
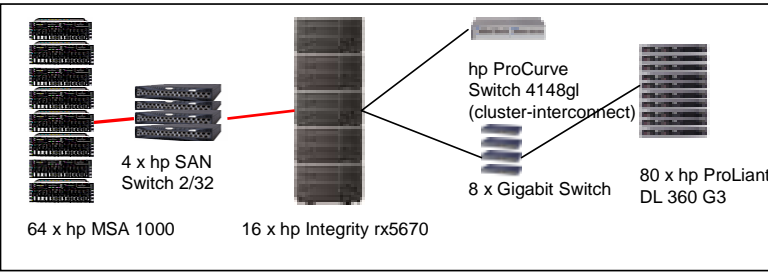
	<b>hp Integrity rx5670 Cluster 64P</b> <b>C/S with</b> <b>80 hp ProLiant DL360-G3</b>	<b>TPC-C Rev. 5.1</b>
		<b>Report Date: December 8, 2003</b>

<b>Total System Cost</b>	<b>TPC-C Throughput</b>	<b>Price/Performance</b>	<b>Availability Date</b>
<b>\$6,541,770</b>	<b>1,184,893.38</b>	<b>\$5.52</b>	<b>April 30, 2004*</b> <b>*Hardware available now</b>

<b>Processors</b>	<b>Database Manager</b>	<b>Operating System</b>	<b>Other Software</b>	<b>Number of Users</b>
64 x 1.5GHz Intel Itanium 2 6M Processors – Servers  32 x Xeon 2.4GHz, 48 x Xeon 2.8GHz, 80 x 3.0GHz – Clients	Oracle Database 10g Enterprise Edition with Real Application Cluster and Partitioning	Red Hat Enterprise Linux AS 3	BEA Tuxedo 8.1	<b>1280160</b>



**19 hp Rack 9142s containing:**  
 16 x hp Integrity rx5670  
 4 x hp StorageWorks SAN Switch 2/32  
 1 x hp ProCurve 4148gl  
 64 x hp StorageWorks MSA1000  
 96 x hp StorageWorks 4314R  
 80 x hp ProLiant DL360G3



	<b>Server</b>		<b>Each Client</b>	
<b>System Components</b>	Quantity	Description	Quantity	Description
Processor	64	1.5GHz Itanium 2 6M w/ 6MB Cache	2	2.4GHz, 2.8GHz or 3.0GHz w/512KB Cache
Memory	768	1GB	4	1024MB
Disk Controllers	16	Integrated SCSI Controller	1	Integrated SMART 5i Controller
Disk Drives	64	hp StorageWorks fca2214PCI-X HBA		
	672	18GB, 15krpm HDD Ultra320 HP	1	36 GB 15K SCSI Drive
	1344	36GB, 15krpm HDD Ultra320 HP		
	224	146GB, 10krpm HDD Ultra320 HP		
Total Storage		93184 GB		36 GB
Tape Drives	1	20/40 GB DAT		

Hewlett Packard Company	hp Integrity rx5670 Cluster 64P			TPC-C Rev. 5.1			
	C/S			Report Date: 8 December, 2003			
Description	Price Key	Part Numbr	Unit Price	Qty	Extended Price	3 Yr Maint Price	
hp Integrity rx5670, 1.5GHz Itanium 2 w/ 6MB iL3 cache, 0 MB RAM, 0 disk	1	A6838B	\$26,494	16	\$423,904		
CPU upgrade Itanium 2, 1.5GHz w/ 6MB iL3 cache	1	A9810A	\$8,250	48	\$396,000		
4GB PC2100 DDR-SDRAM (4x1GB DIMMs)	1	A6834A	\$7,500	192	\$1,440,000		
Memory Carrier Board	1	A6747A	\$1,981	32	\$63,392		
hp 36GB, 15krpm Ultra320 hot-swap disk	1	A7049A	\$819	16	\$13,104		
hp Rackmount Kit Factory	1	A5580A	\$134	16	\$2,144		
DVD Rom drive	1	A5557B	\$450	16	\$7,200		
Graphics USB Card	1	A6869A	\$349	16	\$5,584		
hp USB keyboard and mouse	1	A7861A	\$32	16	\$512		
hp Power Distribution Unit 120-240V	1	E7671A	\$145	48	\$6,960		
hp Hardware Support 3YR 24X7 4HR	1	HA110A3	\$8,759	16		\$140,144	
DAT 2040 Drive, EXT CRB US DAT 20/40 GB External Tape Drive - Carbon	2	157770-002	\$1,250	1	\$1,250		
hp NC7770 PCI-X Gigabit server adapter	2	244948-B21	\$221	32	\$7,072		
hp StorageWorks fca 2214 2Gb, 64-bit/133Mhz PCI-X FC HBA	2	281541-B21	\$1,590	64	\$101,760		
5m LC to LC Cable Kit	2	221692-B22	\$82	64	\$5,248		
15m LC to LC Cable Kit	2	221692-B23	\$103	64	\$6,592		
hp StorageWorks SAN Switch 2/32	2	240603-B21	\$37,733	4	\$150,932		
hp SAN Switch 2/32 Support 3YR 24X7 4HR	2	340512-002	\$12,037	4		\$48,148	
2Gb SFF-SW Tmcrv Kit	2	221470-B21	\$199	64	\$12,736		
2Gb SFF-SW Tmcrv Kit (10% spares)	2	221470-B21	\$199	7	\$1,393		
S5500 15 carbon / silver monitor	2	261602-001	\$129	16	\$2,064		
hp Rack Model 9142 (42U - Opal) - Flat Pallet	2	120663-B21	\$1,321	19	\$25,099		
UPS R1500 XR	2	204404-001	\$866	8	\$6,928		
hp Storageworks Modular SAN Array 1000	2	201723-B22	\$9,995	64	\$639,680		
hp StorageWorks Modular SAN Array 1000 Support 3YR 24x7 4HR	2	402164-002	\$3,538	64		\$226,432	
hp StorageWorks Enclosure Model 4314R	2	190209-001	\$2,955	96	\$283,680		
hp StorageWorks Enclosure Model 4314R Support 3YR 24X7 4HR	2	171242-002	\$157	96		\$15,072	
18GB, 15krpm HDD Ultra320 HP	2	286775-B22	\$299	672	\$200,928		
18GB, 15krpm HDD Ultra320 HP (10% spares)	2	286775-B22	\$299	68	\$20,332		
36GB, 15krpm HDD Ultra320 HP	2	286776-B22	\$429	1344	\$576,576		
36GB, 15krpm HDD Ultra320 HP (10% spares)	2	286776-B22	\$429	135	\$57,915		
146GB, 10krpm HDD Ultra320 HP	2	286716-B22	\$933	224	\$208,992		
146GB, 10krpm HDD Ultra320 HP (10% spares)	2	286716-B22	\$933	23	\$21,459		
hp ProCurve Switch 4148gl	1	J4888A	\$1,934	1	\$1,934		
hp ProCurve Switch gl 100/1000-T module	1	J4863A	\$812	4	\$3,248		
hp ProCurve Switch gl 100/1000-T module Support 3YR 24X7 4HR	1	U2856E	\$1,080	1		\$1,080	
<b>Server Subtotal</b>					<b>\$4,694,618</b>	<b>\$430,876</b>	
Oracle Database 10g Enterprise Edition for 3 years, Unlimited users	3	run-time	\$20,000	64	\$1,280,000		
Real Application Clusters for 3 years, Unlimited users	3	run-time	\$10,000	64	\$640,000		
Partitioning for 3 years, Unlimited users	3	run-time	\$5,000	64	\$320,000		
Database Server Support Package for 3 years	3	run-time	\$32,000	3		\$96,000	
Red Hat Enterprise Linux AS for Itanium Processor (Ver. 3 Std. Edi.)	4	na	\$1,992	16	\$31,872		
2 Addi. Yrs Subs. to Red Hat Ent. Linux AS for Itanium (Ver. 3 Std. Edi.)	4	na	\$1,992	32		\$63,744	
<b>Server Software Subtotal</b>					<b>\$2,271,872</b>	<b>\$159,744</b>	
hp ProLiant DL360R03 X2.4-512KB/533, 512MB	2	292887-001	\$2,199	16	\$35,184		
2.4GHz/512KB Xeon processor kit	2	292891-B21	\$499	16	\$7,984		
hp ProLiant DL360R03 X2.8-512KB/533, 512MB	2	292889-001	\$2,299	24	\$55,176		
2.8GHz/512KB Xeon processor kit	2	292892-B21	\$599	24	\$14,376		
hp ProLiant DL360R03 X3.06-512KB/533, 512MB	2	322470-001	\$2,449	40	\$97,960		
3.06GHz/512KB Xeon processor kit	2	322472-B21	\$799	40	\$31,960		
2GB Reg PC2100 2X1GB	2	300680-B21	\$1,100	160	\$176,000		
36GB, 15krpm HDD Ultra320 HP	2	286776-B22	\$429	80	\$34,320		
hp ProLiant DL3xx Support 3YR 24X7 4HR	2	162675-002	\$599	80		\$47,920	
<b>Client Subtotal</b>					<b>\$452,960</b>	<b>\$47,920</b>	
Red Hat Enterprise Linux ES (version 3 Standard Edition)	4	na	\$799	80	\$63,920		
2 Addi. Yrs Subs. to Red Hat Ent. Linux ES (Ver. 3 Std Edi.)	4	na	\$799	160		\$127,840	
BEA Tuxedo 8.0 Tier 1	5	na	\$1,140	80	\$91,200	\$60,480	
<b>Client Software Subtotal</b>					<b>\$155,120</b>	<b>\$188,320</b>	
16 PORT 100/1000 Mbps Copper Gigabit Switch	6	GS516T	650	8	\$5,200		
16 PORT 100/1000 Mbps Copper Gigabit Switch (spares)	6	GS516T	650	2	\$1,300		
<b>Connectivity Subtotal</b>					<b>\$6,500</b>		
HP's Large Configuration Discount *					-\$1,182,406	-\$99,754	
Oracle Mandatory E-Business Discount (license and support)					-\$584,000		
<b>Total:</b>					<b>\$5,814,664</b>	<b>\$727,106</b>	
Price Key: 1-HP at 30% discount, 2-HP at 17% discount, 3-Oracle, 4-Red Hat 5-BEA, 6-CDW. Oracle pricing contact: Mary Beth Pierantoni, mary.beth.pierantoni@oracle.com, 650-506-2118.					<b>3 year cost of ownership:</b>		
					<b>tpmC:</b>	<b>\$6,541,770</b>	
					<b>\$/tpmC:</b>	<b>1184893.38</b>	
* All discounts are based on US list prices and for similar quantities and configurations					<b>\$/tpmC:</b>	<b>\$5.52</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 specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Results independently audited by Lorna Livingtree of Performance Metrics Inc. Thank you.							

## Numerical Quantities Summary

**MQTH, Computed Maximum Qualified Throughput**

**1,184,893.375 tpmC**

<b>Response Times (in seconds)</b>	<b>Average</b>	<b>90%</b>	<b>Maximum</b>
New-Order	2.435	4.908	76.474
Payment	1.227	2.551	67.072
Order-Status	1.621	3.297	39.809
Delivery (interactive portion)	0.258	0.165	17.567
Delivery (deferred portion)	0.555	0.555	20.676
Stock-Level	0.632	0.981	28.162
Menu	0.102	0.102	0.483

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

New-Order	44.911%
Payment	43.023%
Order-Status	4.020%
Delivery	4.026%
Stock-Level	4.021%

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

	<b>Resp.Time</b>	<b>Menu</b>
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)**

	<b>Min.</b>	<b>Average</b>	<b>Max.</b>
New-Order	18.005/0.00	18.008/26.015	18.035/259.946
Payment	3.010/0.00	3.019/12.017	3.052/120.080
Order-Status	2.010/0.00	2.019/10.017	2.045/99.818
Delivery (interactive)	2.010/0.00	2.019/5.025	2.045/50.130
Stock-Level	2.010/0.00	2.019/5.015	2.045/49.556

### **Test Duration**

Ramp-up time	80minutes
Measurement interval	120 minutes
Transactions (all types) completed during measurement interval	316601025
Ramp down time	207 minutes

### **Checkpointing**

Number of checkpoints	4
Checkpoint interval	30 minutes