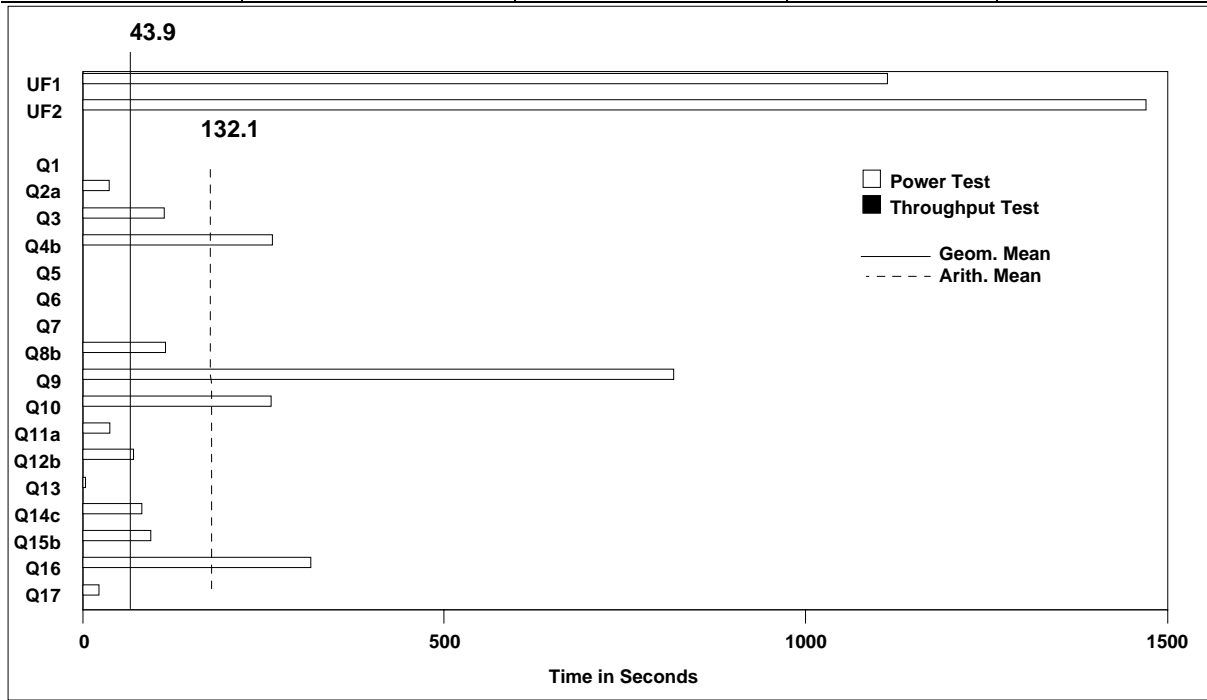


**IBM Netfinity 7000 M10
with Oracle8i**

TPC-D Rev 1.3.1

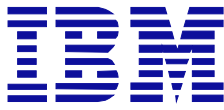
Report Date: 15 Feb. 1999

Total System Cost		TPC-D Power	TPC-D Throughput	Price/Performance
\$371,577		8,199.1 QppD@100GB	1,265.3 QthD@100GB	\$115 per QphD@100GB
Database Size	Database Manager	Operating System	Other Software	Availability Date
100GB	Oracle8i v8.1.5.1	Microsoft Windows NT Server 4.0 EE	MKS Toolkit VisualC++	May 18, 1999



Database Load Time: 70h 35m	Total Data Storage/Database Size: 10.8	RAID: N
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Components	Qty	
Processors	4	450MHz Pentium II Xeon / 2MB L2 Cache
Memory	4	1024MB
Disk Controllers	8	IBM ServeRAID-3H Ultra2 SCSI Adapter
Disk Drives	119	9.1GB 10K rpm Wide Ultra SCSI Disk Drives
Total Storage		1082.9GB



**IBM Netfinity 7000 M10
with Oracle8i**

TPC-D Revision 1.3.1

Report Date: 15 Feb. 1999

Description	Part Number	Source	Unit Price	Qty	Ext. Price	5-Yr. Maint.**
Server Hardware						
IBM Netfinity 7000 M10 / 450MHz/2MB L2 Cache Pentium II Xeon	8680-5RU	1	15,639	1	15,639	6,415
450MHz / 2MB L2 Cache Processor Upgrade	01K8007	1	7,164	3	21,492	0
1024MB (4x256) Memory Expansion Kit	01K8046	1	5,519	4	22,076	0
Memory Card	01K8004	1	516	1	516	0
Netfinity ServeRAID-3H Ultra2 SCSI Adapter	01K7207	1	1,785	8	14,280	0
32MB Battery Backup Cache	28L1003	1	298	1	298	0
IBM Third SCSI Channel Internal Cable	76H5400	1	29	8	232	0
Netfinity 4.2M Ultra2 SCSI Cable	01K9311	1	104	16	1,664	0
IBM EtherJet 100/10 PCI Adapter	86H2432	1	79	1	79	0
IBM G42 14" (13.2" Viewable) Color Monitor	654000N	1	202	1	202	215
10/20GB NS Internal SCSI Tape Drive	01K1319	1	628	1	628	0
Netfinity Rack	9306900	1	1,672	2	3,344	0
Side Panel Kit	94G6669	1	194	1	194	0
Subtotal					\$80,644	\$6,630
Server Software						
Oracle8i v8.1.5.1 Enterprise Database Server for NT		2	50,160	1	50,160	66,640
Microsoft Windows NT 4.0 EE		1	3,303	1	3,303	0
Microsoft Visual C++ and Subscription Service		1	418	1	418	0
MKS ToolKit for NT		1	256	1	256	0
Microsoft 5-Year Maintenance		3	2,095	5		10,475
Subtotal					\$54,127	\$77,115
Storage Devices						
Netfinity EXP15 Rack Storage Expansion Enclosure (plus 2 spares)	35202RU	1	2,553	15	38,295	0
IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI Drive (plus 12 spares)	01K8499	1	876	131	114,756	0
Subtotal					\$153,051	\$0
Total					\$287,832	\$83,745

Pricing: 1 - CDW Computer Centers, Inc.; 2 - Oracle Corp.; 3 - Microsoft Corp.

**** The standard 3-year warranty and the extended warranty on all hardware are for 7x24, on site same day coverage.**

Audited by Francois Raab of Information Paradigm, Inc.

Five-Year Cost of Ownership: \$371,577

QppD @ 100GB: 8,199.1

QthD @ 100GB: 1,265.3

QphD @ 100GB: 3,220.9

\$/ QphD @ 100GB: \$115.37

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 sections of the TPC benchmark specification. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.



Numerical Quantities Summary

Measurement Results:

Database Scaling (SF/Size)	100
Total Data Storage/Database Size	10.8
Database Load Time	70:35
Query Streams for Throughput Test	0
TPC-D Power Metric (QppD@100GB)	8,199.1
TPC-D Throughput Metric (QthD@100GB)	1,265.3
Composite Query-per-Hour Rating (QphD@100GB)	3,220.9
Total System Price over 5 Years	\$371,577
TPC-D Price/Performance Metric (\$/QphD@100GB)	\$115.37

Measurement Intervals:

Measurement Intervals in Throughput Test (Ts) = 4,837 seconds

Duration of Stream Execution

Stream ID	Seed Used	Start Date	Start Time	End Date	End Time
UF1		02/11/99	15:51:27	02/11/99	16:10:05
Stream 0	883585603	02/11/99	15:51:27	02/11/99	17:12:05
UF2		02/11/99	16:47:32	02/11/99	17:12:05

Timing Intervals (in seconds):

Stream	Q1	Q2a	Q3	Q4b	Q5	Q6	Q7	Q8b	Q9
Stream 00	0.3	37.4	114.7	262.7	0.7	0.2	0.5	115.0	818.8

Stream ID	Q10	Q11a	Q12b	Q13	Q14c	Q15b	Q16	Q17	UF1	UF2
Stream 00	261.5	38.5	72.4	5.3	82.3	95.7	316.8	23.5	1114.1	1472.5