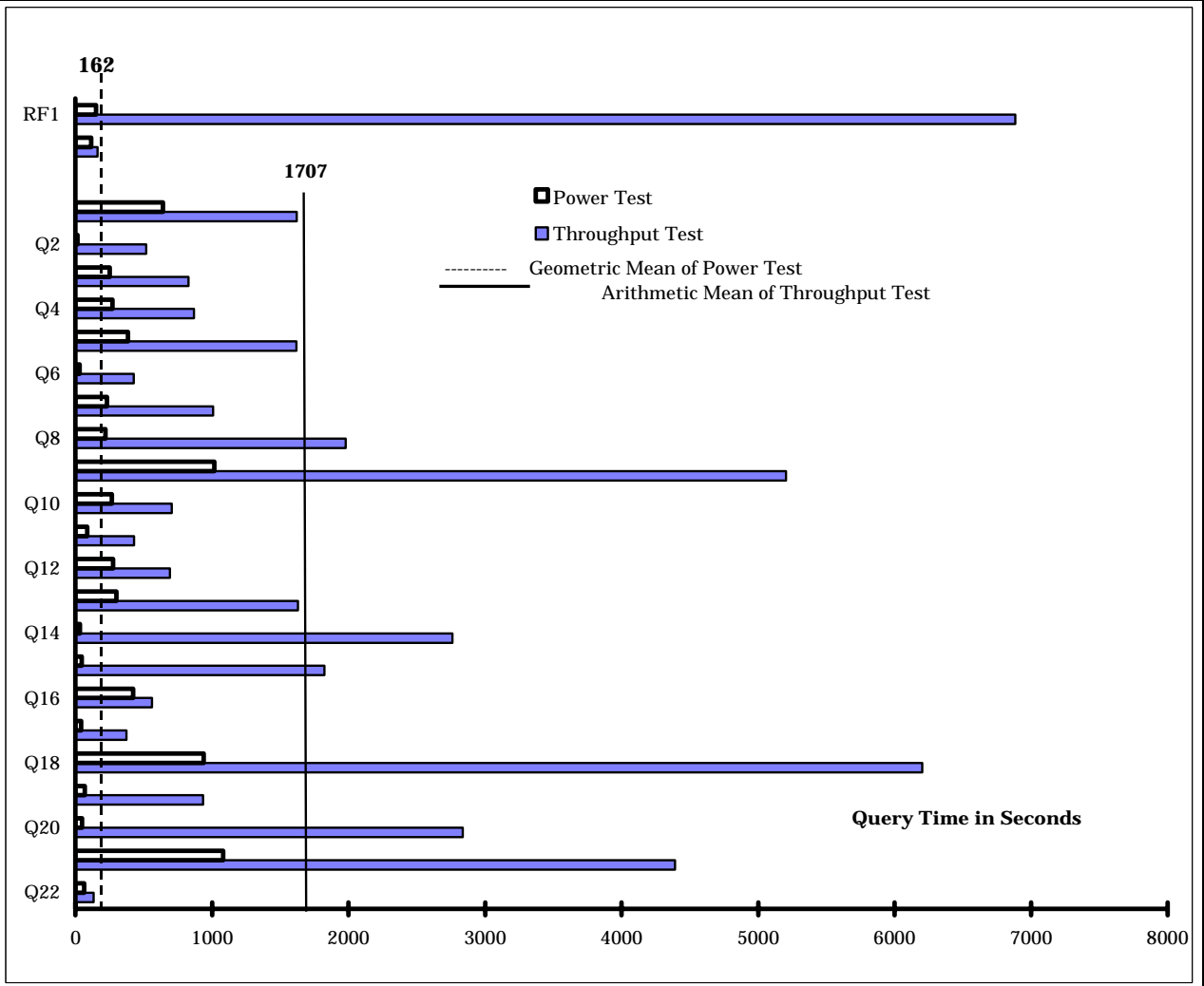


UNISYS	ES7000 Orion 130 Enterprise Server	TPC-H Rev. 2.0		
		Report Date 15 Oct 2002 Upgraded 28 Oct 2002		
Total System Cost	Composite Query per Hour Rating	Price Performance		
\$988,328	4,774.3 / QphH @ 300GB	\$207.02 / QphH @ 300GB		
Database size	Database Manager	Operating System	Other Software	Availability Date
300 GB	Microsoft SQL Server 2000 Enterprise Edition 64-bit	Microsoft Windows .NET Datacenter Server 2003 64-bit	Windows 2000 Server w/ IIS 5.0 and COM+ Microsoft Visual C++	31 Mar 2003



Database Load Time = 8:30:00	Load included backup: Y	Total Data Storage / Database Size = 20.16
RAID (Base tables): N	RAID (Base tables and Auxiliary Data Structures): N	RAID (All): N
System Configuration		
Processors	16 x 1.0GHz Intel® Itanium2™ with 3MB Level 3 Cache	
Memory	64 GB Main Memory	
Disk Controllers	18 PCI Fibre Channel 1 PCI SCSI	
Disk Drives	358 18GB FC (16.4 GB useable) 2 72GB FC (71.8 GB useable) 1 36GB SCSI (34.8 GB useable)	
Total Disk Storage	6049.6 GB	



ES7000 Orion 130 Enterprise Server

TPC-H Rev. 2.0

Report Date

15 Oct 2002

Upgraded 28 Oct 2002

Description	Part No.	Third Party		Unit Price	Qty.	Extended Price	3 yr.Maint. Price
		Brand	Price				
Server Hardware:							
SYS: ES7000-130 Orion, 16x1GHz Procs, 32GB Mem	ES7004163-GS			1		\$272,000	\$23,412
1x RAID Controller, 2x 36GB Disk (boot media)	Included						
Sentinel System Management S/W and Media	Included						
MEM: 4GB, 1 GB DIMMs	MEM41-4GB			1	8	\$5,485	\$43,880
IO: Module, PCI-Adapter Enclosure	MOD3000-PCI			1	2	\$1,723	\$3,446
CTRL: Fibre Channel HBA, 2-Port, 64-bit PCI	FCH720111-P64			1	18	\$1,813	\$32,634
CTRL: 10/100Mbs, 1 Ch., PCI	ETH32112-PCI			1	1	\$104	\$104
I/F: Monitor, 17-inch Color, Kybrd, Mse & Cable	ES70003-UIF			1	1	\$544	\$544
				Server Subtotal		\$352,608	\$23,412
Storage Hardware:							
DISK: 18GB Drive, 15K FC, SCA	ESM18304-F44			1	358	\$864	Spared
DISK: 18GB Drive, 15K FC, SCA 10% spares*	ESM18304-F44			1	36	\$864	\$31,104
DISK: 73GB Drive, 10K FC, SCA	ESM73203-F94			1	2	\$1,718	Spared
DISK: 73GB Drive, 10K FC, SCA 10% spares*	ESM73203-F94			1	2	\$1,718	\$3,436
DAE: Enclsr, FC JBOD 2 LCC w/ 0 Disk	ESM702-JBD			1	36	\$1,990	\$71,640
CBL: FC, 10 meter, DB9 Conn's, non-eql.	CBL135-10			1	18	\$193	\$3,474
PWR: Distribution Strip, 9-Plug, 220V	SFR9-PWR			1	16	\$295	\$4,720
CBL: Power, U.S. (Domestic), C20 - L6-20P	USE1936-LC6			1	16	\$126	\$2,016
CAB: 36U x 19" x 34" Open Front Cabinet	HRT361934-OFT			1	4	\$1,473	\$5,892
DOOR: 36U x 19", Rear	HRT3619-RDR			1	4	\$368	\$1,472
PNL: 36U x 34" Side Skins, L&R HRT	HRT3634-SDS			1	4	\$589	\$2,356
INSTL: Stabilizer Foot	RM1936-FOT			1	4	\$126	\$504
				Storage Subtotal		\$404,822	\$48,796
Server Software:							
O/S: Microsoft Windows .NET Datacenter & SQL Server	WNQ641616-LIT			2	1	\$234,827	\$23,760
ACC: Microsoft Visual Studio Professional 6.0 Win32	659-00390			2	2	\$1,079	Inc. below
ACC: Microsoft Windows 2000 Server Resource Kit				2	2	\$300	Inc. below
SRVC: Microsoft 3-year Maintenance for SQL Server	PRO-PRORS-16U-01			2	2	\$1,950	\$5,850
				Software Subtotal		\$236,206	\$29,610
				Configuration Total		\$993,636	\$101,818
Comark Large Volume Discount						(\$102,680)	
Unisys Service Pre-Pay Discount							(\$4,446)

Notes:

1. 3rd Party Brand and Pricing: 1 = Comark supplied product and Unisys supplied Maintenance price, 2 = Microsoft supplied pricing
2. HW & SW maintenance figured at 24 x 7 w/ 4 hr. max. response time for spares.
3. * = 10% spare disks added in place of onsite service.
4. This reflects SQL per processor pricing, which negates the need to price SQL CALs.

Three Year Cost of Ownership: \$988,328
QphH @ 300GB: 4,774.3
\$ / QphH@300GB: \$207.02

Benchmark results and test methodology audited by Lorna Livingtree of Performance Metrics, Inc.

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 assumption 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 benchmarks specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank You.



ES7000 Orion 130

(16P 1GHz/3MB)

TPC-H Rev. 2.0

Report Date: 15 Oct 2002

Upgraded 28 Oct 2002

Numerical Quantities Summary

Measurement Results

Scale Factor	300
Total Data Storage / Database Size	20.16
Start of Database Load	10/1/2002 22:01:17
End of Database Load	10/2/2002 5:13:38
Start of Database Backup	10/2/2002 5:13:47
End of Database Backup	10/2/2002 6:31:26
Database Load Time	8:30:00
Query Streams for Throughput Test	6
TPC-H Power	6768.6
TPC-H Throughput	3367.6
Composite Query per Hour Rating(QpH@100GB)	4774.3
Total System Price Over 5 Years	\$988,328
TPC-H Price Performance Metric	\$207.02

Measurement Intervals

Measurement Interval in Throughput Test (Ts)	42333.2 seconds
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Duration of Stream Execution:

	Seed	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 0	1002051338	10/2/02 21:14:06 10/2/02 23:06:27	10/2/02 21:11:26 10/2/02 21:13:56	10/2/02 23:06:28 10/2/02 23:08:23	1:52:20
Stream 1	1002051339	10/2/02 23:08:27 10/3/02 10:17:03	10/2/02 23:08:26 10/3/02 10:19:58	10/3/02 10:20:03 10/3/02 10:22:19	11:08:36
Stream 2	1002051340	10/2/02 23:08:28 10/3/02 9:20:17	10/3/02 10:22:23 10/3/02 10:25:46	10/3/02 10:25:52 10/3/02 10:28:32	10:11:49
Stream 3	1002051341	10/2/02 23:08:29 10/3/02 8:50:43	10/3/02 10:28:36 10/3/02 10:31:57	10/3/02 10:32:04 10/3/02 10:34:48	9:42:14
Stream 4	1002051342	10/2/02 23:08:30 10/3/02 9:41:04	10/3/02 10:34:52 10/3/02 10:38:12	10/3/02 10:38:19 10/3/02 10:41:05	10:32:34
Stream 5	1002051343	10/2/02 23:08:32 10/3/02 9:24:19	10/3/02 10:41:10 10/3/02 10:44:44	10/3/02 10:44:48 10/3/02 10:47:36	10:15:47
Stream 6	1002051344	10/2/02 23:08:38 10/3/02 9:52:38	10/3/02 10:47:41 10/3/02 10:51:03	10/3/02 10:51:10 10/3/02 10:53:59	10:43:59



ES7000 Orion 130

(16P 1GHz/3MB)

TPC-H Rev. 2.0

Report Date: 15 Oct 2002
Upgraded 28 Oct 2002

TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 0	642.5	15.0	251.5	272.6	383.6	30.6	231.8	219.6
Stream 1	640.7	907.6	1021.2	255.7	1870.1	476.7	1346.6	2422.9
Stream 2	2117.6	403.8	739.4	994.1	1740.0	108.5	865.7	1527.8
Stream 3	1624.2	311.8	762.7	1002.1	1439.4	497.0	1302.5	2218.2
Stream 4	1837.6	812.7	610.7	1186.3	1775.2	484.8	553.0	1843.6
Stream 5	1662.7	418.4	876.2	822.3	1674.6	496.3	866.8	1176.9
Stream 6	1847.2	256.9	960.5	947.8	1212.8	497.7	1104.9	2688.2
Min Qi	640.7	256.9	610.7	255.7	1212.8	108.5	553.0	1176.9
Max Qi	2117.6	907.6	1021.2	1186.3	1870.1	497.7	1346.6	2688.2
Avg Qi	1621.7	518.5	828.5	868.1	1618.7	426.8	1006.6	1979.6
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 0	1018.2	266.3	84.8	276.8	301.0	32.7	45.8	423.0
Stream 1	1961.5	848.4	329.9	857.5	1811.9	2120.2	1248.5	576.0
Stream 2	6126.0	666.5	647.6	605.7	1188.6	3639.7	1660.7	793.2
Stream 3	5190.0	589.2	465.5	670.8	1345.8	2466.7	2572.5	403.0
Stream 4	5955.4	600.1	367.3	705.9	1567.5	2213.2	2139.2	493.4
Stream 5	5302.6	857.9	443.3	721.7	1459.3	2565.4	2200.0	483.1
Stream 6	6693.2	667.9	316.7	582.7	2402.4	3562.7	1124.4	617.9
Min Qi	1961.5	589.2	316.7	582.7	1188.6	2120.2	1124.4	403.0
Max Qi	6693.2	857.9	647.6	857.5	2402.4	3639.7	2572.5	793.2
Avg Qi	5204.8	705.0	428.4	690.7	1629.3	2761.3	1824.2	561.1
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	41.0	939.0	69.9	47.5	1082.1	64.9	150.6	114.5
Stream 1	135.2	6131.6	119.0	9268.8	5700.4	65.7	40291.4	135.8
Stream 2	608.4	8189.6	182.1	306.9	3450.3	146.7	202.8	160.1
Stream 3	386.5	5752.6	923.3	233.0	4587.6	190.1	200.7	163.8
Stream 4	392.5	6201.8	1282.6	1522.7	5284.4	123.8	199.6	166.4
Stream 5	674.0	6844.4	1332.2	205.3	5737.1	126.8	214.0	168.2
Stream 6	46.5	4100.2	1764.3	5496.1	1595.3	153.0	201.4	169.5
Min Qi	46.5	4100.2	119.0	205.3	1595.3	65.7	199.6	135.8
Max Qi	674.0	8189.6	1764.3	9268.8	5737.1	190.1	40291.4	169.5
Avg Qi	373.9	6203.4	933.9	2838.8	4392.5	134.4	6885.0	160.6