

TPC Benchmark™ C

Full Disclosure Report for



PRIMERGY R450

**Using Microsoft SQL Server 2000
Enterprise Edition SP2**

**and Microsoft Windows 2000
Advanced Server SP2**

March 12, 2002

First Edition



PRIMERGY R450

C/S with 3 PRIMERGY L200

TPC-C REV 5.0
EXECUTIVE SUMMARY

Report Date: March 12, 2002

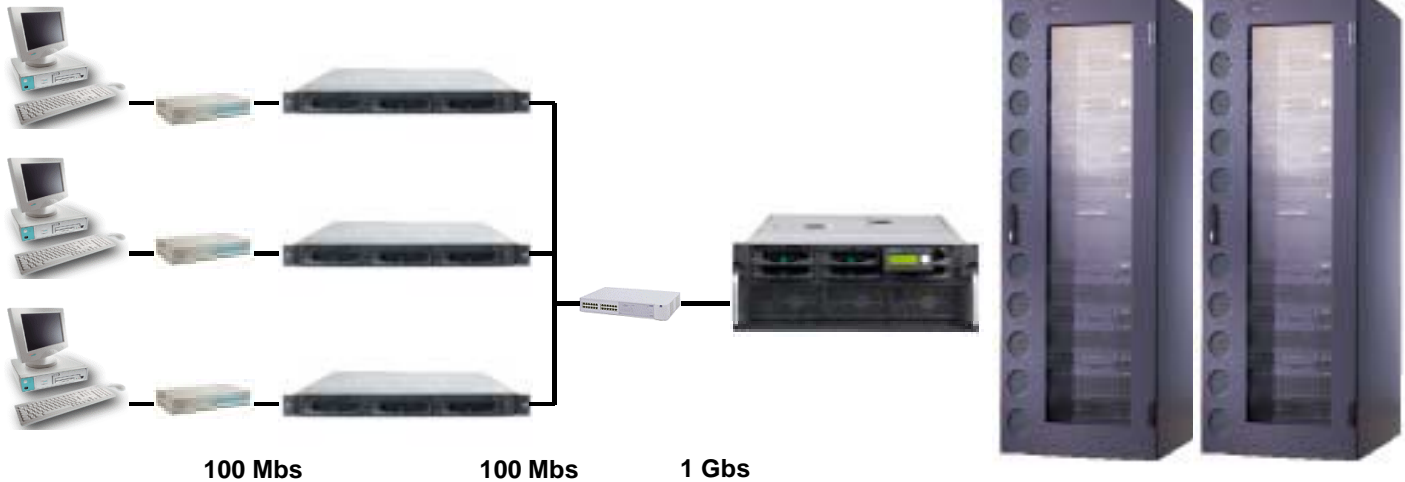
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
€432,481	48,906.18 tpmC	€8.84/tpmC	May 1, 2002	
Processors	Database Manager	Operating System	Other Software	Number of Users
Server 4 Intel Xeon™ MP 1.60 GHz with 1M iL3 Cache Client 3 x 2 Intel Pentium® III 1.26 GHz with 512 KB SLC	Microsoft SQL Server 2000 Enterprise Edition SP2	Microsoft Windows 2000 Advanced Server SP2	Windows 2000 Server, IIS 5.0 and COM+	39,000

Terminals:
39000 users

Client:
3 x PRIMERGY L200
13000 users per client

Server:
PRIMERGY R450
6 SCSI Controller

Storage:
21 x PRIMERGY S30
220 disk



System Components	Qty/Srv.	1 PRIMERGY R450	Qty/Client	3 PRIMERGY L200
Processors	4	Intel Xeon™ MP 1.60 GHz with 1M iL3 Cache	2	Intel Pentium® III 1.26 GHz with 512 KB SLC
Memory	8	GB	512	MB
Disk Controller	6	Mylex eXtremeRAID 2000	1	SCSI Controller
Disk Drives	235	18 GB	1	18 GB
Total GB of Storage	1	3,755 GB		
Tape Drive	1	20 GB DAT		



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Description	Part Number	Third Party	Unit Price	Qty.	Extended Price	3yr Maint. Price
Brand Pricing						
PRIMERGY R450 GE RS Xeon 1.6GHz 1MB iL3	S26361-K845-V102	1	11,600 Euro	1	11,600 Euro	
Processor Xeon 1.6GHz 1MB iL3	S26361-F2636-E161	1	7,160 Euro	3	21,480 Euro	
Memory 2 GB PC1600 DDR RAM	S26361-F2550-E544	1	2,860 Euro	4	11,440 Euro	
Tape DAT DDS4 20GB	S26361- F2233- E3	1	1,020 Euro	1	1,020 Euro	
Disk 18GB, 10k, U160, hot plug, 1"	SNP: SY- F2336L118- P	1	420 Euro	1	420 Euro	
PCI Gigabit Ethernet Controller	D:RM6T5-CL18	1	3,068 Euro	2	6,136 Euro	
Mylex eXtremeRAID 2000 4x U160 SCSI, BBU	S26361- F2190- E128	1	2,700 Euro	6	16,200 Euro	
CD- ROM, ATAPI 0.5"	SNP: SY- F2313E1- P	1	100 Euro	1	100 Euro	
Keyboard KBPC S2 D	S26381- K297- E120	1	13 Euro	1	13 Euro	
Monitor 151E	S26361- K819- V150	1	160 Euro	1	160 Euro	
PRIMERGY S30 GE RH 2-Channel U160 SCSI	SNP: SY- K638V210- P	1	2,791 Euro	1	2,791 Euro	
PRIMERGY S30 Rack Kit	SNP: SY- F2261E8- P	1	120 Euro	1	120 Euro	
SCSI Cable UHD68(S)	SNP: SY- F2365L20- P	1	104 Euro	2	208 Euro	
3 Year Maintenance Server, 7x24, 4hr Resp.	FSP: GX3S0400AAAASR	1				1,200 Euro
Server Hardware Subtotal					71,688 Euro	
DataCenter Rack 38 HU	SNP: SY- K614V101- P	1	1,560 Euro	2	3,120 Euro	
APC-USV 3000VA Rack	SNP: PS- E421E1- P	1	1,740 Euro	2	3,480 Euro	
18GB, 15k, U160, Hot plug, 1"	S26361-F2336-E518	1	674 Euro	234	157,658 Euro	
18GB, 15k, U160, Hot plug, 1", 10%sprare	S26361-F2336-E518	1	674 Euro	24	16,170 Euro	
PRIMERGY S30 GE RH 1-Ch incl. Spare	SNP:SY-K638V230-P	1	2,791 Euro	22	61,408 Euro	
PRIMERGY S30 Rack Kit incl. spare	SNP: SY- F2261E8- P	1	120 Euro	22	2,640 Euro	
SCSI Cable UHD68(S) incl. spare	SNP: SY- F2365L20- P	1	104 Euro	22	2,288 Euro	
3 Year Maintenance Rack, 7x24, 4hr Resp.	FSP: GX3S0400AAAASR	1				1,250 Euro
Storage Subtotal					246,763 Euro	
Maint. Server + Storage						2,450 Euro
PRIMERGY L200 GE RS PIII 1.26GHz/ 512KB	S26361- K647- V103	1	2,076 Euro	3	6,228 Euro	
Processor PIII 1.26GHz/ 512KB	S26361- F2599- E526	1	684 Euro	3	2,052 Euro	
Memory 256MB SDRAM PC133 ECC	S26361- F2306- E522	1	220 Euro	6	1,320 Euro	
Disk 18GB, U160, hot plug, 1"	SNP: SY- F2266E118-A	1	420 Euro	3	1,260 Euro	
CD- ROM, ATAPI 0.5"	SNP: SY- F2313E1- P	1	100 Euro	3	300 Euro	
Monitor 151E	S26361- K819- V150	1	160 Euro	3	480 Euro	
Tastatur KBPC S2 D	S26381- K297- E120	1	13 Euro	3	38 Euro	
3 Year Maintenance, 7x24, 4hr Resp.	FSP: GX3S0400AAAASR	1	975 Euro	3		2,925 Euro
Client Hardware Subtotal					11,678 Euro	2,925 Euro
Windows Advanced Svr 2000 (open program no level)	MSO:C10-00475	1	2,570 Euro	1	2,570 Euro	
MS SQL-Server 2000 Ent.Edit. Per Proc Lic. (open program level C)	MSO:810-00846	1	19,271 Euro	4	77,085 Euro	
Server Software Subtotal					79,654 Euro	
Windows Svr 2000 (open program no level)	MSO:C11-00821	1	791 Euro	3	2,372 Euro	
VC++ Pro 6.0 Win32	MSO:048-00426	1	434 Euro	1	434 Euro	
Client Software Subtotal					2,805 Euro	
Microsoft Software Support (all above)	SNP:10901600012					10,353 Euro
24x10/0100Mbit Switch (+10% spare)	DES-3225G	2	856 Euro	3	2,568 Euro	
Gigabit Uplink (+10% spare)	DES-3251G	2	532 Euro	3	1,596 Euro	
User Connectivity Subtotal					4,164 Euro	
Total					416,753 Euro	15,728 Euro

1=Fujitsu-Siemens, 2=Buerotechnik Sachsen GmbH

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 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 section of the TPC benchmark pricing 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.

Three-Year Cost of Ownership: €432,481
tpmC Rating: 48,906.18
€/ tpmC: 8.84

Note: The benchmark results and test methodology were audited by Bradley Askins of InfoSizing

Numerical Quantities Summary

MQTh, computed Maximum Qualified Throughput		48,906.18 tpmC	
Response Times (in seconds)	90th percentile	Average	Maximum
- New-Order	0.56	0.35	5.46
- Payment	0.46	0.26	4.58
- Order-Status	0.48	0.29	5.64
- Delivery (interactive portion)	0.11	0.10	0.46
- Delivery (deferred portion)	0.41	0.25	1.19
- Stock-Level	1.86	1.37	4.84
- Menu	0.11	0.10	1.03
Transaction Mix, in percent of total transactions			
- New-Order			44.90 %
- Payment			43.03 %
- Order-Status			4.01 %
- Delivery			4.03 %
- Stock-Level			4.02 %
Emulation Delay (in seconds)		Response Time	Menu
- New-Order		0.1	0.1
- Payment		0.1	0.1
- Order-Status		0.1	0.1
- Delivery (interactive)		0.1	0.1
- Stock-Level		0.1	0.1
Keying/Think Times (in seconds)	Minimum	Average	Maximum
- New-Order	18.00/0.000	18.02/12.06	18.06/120.52
- Payment	3.00/0.000	3.02/12.05	3.06/120.51
- Order-Status	2.00/0.000	2.02/10.02	2.05/100.50
- Delivery (interactive)	2.00/0.000	2.02/ 5.06	2.04/ 50.51
- Stock-Level	2.00/0.000	2.02/ 5.05	2.04/ 50.51
Test Duration and Checkpointing			
- Ramp-up time		35 minutes	
- Measurement interval		120 minutes	
- Number of checkpoints		4	
- Checkpoint interval		30 minutes	
- Transactions during measurement interval (all types)		13,597,484	