



Dell PowerEdge R720

TPC-H Rev. 2.14.0
 TPC-Pricing Rev. 1.6.0

Report Date:
 May 8, 2012

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$48,381 USD

403,230.1
 QphH@100GB

\$0.12 USD
 \$ / QphH@100GB

Database Size

Database Manager

Operating System

Other Software

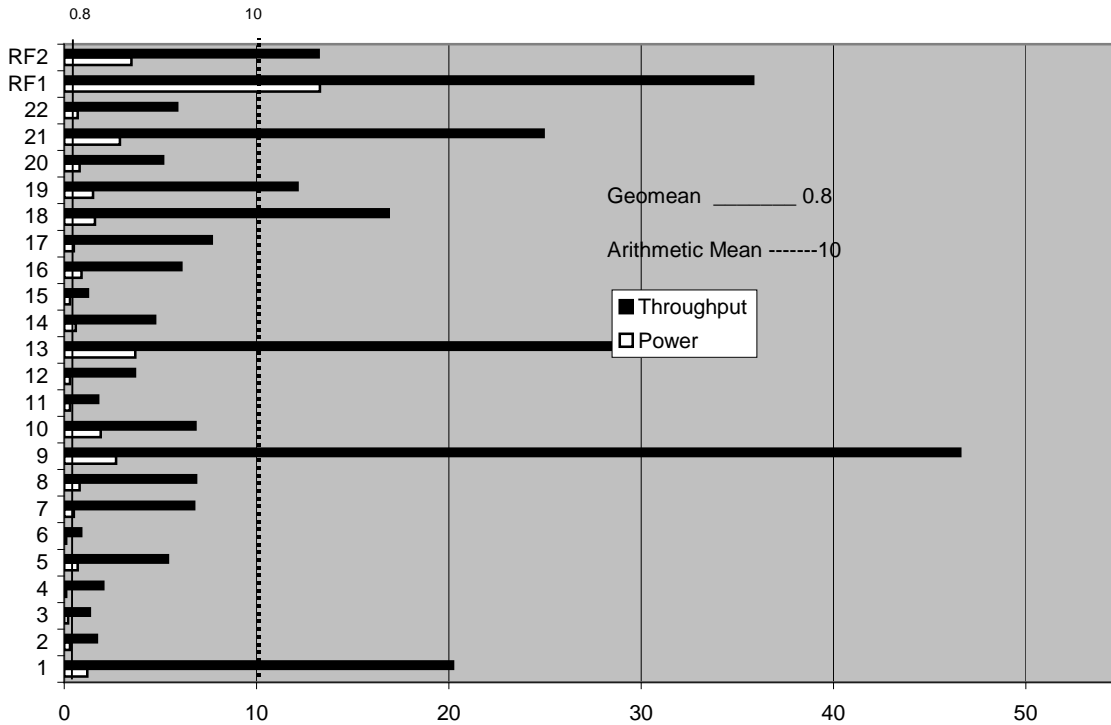
Availability Date

100GB

VectorWise 2.0.1

RedHat Enterprise Linux 6.1

May 8, 2012



Database Load Time = 2:11:33

Storage Redundancy Level

Load Includes Backup: N

Base Tables and Auxiliary Data Structures

5

Total Data Storage / Database Size = 23.36

DBMS Temporary Space

5

Percentage Memory / Database Size = 192%

OS and DBMS Software

5

System Configuration: Dell PowerEdge R720

Memory: 192 GB
 Disk Controller: PERC H710P integrated RAID controller with 1GB NVRAM
 Storage: 16 x 146GB 15K RPM SAS 6G
 Total Storage: 2336 GB
 LAN Controller: Intel Ethernet I350 QP 1Gb Network Daughter Card



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Description	Part Number	Pricing Source	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
Server Hardware							
PowerEdge R720	225-2133	1	\$1,342.00	1	\$1,342.00		
2.5" Chassis with up to 16 Hard Drives	317-8474	1	\$650.00	1	\$650.00		
PowerEdge R720 Shipping	331-4437	1	\$0.00	1	\$0.00		
Performance Optimized	331-4428	1	\$0.00	1	\$0.00		
VFlash,8GB SD Card,iDRAC Ent	342-1413	1	\$49.00	1	\$49.00		
iDRAC7 Enterprise	421-5339	1	\$399.00	1	\$399.00		
POWER CORD, 10F, NEMA5-15P-C13	310-8509	1	\$0.00	2	\$0.00		
Power Saving Dell Active Power Control	330-5116	1	\$0.00	1	\$0.00		
DVD+-RW, SATA	313-9090	1	\$99.00	1	\$99.00		
NO DOCUMENTATION	310-5171	1	\$0.00	1	\$0.00		
No Media Required	421-5736	1	\$0.00	1	\$0.00		
ONSITE INSTL DECLINED	900-9997	1	\$0.00	1	\$0.00		
E5-2690 2.90GHz,20M Cache,135W	317-9600	1	\$2,999.00	1	\$2,999.00		
Heat Sink,PowerEdge R720 and R720xd	331-4508	1	\$0.00	1	\$0.00		
DIMM Blanks for Systems with 2 Processor	317-8688	1	\$0.00	1	\$0.00		
E5-2690 2.90GHz,20M Cache,135W	317-9614	1	\$2,999.00	1	\$2,999.00		
Heat Sink,PowerEdge R720 and R720xd	331-4508	1	\$0.00	1	\$0.00		
1600 MHz RDIMMS	331-4424	1	\$0.00	1	\$0.00		
8GB RDIMM,1600MHz,SV,DR,x4	317-9648	1	\$180.00	24	\$4,320.00		
R5,H710p,H710,H310 CTL	331-4382	1	\$0.00	1	\$0.00		
146GB 15K SAS,6G,2.5,HP	342-0427	1	\$389.00	16	\$6,224.00		
Dual Redundant Power Supply, 1100W	331-4607	1	\$490.00	1	\$490.00		
No Bezel	313-0869	1	\$0.00	1	\$0.00		
Enet I350 QP 1Gb NW DC	430-4447	1	\$349.00	1	\$349.00		
Risers,6,x8PCle+1,x16 PCle	331-4440	1	\$0.00	1	\$0.00		
RHEL6.1,Flx64,No Lic or Media	421-7141	1	\$0.00	1	\$0.00		
RHEL,1-2 SKT,3yr Sub and Lic,1VT Guest	421-5721	1	\$3,595.00	1	\$3,595.00		
PH710P Intg RD CTL,1GB NV	342-3531	1	\$799.00	1	\$799.00		
PSMC 4H7X24 OS,PE R720,UNY,2YR EXT	936-4573	1	\$654.00	1		\$654.00	
PSMC TECH SPT,PE R720,3 YR	936-4613	1	\$1,203.00	1		\$1,203.00	
HW WRTY + SVC,PE R720,UNY,2YR EXT	939-2678	1	\$126.00	1		\$126.00	
HW WRTY + SVC,PE R720,UNY,INIT	939-2768	1	\$74.00	1		\$74.00	
PSMC 4H7X24 OS,PE R720,UNY,INIT	988-9221	1	\$156.00	1		\$156.00	
INFO,PS TECH SPT CONTACT,ENTERPRISE	989-3439	1	\$0.00	1		\$0.00	
PSMC MISSION CRIT SVC,PE R720,3YR	996-8019	1	\$486.00	1		\$486.00	
RdyRI Slidng Rl,No CMA	331-4434	1	\$149.00	1	\$149.00		
Dell E170S,17VIS,VGA Only,CLIENT/ENT	320-8083	1	\$149.00	1	\$149.00		
OPTICAL MOUSE, TWO BUTTONS, USB, BLACK	331-0846	1	\$9.00	1	\$9.00		
Dell USB KB,ENG, No Palmrest, ESG	331-2254	1	\$10.00	1	\$10.00		
Dell Discount (30%)		1		1	-\$7,389.30	-\$809.70	
Subtotal					\$17,241.70	\$1,889.30	
No external storage							
Software							
VectorWise 2.0 3-year license Dell server**	ING-VW-3Y-GB-DELL	2	\$250.00	100	\$25,000.00		
VectorWise 1-year maintenance bug fixes**	ING-VW-3Y-GB-DELL-MNT	2	\$25.00	300		\$7,500.00	
VectorWise discount	10%	2			-\$2,500.00	-\$750.00	
Subtotal					\$22,500.00	\$6,750.00	
Audited by: Lorna Livingtree for Performance Metrics, Inc.					Total	\$39,741.70	\$8,639.30
Price Key: 1-Dell: Pricing may be verified by calling 1-800-BUY-DELL contact: Gregory Olsen, Greg_Olsen@dell.com and referencing quote # 619930776 2-Actian Pricing may be verified by calling 1-650-587-5500 contact: Mark Van de Wiel, mark.vandewiel@Actian.com All discounts are based on list prices and for similar quantities and configurations.				Cost of Ownership: \$48,381 USD QphH@100GB: 403,230.1 \$/QphH@100GB: \$0.12 USD			
<i>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 from their respective vendors. 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 items, please inform the TPC at pricing@tpc.org. Thank you.</i>							



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Measurement Results

Database Scaling (SF/Size)	100
Total Data Storage/Database Size	23.36
Percentage Memory/Database Size	192%
Start of Database Load Time	4/5/12 0:10:23
End of Database Load Time	4/5/12 2:21:56
Database Load Time	2:11:33
Query Streams for Throughput Test (S)	11
TPC-H Power @100GB	448,702.6
TPC-H Throughput @100GB	362,365.9
TPC-H Composite @100GB	403,230.1
Total System Price Over 3 Years	\$48,381
TPC-H Price/Performance Metrics (\$/QphH@100GB)	\$0.12

Measurement Interval in Throughput Test (Ts)

240.42

Power Run	Seed	Query Start Time	Duration(sec)	RF1 Start Time	RF 2 Start Time
		Query End Time		RF1 End Time	RF 2 End Time
	405022156	4/5/2012 03:15:54	22.8	4/5/2012 03:15:41	4/5/2012 03:16:17
		4/5/2012 03:16:17		4/5/2012 03:15:54	4/5/2012 03:16:20
Throughput Streams	Seed	Query Start Time	Duration(sec)	RF1 Start Time	RF 2 Start Time
		Query End Time		RF1 End Time	RF 2 End Time
1	405022157	4/5/2012 03:16:22	200.7	4/5/2012 03:16:22	4/5/2012 03:16:38
		4/5/2012 03:19:42		4/5/2012 03:16:38	4/5/2012 03:16:43
2	405022158	4/5/2012 03:16:22	227.3	4/5/2012 03:16:43	4/5/2012 03:16:59
		4/5/2012 03:20:09		4/5/2012 03:16:59	4/5/2012 03:17:04
3	405022159	4/5/2012 03:16:22	219.1	4/5/2012 03:17:04	4/5/2012 03:17:20
		4/5/2012 03:20:01		4/5/2012 03:17:20	4/5/2012 03:17:24
4	405022160	4/5/2012 03:16:22	223.0	4/5/2012 03:17:24	4/5/2012 03:17:40
		4/5/2012 03:20:05		4/5/2012 03:17:40	4/5/2012 03:17:45
5	405022161	4/5/2012 03:16:22	214.1	4/5/2012 03:17:45	4/5/2012 03:18:02
		4/5/2012 03:19:56		4/5/2012 03:18:02	4/5/2012 03:18:07
6	405022162	4/5/2012 03:16:22	225.9	4/5/2012 03:18:07	4/5/2012 03:18:31
		4/5/2012 03:20:08		4/5/2012 03:18:31	4/5/2012 03:18:36
7	405022163	4/5/2012 03:16:22	218.7	4/5/2012 03:18:36	4/5/2012 03:18:53
		4/5/2012 03:20:00		4/5/2012 03:18:53	4/5/2012 03:18:58
8	405022164	4/5/2012 03:16:22	216.1	4/5/2012 03:18:58	4/5/2012 03:19:14
		4/5/2012 03:19:58		4/5/2012 03:19:14	4/5/2012 03:19:19
9	405022165	4/5/2012 03:16:22	219.0	4/5/2012 03:19:19	4/5/2012 03:19:36
		4/5/2012 03:20:01		4/5/2012 03:19:36	4/5/2012 03:19:41
10	405022166	4/5/2012 03:16:22	222.8	4/5/2012 03:19:41	4/5/2012 03:19:58
		4/5/2012 03:20:05		4/5/2012 03:19:57	4/5/2012 03:20:03
11	405022167	4/5/2012 03:16:22	220.8	4/5/2012 03:20:03	4/5/2012 03:20:18
		4/5/2012 03:20:03		4/5/2012 03:20:18	4/5/2012 03:20:21



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Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	1.2	0.3	0.2	0.1	0.7	0.1	0.5	0.8	2.7	1.9	0.3	0.3
1	19.2	1.3	3.3	0.9	4.9	1.1	5.8	5.5	46.4	6.3	1.6	3.6
2	21.8	1.4	1.1	0.8	6.2	0.6	6.2	5.7	46.4	6.8	1.7	3.4
3	19.3	2.0	1.4	0.8	9.0	1.0	6.2	6.4	50.9	7.9	1.6	1.3
4	19.1	1.9	0.8	1.2	6.6	1.0	8.7	15.1	46.6	6.8	2.0	3.9
5	28.4	0.7	1.0	3.3	5.2	1.0	6.2	5.8	50.1	6.2	1.9	5.0
6	18.8	1.5	1.3	0.4	5.9	1.2	9.5	5.8	44.9	5.5	1.5	3.9
7	19.3	1.3	1.1	0.8	6.3	1.0	6.4	5.8	43.6	7.3	2.5	3.9
8	19.3	1.3	1.1	0.9	5.9	0.4	6.3	5.8	45.6	6.5	1.8	3.9
9	18.9	1.3	1.0	11.5	2.4	1.2	6.2	6.4	46.4	7.3	2.3	3.7
10	19.3	1.3	1.5	0.9	1.1	0.1	6.6	5.8	47.2	7.8	1.0	3.9
11	19.0	4.7	1.1	0.8	5.9	1.1	6.2	7.4	44.4	6.6	1.5	4.0
Minimu	1.2	0.3	0.2	0.1	0.7	0.1	0.5	0.8	2.7	1.9	0.3	0.3
Maximu	28.4	4.7	3.3	11.5	9.0	1.2	9.5	15.1	50.9	7.9	2.5	5.0
Average	18.6	1.6	1.2	1.9	5.0	0.8	6.2	6.4	42.9	6.4	1.6	3.4
Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	3.7	0.6	0.3	0.9	0.5	1.6	1.5	0.8	2.9	0.7	13.3	3.5
1	30.4	3.4	1.5	6.3	7.9	15.7	13.1	4.4	12.2	6.0	54.4	12.6
2	38.6	4.6	1.2	6.7	7.4	17.5	12.0	5.4	25.7	6.1	28.1	11.9
3	30.3	6.0	1.2	2.2	7.5	15.9	12.9	4.6	25.6	5.2	27.9	16.1
4	29.6	3.2	1.5	2.0	7.5	15.9	12.3	4.7	29.4	3.3	30.2	11.7
5	30.4	3.3	1.3	5.9	8.1	15.1	13.2	4.7	11.7	5.5	28.3	13.0
6	29.1	6.1	1.4	6.3	8.1	21.9	12.9	8.9	25.3	5.8	27.9	13.3
7	28.9	6.3	0.7	6.2	7.9	18.1	12.4	4.3	28.6	6.1	29.8	14.2
8	28.4	5.1	1.3	16.9	8.0	15.3	3.9	4.4	26.5	7.7	47.0	14.0
9	29.6	4.1	1.4	2.4	7.2	15.3	12.9	4.9	25.9	6.8	30.7	13.6
10	28.4	3.0	1.4	6.1	7.2	18.3	15.0	5.4	35.9	5.7	29.8	13.5
11	28.7	6.8	0.7	6.0	7.5	16.7	12.8	4.8	27.5	6.5	30.0	14.1
Minimu	3.7	0.6	0.3	0.9	0.5	1.6	1.5	0.8	2.9	0.7	13.3	3.5
Maximu	38.6	6.8	1.5	16.9	8.1	21.9	15.0	8.9	35.9	7.7	54.4	16.1
Average	28.0	4.4	1.2	5.7	7.1	15.6	11.2	4.8	23.1	5.5	31.4	12.6