



HP Integrity Superdome - Itanium/1.6 GHz/18MB iL3 - 32p/64c

TPC-H Rev 2.8.0

Report Date:
April 29, 2009

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$2,532,527 USD

123,323.1

\$20.54 USD

QphH@1000GB

Price/QphH@1000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

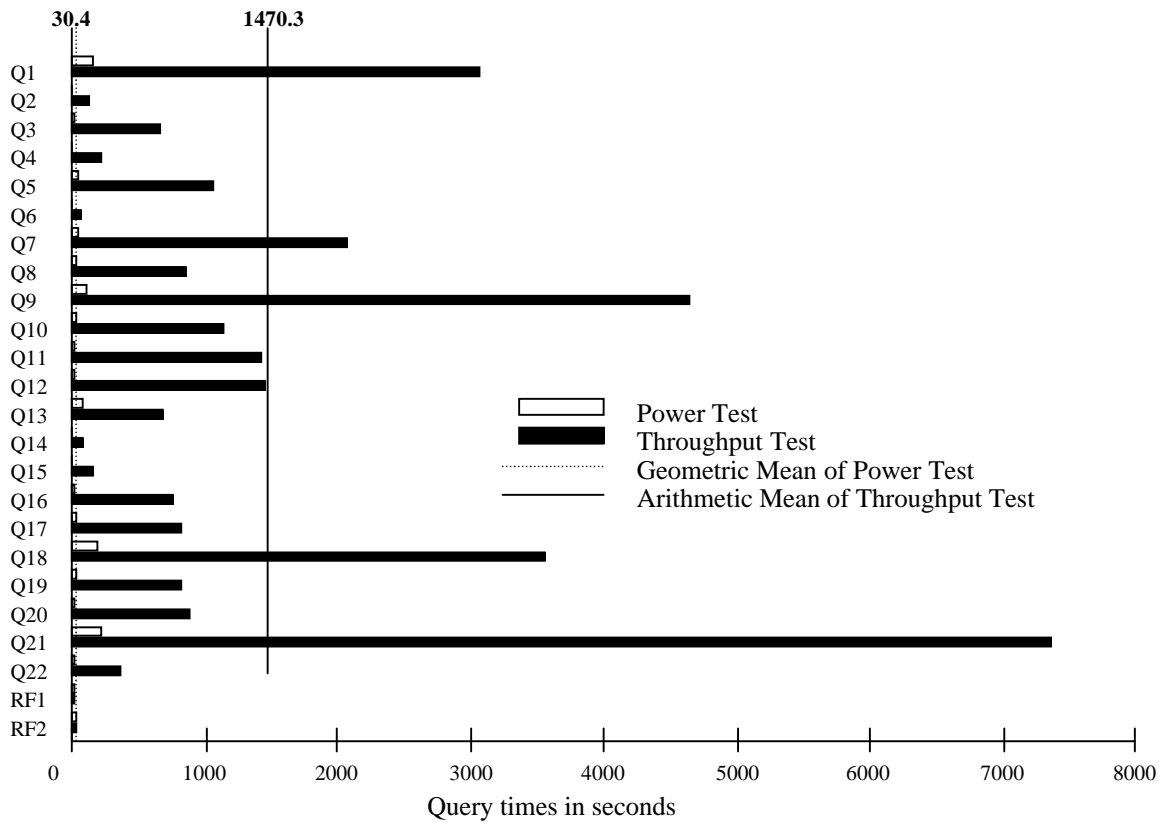
1000 GB*

**Oracle Database 11g
Enterprise Edition with
Partitioning and Oracle
Automatic Storage
Management**

HP-UX 11i v3 64-bit

None

Now



Database Load Time = 01:07:12

Load Includes Backup: N

Total Data Storage/Database Size = 112.42

RAID (Base Tables Only): N

RAID (Base Tables and Auxiliary Data Structures): N

RAID (All): Y

System Configuration

Number of Nodes: 1
 Processors/Cores/Threads/Type: 32/64/64/Intel Itanium 9140 1.6GHz, 9MB iL3 cache per core
 Memory: 384 GB
 Disk Drives: 1 High Availability Storage Systems with 4 18GB disks and 32 EVA 4400 (with total of 768 146GB 15K RPM disks)
 Total Disk Storage: 112416GB (In this number one GB is defined as 1024*1024*1024 bytes)
 Lan Controllers: 1 PCI 1000BT Lan Adapter

*Database Size includes only raw data (e.g. no temp, index, redundant storage space, etc.)



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Description	Part Number	Source	Reference Price	Qty	Extended Price	3 yr Maint Price
Server Hardware						
Superdome left chassis	A9834A, Opt 429	1	235,950	1	235,950	
Superdome sx2000 Cell Board	A9837A	1	19,250	8	154,000	
24x7x4hr - 3 Year Svc & Support Price (Hardware and Software)						702,536
Superdome 256GB Memory Bundle (128x2GB dimms)	A9856A	1	519,888	1	519,888	
Superdome 16GB Memory Group (8x2GB dimms)	A9846A	1	35,611	8	284,888	
12-Slot PCI-X I/O Chassis	A9836A	1	16,950	8	135,600	
Dual-Core Intel Itanium 9140N/1.6GHz/18MB L3	AD371A	1	23,000	32	736,000	
PCI-X 2 port 1000Base-SX Gigabit Adapter	A7011A	1	1,995	1	1,995	
PCI-X 4GB Fibre Channel Adapter (dual port)	AB379B	1	3,495	64	223,680	
PCI Dual Channel Ultra320 SCSI Adapter	A7173A	1	795	1	795	
HPDisk System 2120	A7382A	1	995	1	995	
HP INT no S/W 73G 15K 80U4 HDD	A7529A	1	1,495	4	5,980	
HP Universal Rack 10642 G2 Pallet Rack	AF001A	1	1,249	1	1,249	
HP 24A High Voltage US/JP Modular PDU	252663-D72	1	299	1	299	
HP Tape Array 5300	C7508B	1	729	1	729	
HP DVD + RW Array Field Module	Q1592B	1	649	1	649	
HP rx2660 Server (inc mem/disk/monitor/keyboard/mouse)	AB419A	1	8,557	1	8,557	
I/O Chassis Enclosure for 12-Slot PCI-X Chassis	A9852A	1	25,750	2	51,500	
Graphite I/O expansion power subsystem	A5861D	1	34,860	1	34,860	
Subtotal					2,397,614	702,536
Server Software						
Oracle Database 11g Enterprise Edition, Named User Plus for 3 years		2	11,875	32	380,000	
Partitioning, Named User Plus for 3 years		2	2,875	32	92,000	
Oracle Database Server Support Package for 3 years		2	6,900	1		6,900
HP-UX 11i v3 Integrity 16+ Skt PCL LTU	BA927AC, Opt 055	1	2,370	64	151,680	
HP-UX 11i v3 Integrity BOE Media	BA927AA, Opt AJR	1	565	1	565	
Subtotal					624,245	6,900
Storage						
5m Fibre Channel Cables	221692-B22	1	95	128	12,160	
EVA4400 146GB HDD Starter Kit (8 HDD) (32+4 spare)**	AJ693B	1	15,000	36	540,000	
3 Yr Support Price for EVA4400 and disks						Included
M6412 Fibre Channel Drive Enclosure (32+4 spare)	AG638B	1	4,325	36	155,700	
146GB 15K FC EVA M6412 Enc HDD (512+52 spare)**	AG556B	1	1,190	564	671,160	
ProCurve Switch 2510 Series 48 port	J9020A	1	759	1	759	
Universal Rack 10642 G2 Pallet Rack	AF001A	1	1,249	6	7,494	
24A High Voltage US/JP Modular PDU	252663-D72	1	299	12	3,588	
Subtotal					1,390,861	0
Total					4,412,720	709,436
Oracle Mandatory E-Business Discount on (Licenses and Support)					(95,780)	
54 % Large Configuration Discount and Support Prepayment*					(2,114,480)	(379,369)
Grand Total					2,202,460	330,067

*All discounts are based on US list prices and for similar quantities and configurations

** 8 Hard Disk Drives are included with EVA4400 Starter Kit

Source 1=HP, 2=Oracle

Audited By: Francois Raab for InfoSizing (www.sizing.com)

3-yr Cost of Ownership: 2,532,527

QpH@1000GB: 123,323

\$/QpH@1000GB: 20.54

Prices used in TPC benchmarks reflect 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 inform the TPC at pricing@tpc.org. Thank you.



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Measurement Results

Database Scaling (SF/size)	1000
Total Data Storage/Database Size	112.42
Start of Database Load Time	04/19/09 12:51:16
End of Database Load Time	04/19/09 01:58:28
Database Load Time	1:07:12
Query Streams for Throughput Test (S)	64
TPC-H Power	118,577.0
TPC-H Throughput	128,259.1
TPC-H Composite Query-per-Hour Metric (QphH@1000GB)	123,323.1
Total System Price Over 3 Years	2,532,527
TPC-H Price/Performance Metric (\$/QphH@1000GB)	20.54

Measurement Intervals

Measurement Interval in Throughput Test (Ts)	39,520
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Duration of Stream Execution:

Power Run	Seed	Query Start Time	Duration (sec)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
	419015828	04/18/05 02:03:28	1,248	04/19/09 02:03:28	04/19/09 02:23:36
		04/18/05 02:24:16		04/19/09 02:03:45	04/19/09 02:24:16

Throuput Stream	Seed	Query Start Time	Query End Time	Duration (sec)	RF1 Start Time	RF1 End Time	RF2 Start Time	RF2 End Time
1	419015829	04/18/05 02:24:18	04/18/05 12:14:23	35,405	04/19/09 12:23:52	04/19/09 12:24:11	04/19/09 19:12:24	04/19/09 12:24:47
2	419015830	04/18/05 02:24:18	04/18/05 12:15:08	35,450	04/19/09 12:24:47	04/19/09 12:25:05	04/19/09 19:12:25	04/19/09 12:25:39
3	419015831	04/18/05 02:24:18	04/18/05 10:01:56	27,458	04/19/09 12:25:39	04/19/09 12:25:58	04/19/09 19:12:25	04/19/09 12:26:33
4	419015832	04/18/05 02:24:18	04/18/05 11:18:13	32,035	04/19/09 12:26:33	04/19/09 12:26:52	04/19/09 19:12:26	04/19/09 12:27:26
5	419015833	04/18/05 02:24:18	04/18/05 12:16:13	35,515	04/19/09 12:27:26	04/19/09 12:27:46	04/19/09 19:12:27	04/19/09 12:28:21
6	419015834	04/18/05 02:24:19	04/18/05 10:00:38	27,379	04/19/09 12:28:21	04/19/09 12:28:41	04/19/09 19:12:28	04/19/09 12:29:16
7	419015835	04/18/05 02:24:19	04/18/05 12:11:52	35,253	04/19/09 12:29:16	04/19/09 12:29:34	04/19/09 19:12:29	04/19/09 12:30:10
8	419015836	04/18/05 02:24:19	04/18/05 08:45:01	22,842	04/19/09 12:30:10	04/19/09 12:30:32	04/19/09 19:12:30	04/19/09 12:31:07
9	419015837	04/18/05 02:24:19	04/18/05 11:54:52	34,233	04/19/09 12:31:07	04/19/09 12:31:28	04/19/09 19:12:31	04/19/09 12:32:03
10	419015838	04/18/05 02:24:19	04/18/05 12:15:25	35,466	04/19/09 12:32:03	04/19/09 12:32:23	04/19/09 19:12:32	04/19/09 12:32:57



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Duration of Stream Execution (Continued):

Throughput Stream	Seed	Query Start Time Query End Time	Duration (sec)	RF1 Start Time RF1 End Time	RF2 Start Time RF2 End Time
11	419015839	04/18/05 02:24:19 04/18/05 11:40:16	33,357	04/19/09 12:32:57 04/19/09 12:33:20	04/19/09 19:12:33 04/19/09 12:33:55
12	419015840	04/18/05 02:24:19 04/18/05 10:25:12	28,853	04/19/09 12:33:55 04/19/09 12:34:15	04/19/09 19:12:34 04/19/09 12:34:50
13	419015841	04/18/05 02:24:19 04/18/05 12:09:49	35,130	04/19/09 12:34:50 04/19/09 12:35:10	04/19/09 19:12:35 04/19/09 12:35:45
14	419015842	04/18/05 02:24:19 04/18/05 12:23:52	35,973	04/19/09 12:35:45 04/19/09 12:36:05	04/19/09 19:12:36 04/19/09 12:36:40
15	419015843	04/18/05 02:24:19 04/18/05 09:42:19	26,280	04/19/09 12:36:40 04/19/09 12:37:02	04/19/09 19:12:37 04/19/09 12:37:37
16	419015844	04/18/05 02:24:20 04/18/05 11:29:55	32,735	04/19/09 12:37:37 04/19/09 12:37:58	04/19/09 19:12:37 04/19/09 12:38:33
17	419015845	04/18/05 02:24:20 04/18/05 11:24:51	32,431	04/19/09 12:38:33 04/19/09 12:38:54	04/19/09 19:12:38 04/19/09 12:39:28
18	419015846	04/18/05 02:24:20 04/18/05 11:48:30	33,850	04/19/09 12:39:28 04/19/09 12:39:49	04/19/09 19:12:39 04/19/09 12:40:23
19	419015847	04/18/05 02:24:20 04/18/05 09:37:52	26,012	04/19/09 12:40:23 04/19/09 12:40:47	04/19/09 19:12:40 04/19/09 12:41:21
20	419015848	04/18/05 02:24:20 04/18/05 12:14:32	35,412	04/19/09 12:41:21 04/19/09 12:41:43	04/19/09 19:12:41 04/19/09 12:42:17
21	419015849	04/18/05 02:24:20 04/18/05 12:12:05	35,265	04/19/09 12:42:17 04/19/09 12:42:37	04/19/09 19:12:42 04/19/09 12:43:11
22	419015850	04/18/05 02:24:20 04/18/05 12:13:28	35,348	04/19/09 12:43:11 04/19/09 12:43:30	04/19/09 19:12:43 04/19/09 12:44:05
23	419015851	04/18/05 02:24:20 04/18/05 11:15:17	31,857	04/19/09 12:44:05 04/19/09 12:44:23	04/19/09 19:12:44 04/19/09 12:44:57
24	419015852	04/18/05 02:24:20 04/18/05 11:46:17	33,717	04/19/09 12:44:57 04/19/09 12:45:17	04/19/09 19:12:45 04/19/09 12:45:51
25	419015853	04/18/05 02:24:20 04/18/05 12:17:05	35,565	04/19/09 12:45:51 04/19/09 12:46:11	04/19/09 19:12:46 04/19/09 12:46:45
26	419015854	04/18/05 02:24:21 04/18/05 11:38:19	33,238	04/19/09 12:46:45 04/19/09 12:47:06	04/19/09 19:12:47 04/19/09 12:47:40
27	419015855	04/18/05 02:24:21 04/18/05 11:50:16	33,955	04/19/09 12:47:40 04/19/09 12:47:59	04/19/09 19:12:47 04/19/09 12:48:34
28	419015856	04/18/05 02:24:21 04/18/05 11:16:35	31,934	04/19/09 12:48:34 04/19/09 12:48:55	04/19/09 19:12:48 04/19/09 12:49:29
29	419015857	04/18/05 02:24:21 04/18/05 10:40:03	29,742	04/19/09 12:49:29 04/19/09 12:49:51	04/19/09 19:12:49 04/19/09 12:50:25
30	419015858	04/18/05 02:24:21 04/18/05 12:21:53	35,852	04/19/09 12:50:25 04/19/09 12:50:46	04/19/09 19:12:50 04/19/09 12:51:21



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Duration of Stream Execution (Continued):

Throughput Stream	Seed	Query Start Time Query End Time	Duration (sec)	RF1 Start Time RF1 End Time	RF2 Start Time RF2 End Time
31	419015859	04/18/05 02:24:21 04/18/05 12:02:36	34,695	04/19/09 12:51:21 04/19/09 12:51:42	04/19/09 19:12:51 04/19/09 12:52:16
32	419015860	04/18/05 02:24:21 04/18/05 11:47:57	33,816	04/19/09 12:52:16 04/19/09 12:52:37	04/19/09 19:12:52 04/19/09 12:53:12
33	419015861	04/18/05 02:24:22 04/18/05 11:51:09	34,007	04/19/09 12:53:12 04/19/09 12:53:34	04/19/09 19:12:53 04/19/09 12:54:09
34	419015862	04/18/05 02:24:22 04/18/05 11:40:15	33,353	04/19/09 12:54:09 04/19/09 12:54:30	04/19/09 19:12:54 04/19/09 12:55:05
35	419015863	04/18/05 02:24:22 04/18/05 11:42:03	33,461	04/19/09 12:55:05 04/19/09 12:55:25	04/19/09 19:12:55 04/19/09 12:55:59
36	419015864	04/18/05 02:24:22 04/18/05 11:27:13	32,571	04/19/09 12:55:59 04/19/09 12:56:22	04/19/09 19:12:56 04/19/09 12:56:56
37	419015865	04/18/05 02:24:22 04/18/05 11:03:40	31,158	04/19/09 12:56:56 04/19/09 12:57:17	04/19/09 19:12:57 04/19/09 12:57:52
38	419015866	04/18/05 02:24:22 04/18/05 11:20:52	32,190	04/19/09 12:57:52 04/19/09 12:58:12	04/19/09 19:12:58 04/19/09 12:58:47
39	419015867	04/18/05 02:24:23 04/18/05 12:12:30	35,287	04/19/09 12:58:47 04/19/09 12:59:08	04/19/09 19:12:59 04/19/09 12:59:43
40	419015868	04/18/05 02:24:23 04/18/05 11:46:47	33,744	04/19/09 12:59:43 04/19/09 13:00:05	04/19/09 19:13:00 04/19/09 13:00:40
41	419015869	04/18/05 02:24:23 04/18/05 12:22:14	35,871	04/19/09 13:00:40 04/19/09 13:01:01	04/19/09 19:13:01 04/19/09 13:01:36
42	419015870	04/18/05 02:24:23 04/18/05 11:40:12	33,349	04/19/09 13:01:36 04/19/09 13:01:59	04/19/09 19:13:01 04/19/09 13:02:33
43	419015871	04/18/05 02:24:23 04/18/05 10:23:15	28,732	04/19/09 13:02:33 04/19/09 13:02:53	04/19/09 19:13:02 04/19/09 13:03:27
44	419015872	04/18/05 02:24:23 04/18/05 09:54:12	26,989	04/19/09 13:03:27 04/19/09 13:03:48	04/19/09 19:13:03 04/19/09 13:04:22
45	419015873	04/18/05 02:24:23 04/18/05 11:48:11	33,828	04/19/09 13:04:22 04/19/09 13:04:41	04/19/09 19:13:04 04/19/09 13:05:16
46	419015874	04/18/05 02:24:24 04/18/05 11:48:13	33,829	04/19/09 13:05:16 04/19/09 13:05:36	04/19/09 19:13:05 04/19/09 13:06:10
47	419015875	04/18/05 02:24:25 04/18/05 10:04:47	27,622	04/19/09 13:06:10 04/19/09 13:06:30	04/19/09 19:13:06 04/19/09 13:07:05
48	419015876	04/18/05 02:24:24 04/18/05 12:23:42	35,958	04/19/09 13:07:05 04/19/09 13:07:25	04/19/09 19:13:07 04/19/09 13:08:00
49	419015877	04/18/05 02:24:27 04/18/05 07:33:31	18,544	04/19/09 13:08:00 04/19/09 13:08:20	04/19/09 19:13:08 04/19/09 13:08:56
50	419015878	04/18/05 02:24:25 04/18/05 11:59:19	34,494	04/19/09 13:08:56 04/19/09 13:09:17	04/19/09 19:13:09 04/19/09 13:09:51



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Duration of Stream Execution (Continued):

Throuput Stream	Seed	Query Start Time Query End Time	Duration (sec)	RF1 Start Time RF1 End Time	RF2 Start Time RF2 End Time
51	419015879	04/18/05 02:24:25 04/18/05 12:13:07	35,322	04/19/09 13:09:51 04/19/09 13:10:14	04/19/09 19:13:10 04/19/09 13:10:49
52	419015880	04/18/05 02:24:25 04/18/05 11:15:09	31,844	04/19/09 13:10:49 04/19/09 13:11:10	04/19/09 19:13:11 04/19/09 13:11:45
53	419015881	04/18/05 02:24:25 04/18/05 12:19:18	35,693	04/19/09 13:11:45 04/19/09 13:12:06	04/19/09 19:13:12 04/19/09 13:12:40
54	419015882	04/18/05 02:24:25 04/18/05 11:58:26	34,441	04/19/09 13:12:40 04/19/09 13:13:02	04/19/09 19:13:13 04/19/09 13:13:37
55	419015883	04/18/05 02:24:27 04/18/05 10:51:08	30,401	04/19/09 13:13:37 04/19/09 13:13:58	04/19/09 19:13:13 04/19/09 13:14:32
56	419015884	04/18/05 02:24:26 04/18/05 10:54:36	30,610	04/19/09 13:14:32 04/19/09 13:14:53	04/19/09 19:13:14 04/19/09 13:15:28
57	419015885	04/18/05 02:24:26 04/18/05 11:14:11	31,785	04/19/09 13:15:28 04/19/09 13:15:49	04/19/09 19:13:15 04/19/09 13:16:27
58	419015886	04/18/05 02:24:26 04/18/05 10:44:23	29,997	04/19/09 13:16:27 04/19/09 13:16:48	04/19/09 19:13:16 04/19/09 13:17:23
59	419015887	04/18/05 02:24:27 04/18/05 11:50:00	33,933	04/19/09 13:17:23 04/19/09 13:17:43	04/19/09 19:13:17 04/19/09 13:18:18
60	419015888	04/18/05 02:24:26 04/18/05 09:35:26	25,860	04/19/09 13:18:18 04/19/09 13:18:40	04/19/09 19:13:18 04/19/09 13:19:14
61	419015889	04/18/05 02:24:27 04/18/05 11:39:15	33,288	04/19/09 13:19:14 04/19/09 13:19:36	04/19/09 19:13:19 04/19/09 13:20:13
62	419015890	04/18/05 02:24:27 04/18/05 10:17:09	28,362	04/19/09 13:20:13 04/19/09 13:20:34	04/19/09 19:13:20 04/19/09 13:21:08
63	419015891	04/18/05 02:24:26 04/18/05 11:46:42	33,736	04/19/09 13:21:08 04/19/09 13:21:30	04/19/09 19:13:21 04/19/09 13:22:04
64	419015892	04/18/05 02:24:27 04/18/05 11:48:05	33,818	04/19/09 13:22:04 04/19/09 13:22:24	04/19/09 19:13:22 04/19/09 13:22:58



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TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	169.8	11.3	19.3	9.4	44.8	6.7	48.7	32.2	112.0	33.4	23.5	22.4
Stream 01	0.1	129.5	764.4	0.1	0.5	121.6	0.1	722.4	2032.9	0.1	315.1	1314.2
Stream 02	0.4	78.5	1062.2	325.9	246.8	10.6	1856.4	528.2	4405.3	4453.1	3663.2	739.0
Stream 03	2008.0	168.1	827.5	310.8	2314.9	106.8	4071.7	914.4	5020.9	0.5	2915.3	1.0
Stream 04	4305.3	168.9	636.6	267.2	3603.2	0.2	0.8	1421.9	5227.1	0.2	2187.4	1167.0
Stream 05	4854.6	137.8	1048.2	517.8	0.5	0.2	0.2	919.2	1941.0	0.6	1548.0	1622.0
Stream 06	4458.7	174.8	1049.8	180.5	1184.7	151.8	2030.4	818.4	6189.7	1983.5	1076.4	1513.0
Stream 07	5285.5	170.9	360.2	506.1	377.9	0.2	0.5	1157.3	5109.0	0.4	1909.4	708.5
Stream 08	3815.7	167.4	339.7	157.4	0.1	95.3	0.1	548.5	5823.6	2518.5	2930.0	1167.5
Stream 09	0.3	130.6	1143.4	0.5	0.2	78.2	5974.8	776.5	4992.8	0.5	2529.1	1836.6
Stream 10	5136.2	121.5	0.1	0.1	0.1	212.7	4793.0	145.7	3448.3	0.1	79.1	3820.3
Stream 11	0.4	132.2	749.9	0.6	0.7	141.3	2944.0	1295.6	0.7	2898.7	1492.6	3495.3
Stream 12	5079.1	0.7	757.6	1.8	1.0	0.5	3503.2	1452.3	0.9	0.1	2987.2	3863.1
Stream 13	0.1	43.9	0.1	66.2	0.1	0.1	3813.2	152.6	0.2	0.1	71.6	1665.6
Stream 14	4268.6	118.1	37.3	396.1	212.8	0.1	0.4	112.0	6613.7	0.3	14.7	51.6
Stream 15	0.1	164.1	1062.4	463.6	1265.8	80.9	0.8	715.7	5357.2	0.1	558.4	1515.8
Stream 16	5340.6	83.6	861.2	272.6	1847.1	75.0	0.6	1217.4	3449.9	1018.1	2895.1	1242.7
Stream 17	0.7	218.0	1564.2	0.5	1896.6	0.5	5054.4	937.5	5397.7	0.4	367.4	738.3
Stream 18	3920.8	169.7	1358.0	838.8	2579.5	195.3	0.1	1254.2	1.6	2166.8	2254.4	928.9
Stream 19	0.3	123.6	1349.2	621.7	2231.5	0.4	0.6	776.6	3776.1	2887.0	728.6	1881.9
Stream 20	4911.8	58.4	0.3	325.6	0.7	12.1	5550.7	60.4	3474.9	0.6	374.7	2128.4
Stream 21	3051.0	45.0	0.1	0.5	0.2	0.1	0.1	903.2	4650.8	0.8	2830.8	1793.0
Stream 22	5267.3	132.5	649.4	0.1	0.4	0.3	0.5	919.6	3844.0	0.3	2053.3	2049.3
Stream 23	0.1	157.3	0.2	0.2	0.2	0.1	0.2	1208.5	7049.8	0.1	1430.9	2522.0
Stream 24	0.3	132.0	0.3	413.7	0.2	0.7	7574.3	866.3	9137.9	2851.3	1411.2	1781.3
Stream 25	5028.6	141.5	612.8	178.4	0.1	0.3	0.6	929.5	1905.2	3845.1	1241.8	930.4
Stream 26	3703.7	146.5	833.8	425.1	2205.4	160.3	2022.5	684.6	7273.2	2259.1	411.8	0.4
Stream 27	5305.3	185.0	0.1	477.7	0.4	0.4	0.1	789.4	5781.2	328.8	1847.8	1724.5
Stream 28	2350.5	190.2	968.9	518.2	2779.1	0.4	0.9	1290.7	4717.0	5560.4	1171.2	1641.6
Stream 29	3719.2	152.8	715.9	0.2	2476.3	72.1	0.3	637.1	4950.8	4360.3	1433.2	1846.4
Stream 30	4883.5	26.9	599.1	0.1	2229.1	0.1	6232.7	74.6	6528.5	2238.8	9.8	0.1
Stream 31	5515.2	153.4	0.3	0.2	1789.1	13.6	0.3	707.2	6992.2	0.4	1183.6	1446.9
Stream 32	5325.3	58.0	0.6	516.3	2672.4	0.2	3180.2	796.6	5343.7	0.1	925.5	3564.5



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TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 33	3083.0	167.2	964.1	0.1	2028.6	132.3	4063.6	1000.1	6522.4	3927.8	1851.8	881.3
Stream 34	5378.8	98.7	839.5	0.3	0.1	0.9	4796.4	800.7	6558.1	0.6	378.0	0.1
Stream 35	2362.3	77.2	716.3	0.2	0.1	0.3	3611.2	1013.2	7084.7	3523.7	764.9	1560.1
Stream 36	5216.5	98.2	1466.2	136.2	0.3	188.3	2512.7	823.9	9178.0	2748.5	2312.3	662.6
Stream 37	4957.1	127.9	1181.6	432.9	2750.3	0.6	4074.8	697.3	5025.2	0.3	476.6	1281.0
Stream 38	2221.5	68.9	366.9	326.8	2459.6	79.6	3555.1	601.0	6330.2	4320.2	673.1	661.1
Stream 39	5255.6	44.6	1469.7	452.4	2353.9	131.6	5098.3	730.9	5224.7	0.1	728.7	949.9
Stream 40	2119.6	120.5	769.6	1.4	0.4	0.2	3075.3	818.7	8038.4	2472.7	594.5	1465.9
Stream 41	1118.7	226.7	0.4	0.2	0.4	71.6	269.9	941.3	6548.1	0.4	1322.6	149.8
Stream 42	3743.1	188.4	371.6	0.1	0.1	0.4	1913.2	1665.3	4921.0	0.5	15.4	2494.2
Stream 43	5465.9	91.9	938.4	0.5	773.6	209.2	2232.1	518.8	3808.9	3836.1	1843.5	974.7
Stream 44	2103.5	153.0	2.0	278.9	2451.4	115.6	3853.6	1020.6	6024.6	0.4	1725.5	0.4
Stream 45	0.1	124.1	722.9	498.5	4073.5	169.0	1.2	874.9	6441.5	0.1	2510.4	3054.2
Stream 46	0.5	163.9	1196.2	201.3	2318.9	0.6	1971.8	1253.1	3354.1	0.6	3923.1	2186.4
Stream 47	4373.6	180.4	811.0	0.2	2478.7	113.2	1973.0	637.4	5950.2	2995.7	790.1	1262.0
Stream 48	0.5	110.8	0.1	0.8	0.1	0.1	0.1	1307.2	953.6	0.1	963.3	77.3
Stream 49	3687.2	146.9	485.8	178.2	40.7	78.7	2172.0	617.1	5170.1	0.1	2227.9	490.3
Stream 50	0.8	116.9	1093.7	552.7	0.3	77.1	5240.4	1381.1	4008.9	0.2	2566.6	2318.4
Stream 51	5243.0	148.9	193.1	60.8	0.5	216.6	5054.9	224.7	5006.8	0.1	155.9	1253.8
Stream 52	1128.5	123.5	0.4	445.0	2610.8	98.1	0.9	1367.8	5784.3	1497.0	707.6	1181.1
Stream 53	5313.2	152.0	31.1	0.5	0.2	91.2	4690.8	803.9	7290.1	0.1	605.1	670.0
Stream 54	0.6	51.9	1110.4	0.1	0.1	0.1	0.4	212.6	5127.1	4325.5	81.8	2657.0
Stream 55	3183.8	225.6	771.5	315.7	0.1	0.7	0.7	1231.6	7853.4	0.1	1686.0	1362.5
Stream 56	4763.7	124.8	1058.3	276.1	2852.1	87.4	0.6	476.1	6863.4	0.2	344.7	629.1
Stream 57	4333.6	80.4	1053.9	264.6	2656.5	73.0	5323.2	1227.2	2832.4	1394.4	3486.3	1881.6
Stream 58	3234.4	151.1	1292.4	312.5	1828.5	144.6	0.4	1414.2	4055.6	0.5	57.1	1315.4
Stream 59	4436.9	174.5	1335.1	617.1	2722.0	203.6	0.2	1173.9	3879.3	0.4	1306.7	0.1
Stream 60	1638.2	93.7	1214.1	674.4	1759.3	0.2	1916.0	709.5	0.1	0.5	2592.7	2398.4
Stream 61	5270.2	102.4	683.3	383.8	0.5	101.9	0.6	649.1	1.2	2393.4	1485.3	2491.7
Stream 62	5293.2	1.5	0.4	183.2	0.3	121.6	3180.1	796.6	0.7	0.1	1980.5	959.4
Stream 63	2175.0	136.4	728.7	533.5	0.2	0.3	3807.5	675.4	0.1	0.5	3085.7	3847.2
Stream 64	2113.9	164.0	511.6	0.5	0.4	100.7	0.6	1305.5	6787.0	0.6	1531.4	1239.1
Minimum	0.1	0.7	0.1	0.1	0.1	0.1	0.1	60.4	0.1	0.1	9.8	0.1
Maximum	5515.2	226.7	1564.2	838.8	4073.5	216.6	7574.3	1665.3	9178.0	5560.4	3923.1	3863.1
Average	3074.3	126.8	667.7	233.0	1063.7	64.7	2078.1	854.8	4641.6	1137.8	1431.6	1454.0



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TPC-H Timing Intervals (in seconds)

Duration of stream execution:

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	88.3	5.6	9.3	15.5	41.3	193.8	44.0	17.0	224.8	17.9	16.8	40.5
Stream 01	1.3	0.2	240.3	794.5	736.5	0.7	739.5	435.6	26865.2	190.1	18.2	36.1
Stream 02	0.1	126.7	0.6	1045.7	924.5	348.2	974.4	1354.0	13081.3	224.6	18.3	34.0
Stream 03	0.6	85.7	1.4	1064.7	741.5	4264.6	1026.9	1287.2	1.2	324.3	18.8	34.9
Stream 04	0.7	71.7	154.6	1183.1	752.8	0.4	573.2	433.2	9536.7	342.4	18.5	34.3
Stream 05	0.1	0.4	357.6	1222.2	616.1	0.8	1209.6	707.5	18193.4	616.2	19.4	35.1
Stream 06	553.9	1.0	277.2	1439.6	693.3	136.2	1248.3	1933.3	0.4	284.2	20.3	34.7
Stream 07	0.3	0.1	100.9	207.8	1108.8	15962.2	658.8	1085.0	0.2	543.4	18.2	35.4
Stream 08	2343.2	66.6	127.2	453.0	540.6	0.9	1241.8	241.9	1.9	261.4	22.5	34.6
Stream 09	2275.2	37.7	0.3	256.0	720.4	0.6	1233.6	635.2	11029.0	580.9	20.7	35.1
Stream 10	0.3	76.3	461.9	190.2	986.6	15287.7	91.9	259.9	0.4	353.8	20.0	34.2
Stream 11	0.1	134.7	536.2	1275.5	715.9	14061.2	927.4	2068.1	1.0	484.5	22.7	34.7
Stream 12	0.7	109.9	0.3	681.0	433.8	6697.4	874.2	1831.5	0.1	576.7	20.4	34.3
Stream 13	0.1	12.4	0.1	174.6	767.5	0.1	258.6	196.4	27778.6	128.4	20.3	34.6
Stream 14	0.1	19.0	346.6	1195.9	1645.8	7391.1	106.4	1086.5	12294.1	62.0	20.8	34.8
Stream 15	0.6	81.2	424.9	396.2	535.6	1.2	1052.3	693.3	11371.1	538.1	22.1	34.3
Stream 16	0.8	56.5	0.4	539.0	504.4	2.7	1246.7	238.5	11657.4	185.6	21.4	34.5
Stream 17	0.4	85.5	0.6	1095.8	1558.1	0.7	964.7	801.3	11399.6	348.4	21.1	34.1
Stream 18	2418.3	80.7	0.5	253.7	984.1	0.7	837.5	1967.2	11352.7	286.7	20.9	34.0
Stream 19	7.4	110.6	163.0	558.5	376.4	0.2	1026.1	759.9	8192.8	439.8	23.7	33.8
Stream 20	2369.6	128.1	343.4	535.8	859.8	11886.4	920.2	1097.7	0.4	372.3	22.5	33.6
Stream 21	0.7	128.7	0.4	696.8	1493.5	0.1	1251.2	1117.5	16944.3	356.6	20.0	33.8
Stream 22	2404.3	0.4	0.5	448.1	83.3	0.4	870.8	554.8	15560.7	507.1	19.1	34.4
Stream 23	0.1	128.9	0.1	706.0	922.6	15961.1	715.9	653.8	0.1	398.3	18.1	34.0
Stream 24	0.1	71.6	0.6	424.4	549.3	0.9	742.4	1056.3	6339.2	361.9	19.7	34.3
Stream 25	0.7	107.8	0.3	1184.9	590.9	16375.3	878.7	1227.7	0.1	384.2	19.4	34.7
Stream 26	2654.1	54.2	0.3	532.7	755.1	1.3	1084.0	429.9	7178.8	422.0	20.9	33.4
Stream 27	0.6	92.8	0.1	751.2	1724.6	0.4	95.8	467.3	13867.9	514.1	19.5	34.3
Stream 28	1415.2	131.2	2.8	1077.2	1331.5	4731.8	1159.4	601.5	33.6	260.6	21.0	34.4
Stream 29	0.3	98.1	311.5	563.8	1219.2	3824.0	835.0	2110.5	0.6	413.8	21.5	34.5
Stream 30	0.1	94.7	0.1	36.1	451.5	4326.2	102.2	34.6	7687.0	296.5	20.6	34.9
Stream 31	0.4	16.7	0.1	828.0	508.5	0.1	705.0	1263.4	13465.5	104.8	20.9	33.6
Stream 32	1806.6	86.9	723.8	589.2	521.2	5952.8	626.0	311.4	556.2	258.7	21.4	34.9



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Duration of stream execution:

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 33	0.7	81.0	612.8	955.0	742.9	0.8	814.5	202.0	5617.8	357.4	21.7	34.9
Stream 34	2005.9	126.2	0.3	651.1	565.3	0.5	619.9	1370.4	8665.4	496.0	21.1	34.7
Stream 35	0.1	209.1	0.3	613.9	1203.9	0.1	769.3	783.0	8667.9	499.3	20.5	34.0
Stream 36	1360.6	108.1	0.7	896.6	439.3	2330.9	737.7	859.5	0.5	493.6	22.5	34.0
Stream 37	4102.9	88.7	0.2	1169.4	1328.2	1391.5	604.2	1178.0	0.3	288.8	21.2	34.2
Stream 38	0.5	91.4	0.1	546.1	1889.8	0.5	1103.7	895.2	5738.6	259.3	20.9	34.5
Stream 39	1.1	102.8	135.1	1245.4	509.8	0.1	1306.1	809.9	8590.7	145.9	21.2	34.9
Stream 40	4102.4	62.6	0.5	763.5	541.6	0.3	611.4	253.0	7638.9	292.8	21.8	34.4
Stream 41	0.2	132.9	0.1	563.2	515.2	8180.5	298.6	283.2	14888.8	358.1	21.6	34.4
Stream 42	0.8	139.2	439.4	1033.0	832.4	382.9	1094.7	677.0	13015.7	420.2	22.8	33.9
Stream 43	2315.3	129.0	119.8	1126.6	1334.7	0.3	841.0	1946.0	0.1	225.9	19.9	34.1
Stream 44	0.7	161.4	0.4	915.1	758.2	5376.4	1059.1	557.8	0.8	428.9	20.4	33.9
Stream 45	0.1	82.8	0.4	775.6	1037.9	0.1	742.6	1044.0	11296.9	377.0	19.7	34.9
Stream 46	0.8	142.6	153.9	695.5	892.2	0.8	1069.6	845.1	12973.8	484.9	19.2	34.0
Stream 47	0.4	181.8	252.2	1238.0	893.8	20.0	1216.6	2027.9	0.8	224.7	20.6	34.7
Stream 48	0.1	6.6	0.1	20.2	635.4	16372.1	137.2	793.0	14260.1	320.5	19.9	34.9
Stream 49	0.1	63.3	0.1	703.4	489.6	0.1	1203.8	339.9	137.6	311.8	19.7	36.5
Stream 50	2270.7	31.6	392.9	252.7	531.1	0.3	1250.1	384.4	11409.5	613.4	20.4	34.2
Stream 51	0.5	101.6	547.3	136.3	828.4	15606.7	77.1	78.2	0.8	386.3	23.2	34.8
Stream 52	0.1	125.9	553.4	1026.0	459.0	13089.5	686.8	407.7	0.7	549.4	20.8	35.3
Stream 53	0.1	10.3	146.6	444.4	350.2	3927.5	62.4	1796.5	9003.7	302.9	20.5	34.1
Stream 54	0.1	14.6	0.1	355.7	1367.8	0.1	119.1	126.2	18541.8	347.8	21.9	35.1
Stream 55	2515.5	143.0	408.2	902.7	883.2	5371.4	1005.8	2101.7	1.1	436.5	20.3	34.0
Stream 56	1.0	64.2	0.6	1489.5	464.6	0.9	839.2	755.4	9028.9	488.5	21.5	34.8
Stream 57	0.6	61.3	334.1	565.2	591.8	0.8	1188.2	257.5	3981.4	196.6	21.2	37.2
Stream 58	0.7	0.4	318.2	1084.1	1136.1	0.5	1186.5	533.4	11575.7	354.9	21.8	34.1
Stream 59	3071.1	210.0	0.2	327.0	1681.8	0.4	861.8	1463.2	10211.2	256.8	20.5	35.2
Stream 60	0.1	85.5	159.5	568.1	549.3	0.1	1162.0	1348.1	8629.4	361.1	21.7	34.2
Stream 61	1516.4	121.9	424.1	1792.5	1184.1	11815.8	1128.1	1426.7	0.4	314.6	21.1	37.4
Stream 62	0.2	130.2	190.4	1047.4	561.9	0.4	733.7	1144.5	11695.2	341.1	20.5	34.6
Stream 63	2339.0	131.0	0.6	1386.5	525.2	0.1	1024.3	1114.8	11609.3	614.5	21.3	34.2
Stream 64	0.1	150.5	384.7	849.3	725.5	16368.5	709.7	508.9	0.5	364.6	19.6	34.4
Minimum	0.1	0.1	0.1	20.2	83.3	0.1	62.4	34.6	0.1	62.0	18.1	33.4
Maximum	4102.9	210.0	723.8	1792.5	1889.8	16375.3	1306.1	2110.5	27778.6	616.2	23.7	37.4
Average	685.4	87.3	158.7	758.4	825.1	3554.1	821.0	894.6	7368.4	364.6	20.7	34.6