TPC Benchmark™ C

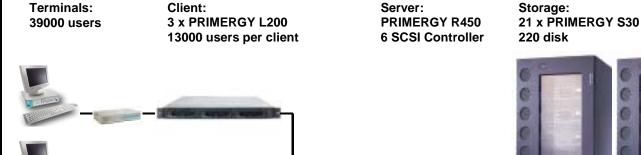Full Disclosure Report for

FUJITSU

PRIMERGY R450

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

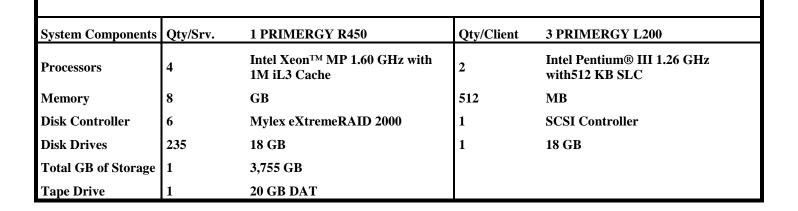**and Microsoft Windows 2000**

Advanced Server SP2

May 24, 2002

First Edition

FUJITSU	**PRIMERGY R450** C/S with **3** PRIMERGY L200		TPC-C REV 5.0 EXECUTIVE SUMMARY
			Report Date: May 24, 2002
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
Yen 65,952,610	**48,906.18 tpmC**	**Yen 1,348.55/tpmC**	**July 10, 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+**	**39000**

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

100 Mbs   **100 Mbs**   **1 Gbs**

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 with512 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**		

FUJITSU

PRIMERGY R450

C/S with 3 PRIMERGY L200

TPC-C REV 5.0
EXECUTIVE SUMMARY

Report Date: May 24, 2002

Description	Part Number	Third Party Brand Pricing	Unit Price	Qty.	Extended Price	3yr Maint. Price
PRIMERGY R450 Xeon-MP 1.6GHz 1MB il3	PGR4A41R	1	2,051,000 Yen	1	2,051,000 Yen	
Processor Xeon-MP 1.6GHz 1MB il3	PG-FG114	1	952,000 Yen	3	2,856,000 Yen	
Memory 512MB->2GB(512MBx4)						
PC1600DDR RAM Conversion Kit	PGBRU2M	1	420,000 Yen	1	420,000 Yen	
Memory 2GB(512MBx4) PC1600DDR RAM	PG-RM2M	1	532,000 Yen	3	1,596,000 Yen	
Tape DAT DDS4 20GB	GP5SDT401	1	140,000 Yen	1	140,000 Yen	
Disk 18GB, 10K, U160, hot plug, 1"	PG-HDH81B	1	56,000 Yen	1	56,000 Yen	
PCI Gigabit Ethernet Controller	PG-1891	1	35,000 Yen	1	35,000 Yen	
Mylex eXtremeRAID 2000 4x U160 SCSI, BBU	PG-144B	1	294,000 Yen	6	1,764,000 Yen	
Keyboard	GP5-R1KB1	1	14,000 Yen	1	14,000 Yen	
Monitor 15"	FMV-DP849	1	18,900 Yen	1	18,900 Yen	
PRIMERGY S30 GE RH 2-Channel U160 SCSI	PG-R1DC6	1	238,000 Yen	1	238,000 Yen	
SCSI Cable UHD68(S)	PG-CBLS004	1	21,000 Yen	2	42,000 Yen	
3 Year Maintenance Server, 7x24, 4hr Resp.						1,894,180 Yen
Server Hardware Subtotal					9,230,900 Yen	
DataCenter Rack 38 HU	PG-R3RC1	1	238,000 Yen	2	476,000 Yen	
APC-USV 3000VA Rack	GP5-R1UP3	1	271,600 Yen	2	543,200 Yen	
18GB, 15k, U160, Hot plug, 1"	PG-HDH85B2	1	105,000 Yen	234	24,570,000 Yen	
PRIMERGY S30 GE RH 1-Channel U160 SCSI	PG-R1DC6BZ	1	238,000 Yen	20	4,760,000 Yen	
SCSI Cable UHD68(S)	PG-CBLS004	1	21,000 Yen	20	420,000 Yen	
3 Year Maintenance Rack, 7x24, 4hr Resp.						6,313,830 Yen
Storage Subtotal					30,769,200 Yen	
Maint. Server + Storage						8,208,010 Yen
PRIMERGY L200 GE RS PIII 1.26GHz/ 512KB	PGL2AP1R	1	319,500 Yen	3	958,500 Yen	
Processor PIII 1.26GHz/ 512KB	PG-FG10P	1	140,000 Yen	3	420,000 Yen	
Memory 256MB(128MBx2) SDRAM PC133 ECC	PG-RM25GA	1	49,000 Yen	3	147,000 Yen	
CD- ROM, ATAPI 0.5"	PG-CD315	1	17,500 Yen	3	52,500 Yen	
Monitor 15"	FMV-DP849	1	18,900 Yen	3	56,700 Yen	
Keyboard	GP5-R1KB1	1	14,000 Yen	3	42,000 Yen	
3 Year Maintenance, 7x24, 4hr Resp.						344,050 Yen
Client Hardware Subtotal					1,676,700 Yen	344,050 Yen
Windows Advanced Svr 2000 (open program no level)	B511C02F	1	567,200 Yen	1	567,200 Yen	
MS SQL-Server 2000 Ent.Edit. Per Proc Lic. (open program level C)	B293C80Y0	1	2,791,700 Yen	4	11,166,800 Yen	
Server Software Subtotal					11,734,000 Yen	
Windows Svr 2000 (open program no level)	B511C02A1	1	142,000 Yen	3	426,000 Yen	
VC++ Pro 6.0 Win32	B298C2033	1	84,600 Yen	1	84,600 Yen	
Client Software Subtotal					510,600 Yen	
Software Support (all above)						3,140,730 Yen
24x10/0100Mbit Switch	SH4124	1	193,700 Yen	1	193,700 Yen	
Gigabit Uplink	SH41GT1	1	87,100 Yen	1	87,100 Yen	
3 Year Maintenance, 7x24, 4hr Resp.						57,620 Yen
User Connectivity Subtotal					280,800 Yen	
Total					54,202,200 Yen	11,750,410 Yen

1=Fujitsu

Three-Year Cost of Ownership:	Yen 65,952,610
tpmC Rating:	48,906.18
Yen / tpmC:	1,348.55

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**	