51:23
		2015-07-04 11:34:03		2015-07-04 11:51:23	2015-07-04 11:52:29
8	704093847	2015-07-04 10:57:01	2,321	2015-07-04 11:52:30	2015-07-04 11:53:43
		2015-07-04 11:35:42		2015-07-04 11:53:43	2015-07-04 11:54:49

Cisco**Cisco UCS C460 M4
Server****TPC-H Rev. 2.17.1
TPC-Pricing Rev. 2.0.0****Report Date: 13-Jul-2015****TPC-H Timing Intervals (in seconds)**

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	10.7	1.3	12.0	14.1	16.5	1.3	7.4	12.7	34.0	29.1	13.6	5.4
1	105.1	6.8	88.5	61.6	83.7	17.1	58.4	721.7	58.1	155.8	66.7	14.0
2	69.0	9.0	87.2	169.3	73.7	97.7	102.4	560.0	53.0	68.4	69.5	80.3
3	24.7	10.5	139.3	68.6	55.8	36.1	176.9	584.1	61.3	120.1	122.7	139.8
4	14.7	2.5	67.1	37.5	153.8	68.9	209.4	551.8	58.0	226.1	84.4	99.8
5	77.9	11.8	133.7	111.6	119.9	54.3	46.4	706.3	36.8	81.6	39.9	221.3
6	78.7	10.8	95.2	141.2	124.8	24.7	71.1	631.0	63.9	180.1	62.9	199.2
7	18.3	12.7	78.8	135.4	76.7	79.2	140.8	485.5	40.7	182.6	63.8	185.3
8	13.8	11.2	78.9	133.6	137.7	107.2	56.5	452.4	103.7	205.1	77.2	118.6
Minimum	10.7	1.3	12.0	14.1	16.5	1.3	7.4	12.7	34.0	29.1	13.6	5.4
Average	45.9	8.5	86.7	97.0	93.6	54.1	96.6	522.8	56.6	138.8	66.7	118.2
Maximum	105.1	12.7	139.3	169.3	153.8	107.2	209.4	721.7	103.7	226.1	122.7	221.3

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	41.1	2.6	4.3	6.1	6.1	56.8	5.5	7.3	38.9	6.5	59.7	81.0
1	66.9	116.9	92.9	8.3	13.9	148.2	102.9	59.5	195.4	37.0	63.1	67.1
2	82.7	49.9	70.6	21.8	164.1	256.1	94.0	137.1	62.1	22.2	65.6	64.4
3	107.8	56.2	37.0	16.6	12.4	191.6	31.7	143.9	80.5	12.9	60.3	66.2
4	108.8	27.4	32.2	12.6	8.7	210.3	123.9	49.1	105.5	85.1	59.4	58.4
5	45.6	38.7	62.7	16.4	16.9	70.2	56.6	149.3	203.0	57.5	59.1	71.4
6	53.7	55.0	97.8	16.3	69.8	323.5	6.9	76.2	38.9	17.2	59.4	65.3
7	51.9	96.0	109.8	8.3	15.4	229.5	6.5	73.4	59.6	71.1	60.2	66.7
8	56.3	88.6	103.2	24.7	74.1	110.4	71.1	150.8	104.7	40.2	73.0	66.1
Minimum	41.1	2.6	4.3	6.1	6.1	56.8	5.5	7.3	38.9	6.5	59.1	58.4
Average	68.3	59.0	67.8	14.6	42.4	177.4	55.5	94.1	98.7	38.9	62.2	67.4
Maximum	108.8	116.9	109.8	24.7	164.1	323.5	123.9	150.8	203.0	85.1	73.0	81.0