UNISYS

Aquanta QS/2 Server
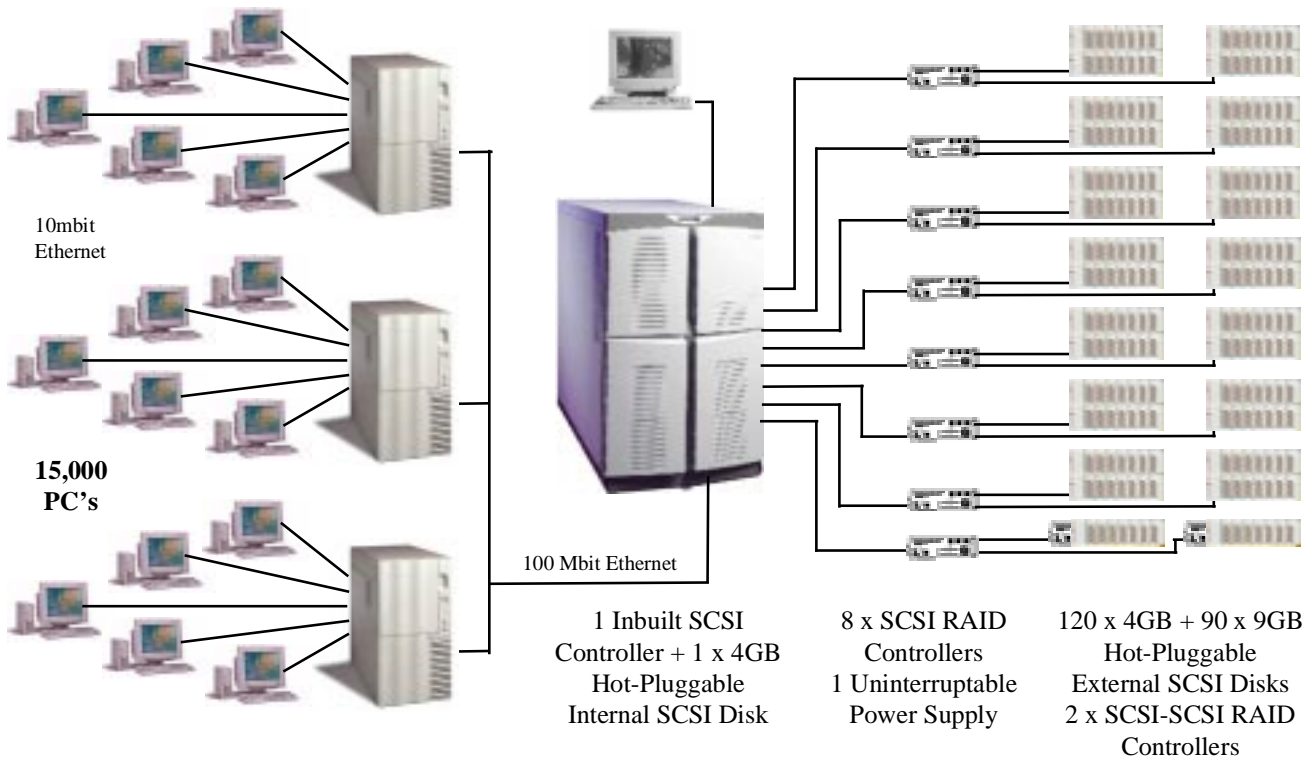## C/S

TPC-C Rev. 3.4

Report Date:
9-Nov-1998

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$466,883	**18,707.70 tpmC**	**$24.96 per tpmC**	**29-Dec-1998**

Processors	Database Manager	Operating System	Other Software	Number of Users
4 Pentium® II Xeon 400 MHz 1MB L2 cache	Microsoft SQL Server Enterprise Edition 7.0	Microsoft NT Server 4.0 Enterprise Edition	Microsoft IIS 3.0 Tuxedo 6.3 CFS	**15,000**

3 x Aquanta GPS Clients   **Aquanta QS/2 Server**

10mbit Ethernet

15,000 PC's

100 Mbit Ethernet

1 Inbuilt SCSI
Controller + 1 x 4GB
Hot-Pluggable
Internal SCSI Disk

8 x SCSI RAID
Controllers
1 Uninterruptable
Power Supply

120 x 4GB + 90 x 9GB
Hot-Pluggable
External SCSI Disks
2 x SCSI-SCSI RAID
Controllers

System Components	Server		Clients	
	Quantity	Type	Quantity	Type
Processors	4	400 MHz Pentium® II Xeon with 1MB Level 2 Cache	3	2 x 300MHz Pentium® II with 512KB Level 2 Cache
Memory	1	4096MB	3	256MB
Disk Controllers	8 + 2 1	SCSI RAID Inbuilt SCSI	3	Inbuilt SCSI
Disk Drives	120 90 1	4.24 GB 8.48 GB 4.23 GB	3	2.02 GB
Total Storage		1275.87 GB		6.06 GB
CD-ROM / Tape	1	CD-ROM Drive	3	CD-ROM Drive

Description	Style	Third Party Brand	Pricing	Unit Price	Qty.	Extended Price	5 Years Maint.
Server Hardware							
SYS: Aquanta QS/2, w/ CDRom, 0 Proc, 0MB Mem	QS2000111-BAS		1	$7,815	1	$7,815	$2,016
PROC: 1x400MHz Pentium II /1MB Cache	XEO2400-1MB		1	$3,955	4	$15,820	$3,552
ACC: Voltage Regulator Module, Processor	XEO24001-VRM		1	$46	6	$276	
MEM:ECC Memory Board, 0MB Mem	MEM241-MBD		1	$470	1	$470	$72
MEM: 128 MB Memory Upgrade	DIM5072-128		1	$786	32	$25,152	$6,144
DISK: 4GB Drive, Ultra SCSI SCA	HDS417-CX1		1	$746	1	$746	$192
ETHERNET: 100Mbit/sec, PCI 32-bit	ETH1010051-PCI		1	$117	1	$117	
CDROM: 14-32x Speed, SCSI	CDR1432-SI		1	$161	1	$161	$48
MONITOR:15-inch Color	EVG2100-E		1	$272	1	$272	
KEYBD: 104 Key Spacesaver	PCK104-SKB		1	$31	1	$31	
MOUSE: 2 Button PS2	PWM1-PS2		1	$23	1	$23	
CTRL:RAID 3-Ch PCI w/ 32MB Mem & Bat.BU + 10% spares	DAC1164-P	Mylex	2	$2,838	10	$28,380	$500
CBL: SCSI 68-pin HD Conn.	CBL2210-OSM		1	$90	16	$1,440	
DISK: 4GB Drive, 10K, SCA + 10% spares	OSD4203-W45		1	$625	132	$82,500	spared
DISK: 9GB Drive, 10K, SCA + 10% spares	OSD9203-W45		1	$930	99	$92,070	spared
CAB: Disk, 7 SCA w/ 050 I/F & Cat-Cbl, 0 Disks, 3U	OSM310050-U05		1	$1,345	14	$18,830	$7,728
CAB: Disk, 7 SCA w/ 057 I/F, 0 Disks, 3U	OSM310057-U05		1	$1,350	14	$18,900	$7,728
CAB: Disk, 7 SCA w/ 100 I/F, 0MB, 0 Disks, 3U	OSM310100-U05		1	$2,727	2	$5,454	$2,448
MEM: 32MB OSM cache	OSM1000-C32		1	$150	2	$300	$144
CAB: Rackmount Kit for Disk Cages	OSM3000-RMK		1	$84	30	$2,520	
PWR: 2nd Power Supply Upgrade, OSM Cabinet	OSM3000-APM		1	$261	2	$522	$192
PWR:3000 VA UPS, 3U	UPD30001-SXR		1	$2,239	1	$2,239	$648
CAB: Rack Cabinet, w/ fill pnls, 36U	CAB361-SXR		1	$1,384	3	$4,152	
CAB: Link kit for 36U cabinets	LNK361-SXR		1	$231	2	$462	
CAB: Bezel kit 36U	BEZ3611-CAB		1	$206	3	$618	
CAB: Stabilizer kit 0U	WGT39581-SXR		1	$110	3	$330	
PNL: L&R side panels 36U	PAN3621-SXR		1	$192	1	$192	
					Subtotal	**$309,792**	**$31,412**
Server Software							
Microsoft NT Server Enterprise Edition 4.0, incl 25 CALs		Microsoft	3	$3,999	1	$3,999	$0
Microsoft SQL Server Enterprise Edtion 7.0, unlimited user license		Microsoft	3	$28,999	1	$28,999	$10,475
					Subtotal	**$32,998**	**$10,475**
Client Hardware							
SYS: Aquanta GPS, 0 Proc, 0MB Mem	GPS600071-BAS		1	$945	3	$2,835	$936
PROC:1x300MHz Pentium II/512KB Cache	GPS2300-512		1	$863	6	$5,178	$1,152
UPGRD: GPS P-II 2nd CPU Supt.	GPS600071-P2U		1	$32	3	$96	$144
MEM: 128 MB Memory Upgrade	DIM672-128		1	$741	6	$4,446	$1,008
DISK: 2GB Ultra SCSI 3.5 Internal	HDS2000-SW7		1	$573	3	$1,719	$864
CDROM: 14-32x Speed, SCSI	CDR1432-SI		1	$161	3	$483	$144
ETHERNET: 100Mbit/sec, PCI 32-bit	ETH101007-PCI		1	$101	6	$606	
ETHERNET: 100Mbit/sec, PCI 32-bit, Quad	SF1001-ET4		1	$1,212	3	$3,636	$720
MONITOR:15-inch Color	EVG2100-E		1	$272	3	$816	
KEYBD: 104 Key Spacesaver	PCK104-SKB		1	$31	3	$93	
MOUSE: 2 Button PS2	PWM1-PS2		1	$23	3	$69	
					Subtotal	**$19,977**	**$4,968**
Client Software							
Microsoft Windows NT Server 4.0, incl 5 CALs		Microsoft	3	$809	3	$2,427	$0
Microsoft Visual C++ Professional 5.0		Microsoft	3	$499	1	$499	$0
TUXEDO Core Functional Services 6.3 for NT		BEA	4	$3,000	3	$9,000	$6,750
					Subtotal	**$11,926**	**$6,750**
User Connectivity							
Ethernet Hub, 8-Port 100TX TrueFast + 10% spares	NX-H8TXD	Netlux	5	$215	3	$645	spared
Ethernet Hub, 8-Port 10Base-T + 1-Port BNC + 10% spares	DEH2924	DataComm	6	$33	2063	$68,079	spared
					Subtotal	**$68,724**	**$0**
					Total	**$443,417**	**$53,605**
Western Micro discount			1			**($30,139)**	

Notes:

1. HW Maintenance - 1st 36 months included in Unisys product costs. The next 24 months
   are at the level: Standard Performance-Gold.
2. All Microsoft maintenance is covered by the maintenance cost of Microsoft SQL Server.
3. 10% or minimum 2 spares are added in place of onsite service (products have a five
   year return-to-vendor warranty)
4. Pricing: 1 = Western Micro, 2 = Mylex, 3 = Microsoft, 4 = BEA, 5 = Netlux, 6 = DataComm Whse

Five Year Cost of Ownership	**$466,883**
TPC-C Throughput	**18,707.70**
$/tpmC	**$24.96**

The benchmark results and test methodology were audited by Richard Gimarc of Performance Metrics, Inc.

NUMERICAL QUANTITIES SUMMARY
Unisys Aquanta QR/2 Server
Microsoft SQL Server Enterprise Edition 7.0

MQTh, Computed Maximum Qualified Throughput: **18707.70**

% throughput difference, reported & reproducibility runs: 0.03%

Transaction Mix

New Order	44.81%
Payment	43.10%
Delivery	4.00%
Stock-Level	4.03%
Order-Status	4.05%

Response Times

Transaction	Average	Maximum	90th %ile
New-Order	0.43	5.36	0.62
Payment	0.29	5.38	0.46
Delivery	0.13	0.74	0.15
Stock-Level	2.14	3.73	2.56
Order Status	0.33	1.32	0.50
Menu	0.12	3.52	0.13
Delivery (Deferred)	0.48	2.47	0.70

Response time delay added for emulated components (seconds)

RT Response time	0.1
Menu Response time	0.1

Keying/Think Time Times (seconds)

Transaction	Minimum	Average	Maximum
New-Order	18.00/0	18.01/12.06	18.07/120.31
Payment	3.00/0	3/12.04	3.06/120.31
Delivery	2.00/0	2/5.06	2.05/50.6
Stock-Level	2.00/0	2/5.03	2.03/50.6
Order-Status	2.00/0	2/10.12	2.04/100.71

Test Duration

Ramp up time	42 minutes
Measurement interval (M)	30 minutes
Transactions (all types) completed during measurement interval	1252510
Ramp-down time	82 minutes

Checkpointing:

Number of checkpoints	1
Checkpoint interval	30 minutes