UNISYS	**ES7000 Model 7600R Enterprise Server (16s)**	**TPC-E 1.6.0** **TPC Pricing 1.3** **Report Date** November 19, 2008 **Revision Date** November 25, 2008

TPC-E Throughput	Price/Performance	Availability Date	Total System Cost
1493.42 tpsE	**$917.26 USD per tpsE**	**December 9, 2008**	**$1,369,840 USD**

Database Server Configuration			
Operating System	Database Manager	Processors/Cores/ Threads	Memory
Microsoft Windows Server 2008 Datacenter Edition (64-bit)	**Microsoft SQL Server 2008 Enterprise Edition (64-bit)**	**16/64/64**	**512GB**

Tier A   Tier B

2 Clients ES3220L Server   **Server ES7000 Model 7600R**   **Storage RTS 4200 RAID**

2 Driver Machines

4Gb Fibre Channel

② ⑰ ③ ③

1Gb Ethernet   1Gb Ethernet

(Database)

(Log)

Client **ES3220L Server** 2 x 2.00GHz Intel® Quad-core Xeon™ w/ 4MB L2 cache, 4 GB memory, 1 x 73GB internal disk, 2 Inbuilt 1Gb Eth. cntrls.	**Server** **ES7000 Model 7600R** 16 x Intel® Hex-core Xeon™ X7460 2.66GHz w/ 16MB L3 cache, * 512 GB memory, 2 x 73GB SAS disk, internal , 1 x PCI SAS RAID cntrl, internal, 9 x PCI Fibre Channel cntrls, 8 Inbuilt 1Gb Eth. cntrls. (2 used). *(4 of 6 cores used / socket)	**Storage** **RTS 4200 RAID Storage** 765 x 73GB 10 x 146GB External Fibre Channel disks, 19 x FC RAID controllers

Initial Database Size	Redundancy Level: 1	Database Storage
5,809 GB	**RAID-10**	**765 x 73GB 15K rpm** **10 x 146GB 15K rpm**

Description	Part Number	Price Source	Unit Price	Qty.	Extended Price	3-yr.Maint. Price
Server Hardware:						
ES7000 Model 7600R with 32 GB	ES7763163-100	1	$135,003	1	$135,003	$6,768
Memory Initial 8GB with 4 GB DIMMs	FAC7102403-ICA	1	$1,514	4	$6,056	
Boot Drive (Mirrored Drives)	FAC7760361-IDK	1	$2,083	1	$2,083	
Memory Expansion - 8GB	FAC7102403-8GB	1	$720	56	$40,320	
USB to CAT5 KVM Converter	KVM9002301-CNV	1	$250	1	$250	
Emulex LPe12002	NU9233231-IOD	1	$3,986	9	$35,874	
			Subtotal		$219,586	$6,768
Server Software:						
Windows 2008 Srvr, DC x64 Edtn	WDX286416-NPR	1	$47,984	1	$47,984	
Windows 2008 Server, DC Lmtd Sbscrptn, 1yr.	DUS2200316-LI	1	$8,400	2	$16,800	
Microsoft SQL Server 2008 Enterprise x64 Edtn.	810-07507	2	$23,432	16	$374,912	
Microsoft Problem Resolution Svc		2	$245	1		$245
			Subtotal		$439,696	$245
Storage Hardware:						
Rack Mount Kit for Enclosures -1 Pack	RTS400012-P01	1	$855	4	$3,420	
Rack Mount Kit for Enclosures -5 Pack	RTS400012-P05	1	$3,815	1	$3,815	
Enclosure with Disk (30 Pack)	RTS4307315-30P	1	$333,144	1	$333,144	
Enclosure with Disk	RTS4307315-1P	1	$13,881	4	$55,524	
Dual RAID Controller for Log	RTS422880-T2	1	$15,490	1	$15,490	
UPS for Log Disk	RTS412120-UPS	1	$2,246	1	$2,246	
SAN Manager Software	RTS44101-SAN	1	$2,246	1	$2,246	
146 GB Disk Drive	RTS4314615-4FH	1	$675	10	$6,750	
73GB Disk Drive	RTS4307315-4FH	1	$495	255	$126,225	
RAID Controller 1x1	RTS422880-1X1	1	$10,102	2	$20,204	
RAID Controller 1x1 - 15 Pack	RTS4228801-P15	1	$104,277	1	$104,277	
AC Power Cord	RTS400740-CBL	1	$14	34	$476	
			Subtotal		$673,817	
Infrastructure						
Snap in 1U Filler	RCK4219421-1UP	1	$20	5	$100	
Snap in 3 U Filler	RCK4219421-3UP	1	$22	7	$154	
42U Rack	RCK4219421-SC2	1	$462	1	$462	
Power Strip	PWR4243001-SD	1	$323	1	$323	
Power Strip	PWR4243001-SVD	1	$332	2	$664	
42U 19" Rack	RCK4219421-FSS	1	$2,769	1	$2,769	
8 port KVM switch	KVM9083101-SWC	1	$1,300	1	$1,300	
16 Port Ethernet Switch (Netgear)	FS116	4	$56	2	$112	
16 Port Gigabit Ethernet Switch (Netgear)	GS516T	5	$256	1	$256	
Rack mount LCD w/1U Drawer	MON2145-LCD	1	$2,700	1	$2,700	
Rack mount keyboard, w/touchpad, USB	KBR210501-USB	1	$275	1	$275	
42U Rack - No Doors	RM421940-FRM	1	$1,286	5	$6,429	
8 Outlet Power Strip	SFR9-PWR	1	$170	19	$3,230	
Power Cord	USE1936-LC6	1	$90	19	$1,710	
Fiber Channel Cables - 18 Pack	GCFAZLLM20-M	3	$625	1	$625	
Ethernet Cables - 27 Pack	GCPO888925-BK	3	$136	1	$136	
			Subtotal		$21,244	
Client Hardware:						
ESL3220 Quad Core Server 2.0 GHz	ESL3220611-200	1	$787	2	$1,574	$986
ESL:3220 Brand Kit	ESL322001-UNI	1	$19	2	$38	
VersaRail Mount Kit	ESL322001-RVR	1	$249	2	$498	
Processor Upgrade	CPL3220612-200	1	$369	2	$738	
Hard Drive - 73GB 15K SAS	HDP73115-SAS	1	$299	2	$598	
Memory - 4GB (8 x 512 DIMMs)	DIM3220083-4GB	1	$628	2	$1,256	
Bezel	ESL322001-BZL	1	$19	2	$38	
SAS RAID Controller	RAD322004-P6I	1	$299	2	$598	
CD/DVD Drive	DVW322001-INT	1	$99	2	$198	
CD/DVD Drive Cable	CBL322001-CD	1	$20	2	$40	
USB to Cat5 KVM Adapter	KVM9002301-CNV	1	$250	2	$500	
			Subtotal		$6,076	$986
Client Software:						
O/S: Windows Server 2008, Standard Edition	P73-04165	2	$711	2	$1,422	
			Subtotal		$1,422	

Unisys Product Pricing (List Prices) - Michael Heifner (215)986-4757 (where Price Source = 1)

			Total USD		$1,361,841	$7,999

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

Notes:		
1. * 10% or minimum 2 spares are added in place of onsite service.	**3-Year Cost of Ownership:**	**$1,369,840** USD
2. HW & SW maintenance at 24 x 7 w/ 4 hr. max. response time for spares.	**TPC-E Throughput:**	**1,493.42** tpsE
3. Price Source: 1 = Unisys Product Price, Unisys Maintenance Price	**Price/Performance:**	**$917.26** USD
2 = Microsoft 3 = GoCables 4 = ProVantage 5 = Xtreme Gadgets		

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

Numerical Quantities Summary

Reported Throughput:				**1493.42**	
Configured Customers:				**750,000**	
Response Time (in seconds)		Minimum	Average	90th %tile	Maximum
Broker-Volume		0.01	0.06	0.11	2.05
Customer-Position		0.00	0.03	0.06	2.72
Market-Feed		0.00	0.04	0.07	2.66
Market-Watch		0.00	0.05	0.09	4.60
Security-Detail		0.00	0.02	0.04	2.41
Trade-Lookup		0.00	0.56	0.80	3.33
Trade-Order		0.00	0.09	0.14	1.76
Trade-Result		0.00	0.11	0.18	2.11
Trade-Status		0.00	0.02	0.05	1.54
Trade-Update		0.01	0.66	0.87	3.47
Data-Maintenance		0.01	0.13	N/A	0.81
Transaction Mix (in percent of total transactions)				Transaction Count	Mix
Broker_Volume				5,268,290	4.900%
Customer-Position				13,976,891	13.000%
Market-Feed				1,075,286	1.000%
Market-Watch				19,352,704	18.000%
Security-Detail				15,052,471	14.000%
Trade-Lookup				8,600,780	7.999%
Trade-Order				10,858,957	10.100%
Trade-Result				10,752,677	10.001%
Trade-Status				20,428,880	19.001%
Trade-Update				2,150,108	2.000%
Data-Maintenance				120	N/A
Test Duration and Timing					
Ramp-up Time (hh:mm:ss)				0:40:37	
Measurement Interval (hh:mm:ss)				2:00:00	
Business Recovery Time (hh:mm:ss)				0:54:43	
Total Number of Transactions Completed in Measurement Interval				107,517,044	