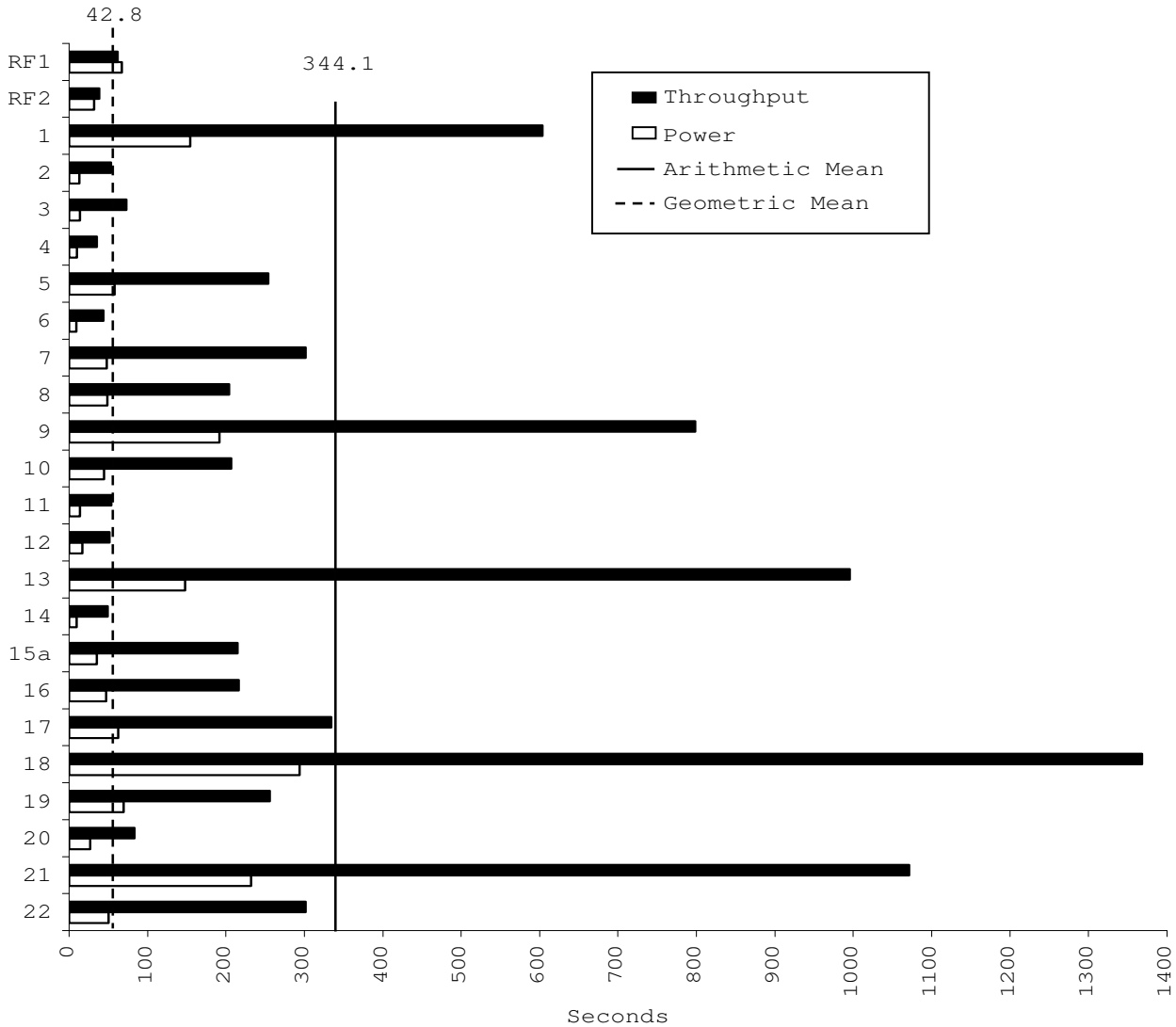


IBM @server OpenPower 720 with DB2 UDB V8.2

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Total System Cost	Composite Query per Hour Rating			Price/Performance
\$265,499	6,357.2 QphH@100GB			42 \$/QphH@100GB
Database Size	Database Manager	Operating System	Other Software	Availability Date
100 GB	DB2 UDB V8.2	SUSE LINUX Enterprise Server 9	None	January 28, 2005

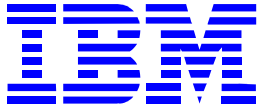


Database Load Time: 1:25:15	Load included backup: N	Total Data Storage/Database Size: 16.38
RAID (base tables): Y	RAID (Base Tables and Auxiliary Data Structures): Y	RAID (All): Y

System Configurations

IBM @server OpenPower 720

Processors	4 x 1650MHz POWER5 with 2x 36MB L3 Cache
Memory	32GB
Disk Controllers	8 x 2Gigabit Fibre Channel PCI-X Adapters & 2 x IBM TotalStorage 7311 Model DS20 I/O drawers & 4 x IBM TotalStorage DS4300 dual controllers
Disk Drives	42 x 36.4GB 15K 2Gb FC drives; 3 x 36.4GB 10K Ultra320 SCSI drives on server
Total Disk Storage	1638.00 GB (GB is defined as 1024 * 1024 * 1024 bytes)



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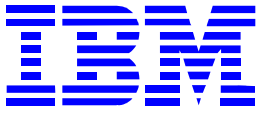
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Description	Part No.	Source	Unit Price	Qty	Ext Price	Maint Price
Server Hardware						
IBM eServer OpenPower 720	9124-720	1	50	1	50	1,368
Media Backplane Card	7877	1	120	1	120	0
4-Disk Slot Exp - Base Ctr (Ultra320 SCSI 4-Pack)	6592	1	244	1	244	0
Power Supply	7889	1	775	2	1,550	0
2-way 1.65GHz POWER5 Processor Card	5262	1	6,590	2	13,180	0
CPU Power Regulator	7876	1	160	2	320	0
IDE Slimline DVD-ROM Drive	2640	1	149	1	149	0
8GB (4x2048MB) DIMMS	1942	1	6,596	4	26,384	0
36.4GB 10,000K RPM Ultra320 SCSI Disk Drive	3273	1	275	3	825	0
Line Cords	6458	1	14	2	28	0
Rack Mount Drawer Rail Kit	7914	1	150	1	150	0
Hardware Management Console - 3631, 6458, 7801, 8800, 8841	7310-C03	1	2251	1	2,251	1,152
Model D20 I/O Drawer	7311-D20	1	4,270	2	8,540	13,514
Remote I/O Cable, 3.5M	3147	1	550	3	1,650	0
SPCN 2m Cable: Drawer to Drawer	6001	1	25	3	75	0
AC Power Supply, 435W	6268	1	625	2	1,250	0
RIO-2 Ports to I/O Planar Riser Card	6417	1	800	2	1,600	0
2 Gigabit Fibre Channel PCI-X Adapter	5716	1	2,267	8	18,136	0
Rack Model T00 - 6098, 6068, 7176	7014-T00	1	4,338	1	4,338	768
				Subtotal	80,840	16,802
Storage						
Storage Server DS4300	1722-60U	1	14,999	4	59,996	9,996
SHORT WAVE SFP GBIC	2210	1	499	8	3,992	0
2GB FC, 36.4GB / 15K Drive Module	5212	1	1,115	42	46,830	0
Linux for POWER Host Kit	7714	1	4,000	1	4,000	0
5m Fibre Optic Cable	5605	1	129	8	1,032	0
DS4300 4-Storage Partitions Activation	8804	1	3,000	4	12,000	0
				Subtotal	127,850	9,996
Software						
HMC Software Support 3 Year	5773-RS3	1	675	1	675	0
HMC Software Support 24x7 3 Year	5773-0570	1	236	1	0	236
DB2 UDB ESE 8.2 SW Lic. & Maint. 12 months for OpenPower 720		1	22,260	4	89,040	0
DB2 UDB EXE SW Maint. Renewal 1 year for OpenPower 720		1	1,060	8	0	8,480
DB2 UDB ESE DPF 8.2 SW Lic. & Maint. 12 months for OpenPower 720		1	6,686	4	26,744	0
DB2 UDB ESE DPF SW Maint. Renewal 1 year for OpenPower 720		1	318	8	0	2,544
				Subtotal	116,459	11,260
Third Party Software						
SUSE LINUX Enterprise Server 9 for POWER, to 16 CPUs/ YR		2	1,299	3	3,897	0
SUSE LINUX Enterprise Server 9 SW Media Kit for IBM POWER		2	35	1	35	0
Novell SUSE LINUX Server Support 24x7x4		2	900	3	0	2,700
				Subtotal	3,932	2,700
				Total	329,081	40,758
				IBM Total System Discounts*		-104,340
				Three-Year Cost of Ownership		265,499
					QphH	6,357
					\$/QphH	42

*Discounts are based on US list prices for similar quantities & configurations



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Pricing Sources:

1 IBM: Bala Ekambaram, WW Marketing Manager, OpenPower Offerings bala.ekambaram@us.ibm.com, 1-512-838-7137

1 IBM: Jonathan Prial, Vice President, Marketing, Information Management, jonprial@us.ibm.com, 1-914-766-1576

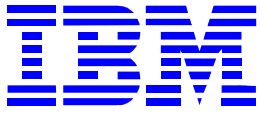
2 Novell SLES 9: <http://www.novell.com/products/linuxenterpriseserver/pricing.html>

2 Novell 24x7x4 Support: http://support.novell.com/linux/linux_server_support.html

Audited by: Francois Raab of Infosizing (www.sizing.com)

The System as configured for the test was available on January 28, 2005.

Prices used in the 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 the stated prices are not available according to these terms, please notify the TPC at pricing@tpc.org. Thank You.



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Numerical Quantities Summary

Measurement Results

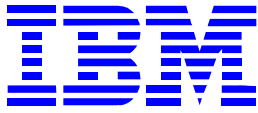
Database Scaling (SF/Size)	=	100
Total Data Storage/Database Size	=	16.38
Start of Database Load	=	11/3/2004 23:18:09
End of Database Load	=	11/4/2004 00:43:24
Database Load Time	=	1:25:15
Query Streams for Throughput Test	=	5
TPC-H Power Metric (QppH@100GB)	=	8,415.6
TPC-H Throughput Metric (QthH@100GB)	=	4,802.3
Composite Query-per-Hour Rating (QphH@100GB)	=	6,357.2
Total System Price over 3 years	=	\$265,499
TPC-H Price/Performance Metric (\$/QphH@100GB)	=	42

Measurement Intervals

Measurement Interval in Throughput Test (Ts) = 8,246 seconds

Duration of Stream Execution

Stream Id	Seed Used	Query Start Date/Time Query End Date/Time	RF1 Start Date/Time RF1 End Date/Time	RF2 Start Date/Time RF2 End Date/Time	Duration
Stream 00	1104004324	11/4/2004 1:04:21 11/4/2004 1:30:58	11/4/2004 1:03:14 11/4/2004 1:04:21	11/4/2004 1:30:58 11/4/2004 1:31:30	0:26:37
Stream 01	1104004325	11/4/2004 1:31:36 11/4/2004 3:40:41	11/4/2004 1:31:40 11/4/2004 3:41:46	11/4/2004 3:41:46 11/4/2004 3:42:20	2:09:05
Stream 02	1104004326	11/4/2004 1:31:36 11/4/2004 3:40:13	11/4/2004 3:42:20 11/4/2004 3:43:45	11/4/2004 3:43:45 11/4/2004 3:44:31	2:08:37
Stream 03	1104004327	11/4/2004 1:31:36 11/4/2004 3:29:21	11/4/2004 3:44:31 11/4/2004 3:45:10	11/4/2004 3:45:10 11/4/2004 3:45:59	1:57:45
Stream 04	1104004328	11/4/2004 1:31:36 11/4/2004 3:37:53	11/4/2004 3:45:59 11/4/2004 3:47:04	11/4/2004 3:47:04 11/4/2004 3:47:28	2:06:17
Stream 05	1104004329	11/4/2004 1:31:36 11/4/2004 3:40:41	11/4/2004 3:47:28 11/4/2004 3:48:23	11/4/2004 3:48:23 11/4/2004 3:49:02	2:09:05



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Timing Interval (in seconds)

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 0	154.5	13.0	14.1	9.9	57.8	9.1	47.8	49.0	191.6	44.5	14.1	16.9
Stream 01	414.5	54.5	94.6	12.9	247.6	24.9	259.3	156.9	812.2	255.8	44.8	60.5
Stream 02	594.0	80.3	60.0	42.3	218.4	71.6	269.5	181.4	828.2	212.3	45.1	36.3
Stream 03	647.5	30.1	68.6	53.4	270.5	58.8	231.6	330.1	794.6	185.8	31.0	69.8
Stream 04	715.4	44.2	67.1	21.2	271.9	28.2	315.3	129.6	770.5	222.1	58.0	43.3
Stream 05	645.5	57.8	74.5	46.5	261.2	35.7	432.6	221.8	786.8	157.2	89.7	47.9
Minimum	414.5	30.1	60.0	12.9	218.4	24.9	231.6	129.6	770.5	157.2	31.0	36.3
Average	603.4	53.4	73.0	35.3	253.9	43.8	301.7	204.0	798.5	206.6	53.7	51.6
Maximum	715.4	80.3	94.6	53.4	271.9	71.6	432.6	330.1	828.2	255.8	89.7	69.8
Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	147.8	9.5	35.4	46.9	62.6	294.0	69.7	26.7	231.8	50.5	67.4	31.9
Stream 01	985.4	46.9	104.3	183.4	266.4	1689.8	197.4	61.4	1385.3	386.4	65.0	34.0
Stream 02	1097.3	46.0	263.0	271.7	603.2	1467.1	387.2	104.8	610.1	226.7	85.8	45.8
Stream 03	726.0	52.7	174.6	187.6	402.9	1496.2	227.1	63.8	677.4	284.6	38.4	49.5
Stream 04	893.5	61.5	377.1	238.7	214.6	1059.5	286.1	118.7	1312.5	328.1	65.1	24.1
Stream 05	1274.3	40.4	154.6	201.1	184.5	1129.8	182.2	67.9	1371.1	281.7	55.1	38.4
Minimum	726.0	40.4	104.3	183.4	184.5	1059.5	182.2	61.4	610.1	226.7	38.4	24.1
Average	995.3	49.5	214.7	216.5	334.3	1368.5	256.0	83.3	1071.3	301.5	61.9	38.4
Maximum	1274.3	61.5	377.1	271.7	603.2	1689.8	387.2	118.7	1385.3	386.4	85.8	49.5