



<b>Hewlett-Packard</b>  <b>Company</b>	HP ProLiant ML350 G5 1.86 GHz/2X2MB	TPC-C Rev. 5.8
	C/S with 2 HP ProLiant ML110G4	Report Date: March 27, 2007 Revised Oct 17, 2007

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
<b>USD \$68,814</b>	<b>82,774</b>	<b>USD \$0.84</b>	<b>Mar. 27, 2007</b>


Database Server Processors /Cores/Threads	Database Manager	Operating System	Other Software	Number of Users
1/4/4 Intel E5320 1.86 GHz QC	Microsoft SQL Server 2005 Standard x64 Edition SP1	Windows Server 2003 Standard x64 Edition SP1	Microsoft Visual C++ Microsoft COM+	<b>66,640</b>



1 HP 5642 Rack containing: 4 X MSA 70 StorageWorks Enclosure with 25X 36 GB 15K SFF SAS Drives



HP ProLiant ML350 G5 w/ 1.86 GHz processor and 20GB RAM, 2 SMART Array P800 SAS RAID Controllers, 1 SMART Array E200i SAS RAID Controller, 2 X 36GB 10K SFF SAS Drives, and 6 X 146GB 10K SFF SAS Drives in internal bay



2 HP ProLiant ML110 G4

2 RTEs  
simulating  
66640 PCs

	Server		Each Client	
System Components	Quantity	Description	Quantity	Description
Processors/Cores/Threads	1/4/4	Intel E5320 QC 1.86 GHz 8MB cache	1/1/2	Intel Pentium D 915 DC 2.8 GHz 2MB cache
Memory	20GB	2X4GB and 6X2GB FBDIMM	1GB	2 X 512 MB
Disk Controllers	2 1	Smart P800 Controller Smart E200i Controller	1	4 Port SATA controller with Embedded RAID
Disk Drives	6	146GB 15K SFF SAS Drives (log)	1	160GB NHP SATA
	100	36 GB 15K LFF SAS Drives (data)		
	2	36 GB 10K SFF SAS Drives (internal, os)		
Total Storage		4267.80GB		160 GB

Hewlett-Packard		HP ProLiant ML350G5			TPC-C Rev. 5.8		
Company					Report Date	27-Mar-07	
Description	Part Number	Pricing	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
<b>Server Hardware</b>							
HP ML350T05 E5320 SAS SFF Array US Svr (Embedded NC373i Gigabit Adapter )	438730-001	1	1,689	1	1,689		
8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21	1	2,149	1	2,149		
4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21	1	649	3	1,947		
HP Smart Array P800 Controller	381513-B21	1	1,099	2	2,198		
HP NC7170 PCI-X Dp Gigabit Svr Adapter	313881-B21	1	269	1	269		
HP s7540 17in. CRT Monitor	PF997AA#ABA	1	139	1	139		
HP 5642 Pallet Unassembled Rack	358254-B21	1	865	1	865		
T1000 UPS	AF403A	1	395	1	395		
36GB 15Krpm SFF SAS HDD	431933-B21	1	349	100	34,900		
146GB 10K SAS 2.5 HP HDD	431958-B21	1	389	6	2,334		
HP 36GB 10K SAS 2.5 Hot Plug Hard Drive	375859-B21	1	269	2	538		
HP StorageWorks MSA-70 Storage	418800-B21	1	3,199	4	12,796		
HP 3y 4h 24x7 MSA60/70 HW Support	UF303E	1	1,850	4		7,400	
HP 3y 4h 24x7 ProLiant ML350 HW Support	U4513E	1	449	1		449	
					<b>Subtotal</b>	<b>60,219</b>	<b>7,849</b>
<b>Server Software</b>							
Microsoft SQL Server 2005 Standard X64 Edition(per processor)	228-04026	2	5,999	1	5,999	Incl Below	
Microsoft Visual C++ Standard	254-00170	2	109	1	109	Incl Below	
Windows Server 2003, Standard x64 Edition SP1	P73-00295	2	719	1	719	Incl Below	
Microsoft Problem Resolution Services		2	245	1		245	
					<b>Subtotal</b>	<b>6,827</b>	<b>245</b>
<b>Client Hardware</b>							
HP ML110G4 P915 NHP-SATA US Svr	417248-001	1	799	2	1,598		
512MB, NHP 160GB SATA, single port nic,(1P)							
HP 512MB UB PC2-5300 1x512MB Kit	432803-B21	1	54	2	108		
HP NC110T PCIe Gigabit Server Adapter	434905-B21	1	99	2	198		
HP 4y 4h 24x7 ProLiant ML110 HW Support	U4435E	1	366	2		732	
					<b>Subtotal</b>	<b>1,904</b>	<b>732</b>
<b>Client Software</b>							
Windows Server 2003, Standard Edition SP1	P73-00295	2	719	2	1,438	Incl. Above	
					<b>Subtotal</b>	<b>1,438</b>	<b>0</b>
<b>User Connectivity</b>							
4 port KVM switch	NW0099	4	66	3	198		
10 foot Cat5E Non Booted Network Patch Cables (plus 10% spares)	415-1003	3	1	6	8		
					<b>Subtotal</b>	<b>205</b>	<b>0</b>
Large Purchase and Net 30 discount (See Note 1)	15.0%	1				<b>(\$9,318)</b>	<b>(\$1,287)</b>
					<b>Total</b>	<b>\$61,275</b>	<b>\$7,539</b>
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 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.					<b>Three-Year Cost of Ownership: USD \$68,814</b>		
					<b>tpmC Rating: 82,774</b>		
					<b>\$/ tpmC: USD \$0.84</b>		
Pricing: 1=HP Direct 800-203-6748 2= Microsoft 3= http://store.graycables.com 4= www.serversdirect.com							
Note 1 = Discount based on HP Direct guidance applies to all lines where pricing = 1							
* = These components are not immediately orderable. See the FDR for more information.							
Note 2 = The benchmark results were audited by Lorna Livingtree of Performance Metrics							

## Numerical Quantities Summary

**MQTH, Computed Maximum Qualified Throughput**

**82,774 tpmC**

<b>Response Times (in seconds)</b>	<b>Average</b>	<b>90%</b>	<b>Maximum</b>
New-Order	0.53	0.93	6.80
Payment	0.44	0.84	6.70
Order-Status	0.52	0.92	6.72
Delivery (interactive portion)	0.17	0.33	6.19
Delivery (deferred portion)	0.32	0.47	4.73
Stock-Level	0.56	0.96	6.73
Menu	0.17	0.35	6.22

### **Transaction Mix, in percent of total transaction**

New-Order	44.93%
Payment	43.03%
Order-Status	4.03%
Delivery	4.01%
Stock-Level	4.01%

### **Emulation Delay (in seconds)**

#### **Resp.Time      Menu**

New-Order	0.10	0.10
Payment	0.10	0.10
Order-Status	0.10	0.10
Delivery (interactive)	0.10	0.10
Stock-Level	0.10	0.10

### **Keying/Think Times (in seconds)**

#### **Min.      Average      Max.**

New-Order	18.02/0.00	18.03/12.04	18.87/120.32
Payment	3.02/0.00	3.03/12.04	3.86/120.32
Order-Status	2.02/0.00	2.03/10.05	2.84/100.32
Delivery (interactive)	2.02/0.00	2.03/5.05	2.85/50.32
Stock-Level	2.02/0.00	2.03/5.04	2.86/50.32

### **Test Duration**

Ramp-up time	23 minutes
Measurement interval	120 minutes
Transactions (all types) completed during measurement interval	22,993,790
Ramp down time	32 minutes

### **Checkpointing**

Number of checkpoints	4
Checkpoint interval	30 minutes