



Lenovo ThinkServer RD630

TPC-H Rev. 2.15.0
 TPC-Pricing Rev. 1.7.0

Report Date:
 May 10, 2013

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$45,469 USD

420,092.4
 QphH@100GB

\$0.11 USD
 \$ / QphH@100GB

Database Size

Database Manager

Operating System

Other Software

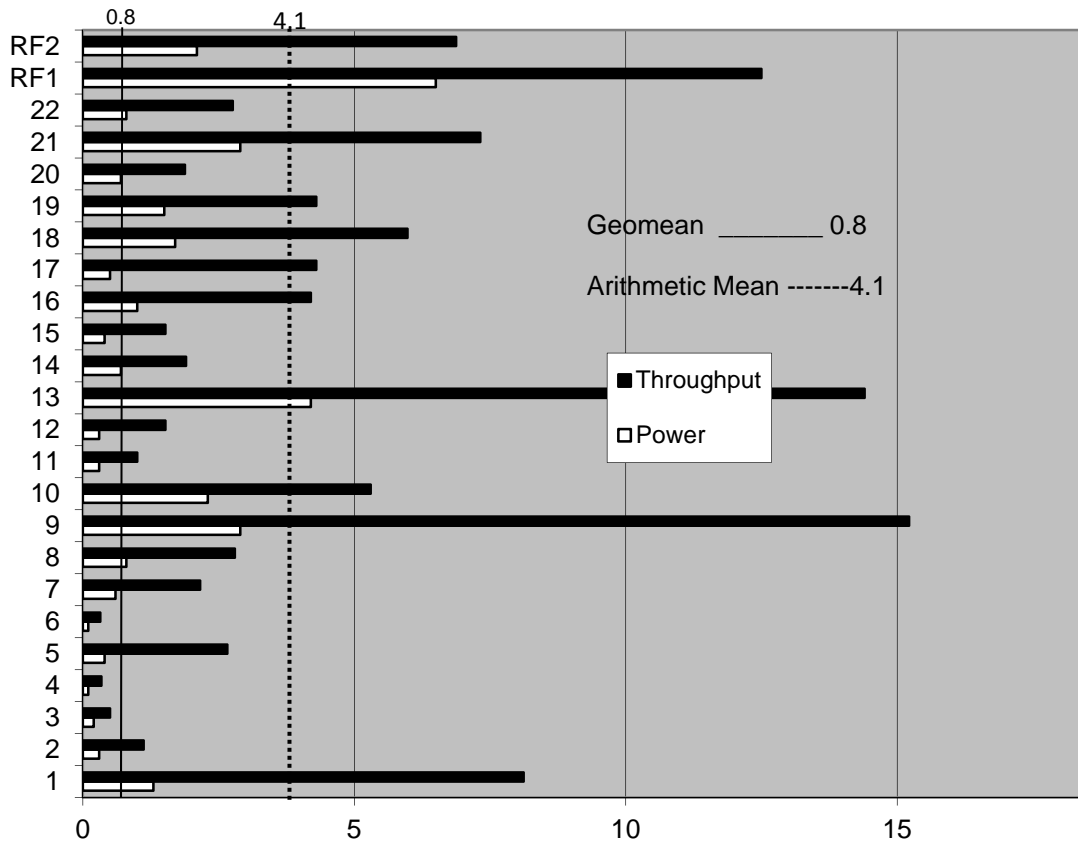
Availability Date

100GB

VectorWise 3.0.0

RedHat Enterprise Linux 6.4

May 10, 2013



Database Load Time = 1:18:35

Storage Redundancy Level

Load Includes Backup: N

Base Tables and Auxiliary Data Structures

5

Total Data Storage / Database Size = 24.00

DBMS Temporary Space

5

Percentage Memory / Database Size = 64.0%

OS and DBMS Software

0

System Configuration: Lenovo ThinkServer RD630

Memory: 64 GB
 Disk Controller: ThinkServer RAID 700 controller
 Storage: 8 x 300GB 10K RPM HDD
 Total Storage: 2400 GB
 LAN Controller: Onboard dual port 1G NIC



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Description	Part Number	Pricing Source	Unit Price	Qty	Extended Price	3 yr. Maint. Price						
Server Hardware												
ThinkServer RD630 - 2595CTO	2595CTO	1	\$13,550.00	1	\$13,550.00							
2.5" Chassis w ith up to 8 Hard Drives		1	\$0.00	1	\$0.00							
E5-2690 2.90GHz,20M Cache,135W		1	\$0.00	2	\$0.00							
8GB 1RX4 RDIMM DDR3 1600		1	\$0.00	8	\$0.00							
ThinkServer 2.5" 300GB 10K SAS 6GPBS HS HDD		1	\$0.00	8	\$0.00							
ThinkServer RAID 700 Adapter w ith Battery		1	\$0.00	1	\$0.00							
Slim DVD RW SATA		1	\$0.00	1	\$0.00							
Basic DIT		1	\$0.00	1	\$0.00							
800W Redundant PSU		1	\$0.00	1	\$0.00							
800W Redundant PSU (Second module)		1	\$0.00	1	\$0.00							
On-site Warranty 3 Year Parts / 3 Year Labor		1	\$0.00	1	\$0.00							
On-site Warranty 3 Year 24x7x4Hr response upgrade	OC08358	1	\$789.00	1		\$789.00						
					Subtotal	\$13,550.00	\$789.00					
No external storage												
Software												
VectorWise 3.0 3-year license Lenovo server**	VW-3Y-GB-LENOVO	2	\$250.00	100	\$25,000.00							
VectorWise 1-year maintenance bug fixes**	VW-3Y-GB-LENOVO-MNT	2	\$25.00	300		\$7,500.00						
VectorWise discount	15%	2			-\$3,750.00	-\$1,125.00						
Red Hat Enterprise Linux 3 year Enterprise subscription	2246201	3	\$3,504.99	1	\$3,504.99							
					Subtotal	\$24,754.99	\$6,375.00					
Audited by: Lorna Livingtree for Performance Metrics, Inc.					Total	\$38,304.99	\$7,164.00					
Price Key: 1-Lenovo: Pricing may be verified by calling 1-855-253-6686				<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cost of Ownership:</td> <td style="text-align: right;">\$45,469 USD</td> </tr> <tr> <td>QphH@100GB:</td> <td style="text-align: right;">420,092.4</td> </tr> <tr> <td>\$/QphH@100GB:</td> <td style="text-align: right;">\$0.11 USD</td> </tr> </table>			Cost of Ownership:	\$45,469 USD	QphH@100GB:	420,092.4	\$/QphH@100GB:	\$0.11 USD
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QphH@100GB:	420,092.4											
\$/QphH@100GB:	\$0.11 USD											
2-Action Pricing may be verified by calling 1-650-587-5500												
contact: Mark Van de Wiel, mark.vandewiel@Action.com												
3 - CDW: Red Hat pricing may be verified at CDW.com												
All discounts are based on list prices and for similar quantities and configurations.												
Audited by: Lorna Livingtree for Performance Metrics, Inc.												
<p><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.</i></p> <p><i>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></p>												



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Measurement Results

Database Scaling (SF/Size)	100
Total Data Storage/Database Size	8.00
Percentage Memory/Database Size	64.00%
Start of Database Load Time	4/17/13 7:55:27
End of Database Load Time	4/17/13 9:14:02
Database Load Time	1:18:35
Query Streams for Throughput Test (S)	5
TPC-H Power @100GB	458,663.5
TPC-H Throughput @100GB	384,764.9
TPC-H Composite @100GB	420,092.4
Total System Price Over 3 Years	\$45,469
TPC-H Price/Performance Metrics (\$/QphH@100GB)	\$0.11

Measurement Interval in Throughput Test (Ts)

103

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
	417091402	4/17/2013 09:29:46	23.9	4/2/2013 00:33:15	4/2/2013 00:34:43
		4/17/2013 09:30:10		4/2/2013 00:33:35	4/2/2013 00:34:49
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	417091403	4/17/2013 09:30:35	91.0	4/17/2013 09:31:24	4/17/2013 09:31:36
		4/17/2013 09:32:06		4/17/2013 09:31:36	4/17/2013 09:31:46
2	417091404	4/17/2013 09:30:35	96.0	4/17/2013 09:31:46	4/17/2013 09:31:59
		4/17/2013 09:32:11		4/17/2013 09:31:59	4/17/2013 09:32:06
3	417091405	4/17/2013 09:30:35	84.6	4/17/2013 09:32:06	4/17/2013 09:32:14
		4/17/2013 09:32:00		4/17/2013 09:32:14	4/17/2013 09:32:18
4	417091406	4/17/2013 09:30:35	99.1	4/17/2013 09:30:35	4/17/2013 09:30:52
		4/17/2013 09:32:14		4/17/2013 09:30:52	4/17/2013 09:30:59
5	417091407	4/17/2013 09:30:35	96.5	4/17/2013 09:30:59	4/17/2013 09:31:12
		4/17/2013 09:32:11		4/17/2013 09:31:12	4/17/2013 09:31:23



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Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	1.3	0.3	0.2	0.1	0.4	0.1	0.6	0.8	2.9	2.3	0.3	0.3
1	7.8	1.1	0.5	0.3	1.6	0.3	2.8	1.5	14.8	5.1	1.8	1.4
2	6.9	1.8	0.7	0.4	3.5	0.2	1.9	2.4	12.4	2.2	1.0	1.0
3	6.2	0.9	0.4	0.3	2.4	0.3	1.6	5.6	19.9	5.1	0.7	0.9
4	9.9	1.1	0.4	0.4	4.2	0.5	2.5	2.3	12.9	7.4	0.9	3.3
5	9.8	0.7	0.5	0.3	1.6	0.3	2.0	2.2	16.1	6.7	0.6	1.0
Minimum	1.3	0.3	0.2	0.1	0.4	0.1	0.6	0.8	2.9	2.2	0.3	0.3
Maximum	9.9	1.8	0.7	0.4	4.2	0.5	2.8	5.6	19.9	7.4	1.8	3.3
Average	7.0	1.0	0.5	0.3	2.3	0.3	1.9	2.5	13.2	4.8	0.9	1.3
Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	4.2	0.7	0.4	1.0	0.5	1.7	1.5	0.7	2.9	0.8	6.5	2.1
1	19.3	2.2	2.6	3.3	7.0	6.1	3.6	1.3	6.6	3.6	12.0	6.7
2	11.0	1.3	1.7	4.9	6.9	6.9	4.6	3.6	7.9	2.3	12.8	3.4
3	14.7	1.9	0.7	2.8	2.8	5.6	4.5	1.6	8.1	2.6	8.3	6.5
4	14.7	1.6	1.9	4.7	1.7	5.6	4.3	1.2	7.3	1.9	17.3	10.9
5	12.3	2.5	0.7	5.3	3.1	5.7	4.5	1.7	6.7	3.4	13.7	0.0
Minimum	4.2	0.7	0.4	1.0	0.5	1.7	1.5	0.7	2.9	0.8	6.5	0.0
Maximum	19.3	2.5	2.6	5.3	7.0	6.9	4.6	3.6	8.1	3.6	17.3	10.9
Average	12.7	1.7	1.3	3.7	3.7	5.3	3.8	1.7	6.6	2.4	11.8	4.9