

**TPC Benchmark™ C**  
**Full Disclosure Report**

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**Data General AViiON® 6600 Server**  
**Using Microsoft SQL Server v. 6.5, Enterprise Edition®**  
**and Microsoft Windows NT Server v. 4.0, Enterprise**  
**Edition®**

First Edition

December 1997

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TPC Benchmark<sup>™</sup> C Full Disclosure Report,  
Data General AV 6600 Server Using Microsoft SQL Server v. 6.5, Enterprise Edition and Windows NT Server v. 4.0, Enterprise Edition  
Edition 1

First Printing, December 1997

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# Contents

<b>Executive Summary .....</b>	<b>7</b>
The TPC-C Benchmark C Overview .....	12
Structure of This Report .....	12
<b>General Items .....</b>	<b>13</b>
Application Code .....	13
Test Sponsor .....	13
Parameter and Option Settings .....	13
Measured and Priced Configurations .....	13
Configuration Diagrams .....	13
<b>Clause 1 Related Items:</b>	
<b>Logical Database Design .....</b>	<b>17</b>
Table Definitions .....	17
Physical Organization of Tables and Indices .....	17
Insert and Delete Operations .....	17
Partitioning .....	17
Replication of Tables .....	17
Additional or Duplicated Attributes .....	17
<b>Clause 2 Related Items:</b>	
<b>Transaction and Terminal Profiles .....</b>	<b>19</b>
Random Number Generation .....	19
Input/Output Screen Layout .....	19
Priced Terminal Feature Verification .....	19
Presentation Manager or Intelligent Terminal .....	19
Transaction Statistics .....	19
Queuing Mechanism .....	20
<b>Clause 3 Related Items:</b>	
<b>Transaction and System Properties .....</b>	<b>21</b>
Transaction System Properties (ACID) .....	21
Atomicity .....	21
Consistency .....	22
Isolation .....	22
Durability .....	22
<b>Clause 4 Related Items:</b>	
<b>Scaling and Database Population .....</b>	<b>25</b>
Initial Cardinality of Tables .....	25
Database Layout .....	25
DBMS Model and Interface .....	27
Mapping of Database .....	27
180-Day Space Computations .....	27

<b>Clause 5 Related Items:</b>	
<b>Performance Metrics and Response Time</b>	<b>29</b>
Measured tpmC	29
Transaction / Menu Response Times	29
Keying and Think Times	29
Response Time Frequency Distribution	30
Response Time Versus Throughput	33
Think Time Frequency Distribution	33
New-Order Throughput Versus Time	34
Steady State Determination	34
Work Performed During Steady State	34
Reproducibility	36
Measurement Period Duration	36
Regulation of the Transaction Mix	36
Transaction Mix and Statistics	37
Checkpoint Count and Location	37

<b>Clause 6 Related Items:</b>	
<b>SUT, Driver and Communication Definition</b>	<b>39</b>
RTE Inputs	39
Emulated Components	39
Functional Diagrams and Network Configuration	39
Network Bandwidth	39
Operator Intervention	39

<b>Clause 7 Related Items:</b>	
<b>Pricing</b>	<b>41</b>
System Pricing	41
Pricing Sources	41
Discounts	41
Availability	41
tpmC, Price/tpmC	41
Country-Specific and Usage Pricing	42
System Pricing Subtotals	42

<b>Clause 9 Related Items:</b>	
<b>Audit</b>	<b>43</b>
Auditor's Report	43

<b>Appendix A:</b>	
<b>Transaction Sources</b>	<b>A-1</b>
Application Client Sources (*.c files)	A-2
Application Sources (*.h files)	A-234

<b>Appendix B:</b>	
<b>Database Definition and Set-Up Code</b>	<b>B-1</b>
SQL Scripts	B-2
Load Program	B-25

<b>Appendix C:</b>	
<b>Customer-Tunable Parameters .....</b>	<b>C-1</b>
SQL Server Configuration Parameters .....	C-3
Internet Information Server Registry Parameters .....	C-4
World Wide Web Server Registry Parameters .....	C-10
NT Server Configuration .....	C-14

<b>Appendix D:</b>	
<b>180-Day Space Computations .....</b>	<b>D-1</b>
180-Day Space Calculation .....	D-1

<b>Appendix E:</b>	
<b>Third Party Pricing .....</b>	<b>E-1</b>

## Figures

Figure 1	Measured System Diagram .....	14
Figure 2	Priced System Diagram .....	15
Figure 3	New Order Response Time Distribution .....	30
Figure 4	Payment Response Time Distribution .....	31
Figure 5	Order Status Response Time Distribution .....	31
Figure 6	Delivery Response Time Distribution (Interactive Portion) .....	32
Figure 7	Stock Level Response Time Distribution .....	32
Figure 8	Response Time Versus Throughput .....	33
Figure 9	New Order Think Time Distribution .....	33
Figure 10	New Order Throughput Versus Time .....	34

## Tables

Table 1	Priced System: Main Hardware .....	15
Table 2	Transaction Statistics Summary .....	20
Table 3	Initial Number of Rows in Each Table .....	25
Table 4	Disk and Database Layout of Tested System .....	26
Table 5	Transaction Reponse Times / Menu Response Times, In Seconds ....	29
Table 6	Keying Times, In Seconds .....	29
Table 7	Think Times, In Seconds .....	30
Table 8	Table and File System Growth .....	D-1



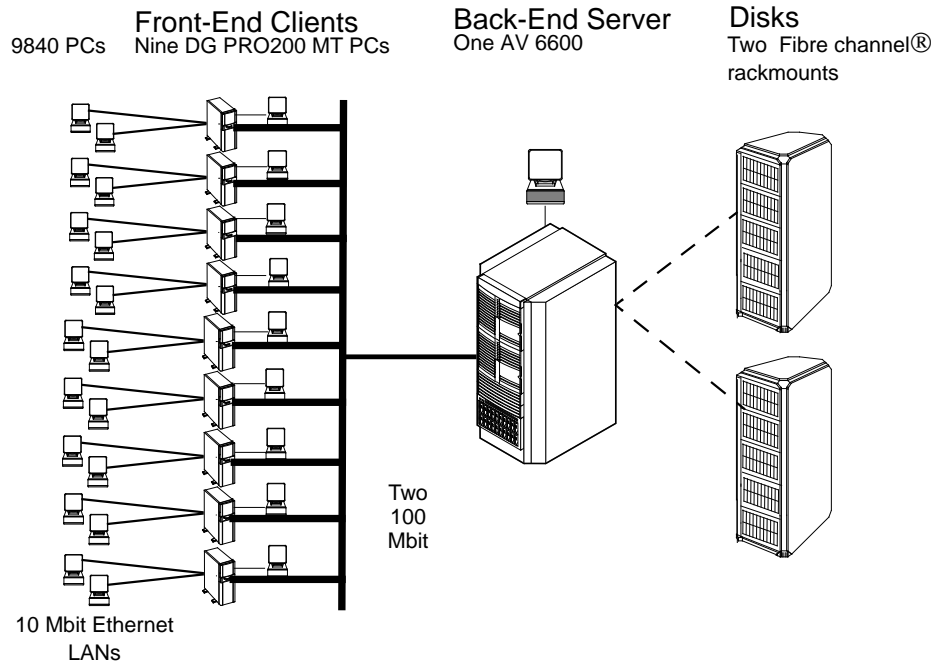
## Executive Summary

The following pages list key results from the benchmark, including tpmC (transactions per minute) and price per tpmC (five-year capital cost per measured tpmC). The remainder of the report provides details about the hardware, software, and test methodology, as required by the Transaction Processing Performance Council.

<b>Data General Corporation</b>	<b>AViiON 6600 Client/Server</b>	<b>TPC-C Rev. 3.3</b> <b>Report Date: December 4, 1997</b>
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<b>Total System Cost</b>	<b>TPC-C Throughput</b>	<b>Price / Performance</b>	<b>Availability Date</b>
<b>\$864,485</b>	<b>12,030.47 tpmC</b>	<b>\$71.86 per tpmC</b>	<b>February 1998</b>

<b>Processors</b>	<b>Database Manager</b>	<b>Operating System</b>	<b>Other Software</b>	<b>Number of Users</b>
<b>Back-End 1 x 6-way Intel Pentium Pro @ 200 MHz</b>	<b>Microsoft SQL Server v. 6.5, Enterprise Edition</b>	<b>Windows NT Server v. 4.0, Enterprise Edition</b>	<b>Microsoft Internet Connector License, Microsoft Visual C++ MS SQL Server Programmers Toolkit, NCR TopEnd v.2.04.01</b>	<b>9840</b>



Components	Front-End Clients: Data General Pentium Pro 200 MT		Back-End Server: AV 6600	
	Qty	Type	Qty	Type
<b>Processors</b>	9 clients	each with 1 Intel Pentium Pro @ 200 MHz	1	6-way Intel Pentium Pro @ 200 MHz with 1 MG L2 cache
<b>Memory</b>	9 clients	each with 192 MB memory	1	4 GB memory
<b>Disk Controllers</b>	9 clients	each with 1 integrated EIDE adapter	1	Integrated SE SCSI adapter,
			4	QLogic Fibre Controllers
<b>Network Hardware</b>	9 clients	each with 2 10-Mbit Ethernet PCI controllers, and 1 100-Mbit controller	2	100 Mbit Ethernet PCI controller
<b>CD-ROM</b>	9 clients	each with 1 CD-ROM	1	CD-ROM
<b>Disk Drives</b>	9	each with a 2.5 GB disk	139	9 GB disks
			2	4 GB internal drives
<b>Total GB of Storage</b>	22.5	GB total storage	1259	GB total storage
<b>Terminals</b>	9840	PCs used as ASCII terminals, plus one DG console	1	DG console terminal



**Data General  
Corporation**

**AViiON 6600  
Client/Server**

**TPC-C Rev. 3.3  
Report Date: December 4,  
1997**

Description	Model	Third Party*		Unit Price	Qty	Ext. Price	5-Yr. Maint.
		Brand	Pricing				
<b>Server Hardware</b>							
"AV6600,3 CPU/512KB, 256MB, LAN, SCSI, CD"	70708-AE			\$28,436	1	\$28,436	\$5,697
ADD-ON 1GB MEM (4X256MB DIMM)	7106			\$26,246	3	\$78,739	\$2,650
REPL 256MB WITH 1GB (4X256MB DIMM)	R7375			\$22,496	1	\$22,496	\$1,104
4GB 1" HOT SWAP DISK FOR AV3600R/6600	61024-SJC			\$1,356	2	\$2,712	\$883
REPL TRI-CPU BOARD (200MHZ/512KB) W(200MHZ/1MB)	R7100			\$13,676	1	\$13,676	\$1,104
ADD-ON TRI-CPU BOARD (200MHZ/1MB)	7200			\$24,476	1	\$24,476	\$1,104
ETHERExpress PRO 100 LAN Card	PILA8480	Software House International	4	\$457	4	\$1828	\$0
"D1600I 14" TERMINAL, WHITE, ERGONOMIC"	6945W			\$306	1	\$306	\$221
"D1200I/D1600I 101-KEYBOARD, PWR CORD"	G6001A-A			\$58	1	\$58	\$66
60" DEEPRACK CABINET	14001-G7			\$2,725	1	\$2,725	\$0
P-F-Rack/Rack Cabinet	9470157			\$5,000	2	\$10,000	\$0
DAE Rackmount Kit	C7680G-A			\$75	14	\$1,050	\$0
Rackmount 10-slot DAE	C5001R-ASC			\$3,206	14	\$44,888	\$18,184
DAE to DAE Rackmount Cable	15495 E001			\$45	10	\$450	\$0
9GB 7200 RPM Disk	C0972FG-A			\$1,988	139	\$276,263	\$82,066
Host to DAE FC Cable	15496 E010			\$75	4	\$300	\$0
Other PCI Fibre Channel Host	118025373			\$750	4	\$3,000	\$1,102
<b>Subtotal</b>						<b>\$511,403</b>	<b>\$114,181</b>
<b>Server Software</b>							
Microsoft Windows NT Server, Enterprise Ed 4.0 incl 25 CALs		Microsoft	1	\$3,999	1	\$3,999	\$0
Microsoft SQL Server, Enterprise Edition, 6.5 plus User License		Microsoft	1	\$28,999	1	\$28,999	\$10,475
<b>Subtotal</b>						<b>\$32,998</b>	<b>\$10,475</b>
<b>Client Hardware</b>							
"DG/V Pro200MT, 64MB, FDD, No HD"	92632N-A			\$3,826	9	\$34,431	\$9,936
64MB SIMM Upgrade (2x32MB)	22100			\$662	18	\$11,922	\$0
2.5GB High Perf Enhanced ID	26088			\$456	9	\$4,100	\$3,180
12x Atapi CD-ROM	26098			\$187	9	\$1,683	\$1,192
"3C905-TX, 10/100Base-T Nic"	24037			\$144	27	\$3,892	\$3,577
14" SVGA Monitor	26105GD			\$238	9	\$2,142	\$1,192
<b>Subtotal</b>						<b>\$58,171</b>	<b>\$19,077</b>
<b>Client Software</b>							
Microsoft Windows NT Server 4.0 incl 5 CALs		Microsoft	1	\$809	9	\$7,281	\$0
Microsoft SQL Workstation (incl Programmers Toolkit)		Microsoft	1	\$499	1	\$499	\$0
Microsoft Visual C++ 32-bit edition		Microsoft	1	\$499	1	\$499	\$0
TopEnd	ESC-TESEV-001	Entersoft	2	\$2,700	9	\$24,300	\$0
TopEnd RTQ	ESC-TERTQ-001	Entersoft	2	\$675	1	\$675	\$0
TopEnd Global Admir	ESC-TEADM-000	Entersoft	2	\$500	1	\$500	\$0
TopEnd - ISD	ESC-TEISD-000	Entersoft	2	\$1,000	1	\$1,000	\$0
TopEnd Support	ESC-TESUP-000	Entersoft	2	\$0	1	\$0	\$19,860
<b>Subtotal</b>						<b>\$34,754</b>	<b>\$19,860</b>
<b>User Connectivity</b>							
Ethernet Hub, 8-port 100TX + 10% spares	NX-H8TX	NETLUX	3	\$299	4	\$1,196	\$0
Ethernet Hub, 16-port 10 Base-T + 10% spares	NX-H16EZ	NETLUX	3	\$90	693	\$62,370	\$0
<b>Subtotal</b>						<b>\$63,566</b>	<b>\$0</b>
<b>Totals:</b>						<b>\$700,892</b>	<b>\$163,593</b>
<b>5-year cost of ownership:</b>						<b>\$864,485</b>	
<b>tpmC Rating:</b>						<b>12,030.47</b>	
<b>\$/tpmC:</b>						<b>\$71.86</b>	

**Notes:**

\*. 10% spares or 2 spares minimum were included for hardware from third-party vendors in place of on-site service; these products include 5 year return-to-vendor warranty

1. Microsoft
2. Entersoft
3. NETLUX
4. Software House International

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

Audited by Francois Raab and Larry Fontana, Information Paradigm, Inc.

## TPC-C Rev. 3.3 Numerical Quantities Summary for Data General AViiON 6600

**Computed Maximum Qualified Throughput (MQTh)** 12,030.47 tpmC

**Percent Throughput Difference In Reported and Reproducibility Runs** .61%

### Transaction Response Times

	90th Percentile	Average	Maximum
New Order	1.59	0.87	7.75
Payment	0.58	0.41	3.31
Order-Status	1.18	0.78	4.24
Delivery (interactive portion)	0.40	0.37	2.60
Delivery (deferred portion)	18.99	11.48	
Stock-Level	2.81	1.68	8.00
Menu	0.31	0.22	2.85

### Response Time Delay (in seconds)

RT Response Time	0.1
Menu Response Time	0.1

### Transaction Mix (in percent of total transactions)

New Order	44.73
Payment	43.11
Order-Status	4.04
Delivery	4.07
Stock-Level	4.04

### Keying / Think Times (in seconds)

	Minimum	Average	Maximum
New Order	18.00 / 0.00	18.01 / 12.08	18.07 / 120.51
Payment	3.01 / 0.00	3.01 / 12.10	3.06 / 120.50
Order-Status	2.01 / 0.00	2.01 / 10.24	2.06 / 84.39
Delivery	2.00 / 0.00	2.01 / 5.05	2.06 / 45.30
Stock-Level	2.01 / 0.00	2.01 / 5.06	2.06 / 43.78

### Test Duration (in minutes)

Ramp-up Time	17 min
Measurement Interval	30 min
Transactions (all types) completed during measurement interval	806,785
Ramp down time	10 min

### Checkpointing

Number of checkpoints	1
Checkpoint interval	30 min

## The TPC-C Benchmark C Overview

The TPC-C benchmark was developed by the Transaction Processing Performance Council (TPC), a consortium of system vendors, software suppliers, and computer users. The TPC was founded to define transaction benchmarks and to disseminate objective, verifiable, performance data to the industry. Data General is an active participant in the TPC.

The TPC-C benchmark is defined in the document, *TPC Benchmark™ C Standard Specification*, Version 3.3. Clause 0.1 from that document provides the following overview.

**0.1** TPC Benchmark™ C (TPC-C) is an OLTP work load. It is a mixture of read-only and update intensive transactions that simulate the activities found in complex OLTP application environments. It does so by exercising a breadth of system components associated with such environments, which are characterized by:

- *The simultaneous execution of multiple transaction types that span a breadth of complexity*
- *On-line and deferred transaction execution modes*
- *Multiple on-line terminal sessions*
- *Moderate system and application execution time*
- *Significant disk input/output*
- *Transaction integrity (ACID properties)*
- *Non-uniform distribution of data access through primary and secondary keys*
- *Databases consisting of many tables and a wide variety of sizes, attributes, and relationships*
- *Contention on data access and update*

The performance metric reported by the TPC-C is a “business throughput” measuring the number of orders processed per minute. Multiple transactions are used to simulate the business activity of processing an order, and each transaction is subject to a response time constraint. The performance metric for this benchmark is expressed in transactions-per-minute-C (tpmC). To be compliant with the TPC-C standard, all references to tpmC results must include the tpmC rate, the associated price-per-tpmC, and the availability date of the priced configuration.

Despite the fact that this benchmark offers a rich environment that emulates many OLTP environments, this benchmark does not reflect the entire range of OLTP requirements. In addition, the extent to which a customer can achieve the results reported by a vendor is highly dependent on how closely TPC-C approximates the customer application. The relative performance of systems derived from this benchmark does not necessarily hold for other workloads or environments. Extrapolations to any other environment are not recommended.

## Structure of This Report

This report follows the structure defined by the *TPC Benchmark™ C Standard Specification*, Version 3.3. When clauses from that document are quoted, the clause number appears in bold type, text from the clause appears in italics, and Data General’s response to the clause follows in standard type.

