



# Bull Escala PL6460R

TPC-C Rev. 5.9

Report Date: June 15, 2008

<b>Total System Cost</b>	<b>TPC-C Throughput</b>	<b>Price/Performance</b>	<b>Availability Date</b>
\$17,127,928 USD	<b>6,085,166</b>	\$2.81 USD	<b>December 15, 2008</b>
<b>Database Server Processor Chip/Core/Thread</b>	<b>Database Manager</b>	<b>Operating System</b>	<b>Other Software</b>
32/64/128 POWER6 5.0GHz	DB2 9.5	AIX 5L V5.3	Microsoft Visual C++ Microsoft COM+



**128 Clients**  
 IBM System x3550  
 Dual-core 2.0GHz Intel® Xeon™  
 4MB L2 Cache  
 1GB Memory  
 73.4GB SAS Drive  
 Integrated dual-port 10/100/1000 Ethernet

**Escala PL6460R**  
 32 Processor Chips with  
 64 5.0GHz POWER6™ Cores  
 32MB L3 Cache per chip  
 4096GB Memory  
 8 146GB Internal SCSI Drives  
 68 4Gb dual-port Fibre Channel Adapters  
 10 10/100/1000 Ethernet Adapters

**Storage**  
 68 IBM System Storage DS4800  
 784 IBM System Storage DS4000 EXP810  
 10,992 73.4GB 15K RPM 4Gbps Drives

System Components	Server		Each of the 128 Clients	
	Quantity	Description	Quantity	Description
<b>Processors Chips /Cores/Threads</b>	32/64/128	5.0GHz POWER6	1/2/2	2.0GHz 4MB L2 Xeon Processor
<b>Memory</b>	64	64GB	2	512 MB
<b>Disk Controllers</b>	1 68 68	SAS Controller 4Gb FC Adapters IBM System Storage DS4800	1	SAS Controller
<b>Disk Drives</b>	8 10,992	146.8GB 15K RPM SCSI 73.4GB 15K RPM 4Gb FC	1	73.4GB 15K RPM SAS
<b>Total Storage</b>		746,467GB		67.86GB
<b>Terminals</b>	1	System Console	1	System Console



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Description	Part Number	Brand	Pricing	Unit Price	Quantity	Extended Price	3-year Maint. Price
<b>Server Hardware</b>							
ESCALA NODE PL6460R	CPSG072-0000	Bull	1	99,150.00	1	99,150.00	82,466
GX Dual Port - 12X HCA	DCCG216-0000	Bull	1	4,000.00	8	32,000.00	
12X Cable 0,6M	CBLG253-1000	Bull	1	463.00	8	3,704.00	
12X Cable 2,5M	CBLG253-1500	Bull	1	650.00	6	3,900.00	
12X Cable 8,0M	CBLG253-1800	Bull	1	960.00	10	9,600.00	
146,8 GB Ultra320 SCSI Disk Drive (1"/15krpm)	MSUG236-0000	Bull	1	1,999.00	8	15,992.00	
8-core POWER6 5.0GHz PoD 0-core Active P.Book	CPUG166-0D00	Bull	1	60,500.00	8	484,000.00	148,582
ONE PROC. ACTIVATION FOR PoD 8-core 5.0GHz	CPKG461-0000	Bull	1	30,300.00	64	1,939,200.00	639,429
Activation of 256GB DDR2 Power6 Memory	CPKG436-0000	Bull	1	387,840.00	16	6,205,440.00	
10/100/1000 BASE-TX ETHERNET PCI-X ADAPTER	DCCG157-0000	Bull	1	1,280.00	1	1,280.00	
2-Port 10/100/1000 BASE-TX ETHERNET PCI-X ADAPTER	DCCG168-0000	Bull	1	755.00	9	6,795.00	
IDE Slimline DVD-RAM Drive	CDRG033-0000	Bull	1	580.00	1	580.00	
4GB/s Fibre Channel PCI-X Adapter 2-port	DCCG196-0000	Bull	1	2,500.00	68	170,000.00	
12X I/O DRW (GX) 20 PCI-X&16 DK BAYS w/i repeater	DRWG111-0000	Bull	1	32,000.00	5	160,000.00	30,380
12X I/O DRW (GX) 20 PCI-X&16 DK BAYS w/o repeater	DRWG110-0000	Bull	1	32,000.00	3	96,000.00	18,228
PCI-X DDR Dual Chan.(4port)/Dual Initiat.SAS Adap.	MSCG072-0000	Bull	1	825.00	1	825.00	
Bulk Power Regulator (BPR)	REFG010-0000	Bull	1	4,200.00	12	50,400.00	
Power Distribution Assembly (BPD)	PSKG009-0000	Bull	1	2,500.00	6	15,000.00	
SLIM LINE DOORS (F&R),CEC and I/O Expansion RACKS	CKTG326-0000	Bull	1	8,000.00	2	16,000.00	
UPIC Cable GRP, BPD1 to I/O DRAWER AT A01	CKTG334-0001	Bull	1	500.00	2	1,000.00	
UPIC Cable GRP, BPD1 to I/O DRAWER AT A09	CKTG334-0003	Bull	1	500.00	2	1,000.00	
UPIC Y-Cable GRP, BPC to Fans	CKTG336-0000	Bull	1	5,000.00	1	5,000.00	
Powered EXPANSION RACK, 24", 42U	RCKG036-0000	Bull	1	60,500.00	1	60,500.00	6,201
UPIC Y-Cable GRP, BPD1 to 2ND PROC. NODE	CKTG339-0002	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD1 to 3RD PROC. NODE	CKTG339-0003	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD1 to 4TH PROC. NODE	CKTG339-0004	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD2 to 5TH PROC. NODE	CKTG339-0005	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD2 to 6TH PROC. NODE	CKTG339-0006	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD2 to 7TH PROC. NODE	CKTG339-0007	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD2 to 8TH PROC. NODE	CKTG339-0008	Bull	1	650.00	1	650.00	
UPIC Y-Cable GRP, BPD1 to I/O DRAWER AT A13	CKTG334-0004	Bull	1	900.00	1	900.00	
UPIC Y-Cable GRP, BPD1 to I/O DRAWER AT A17	CKTG334-0005	Bull	1	900.00	1	900.00	
10M Cable RJ45/RJ45 Category 6	CBLG243-1900	Bull	1	30.00	4	120.00	
2048GB : 32x64GB (0GB Act) Mem.Package 400MHz DDR2	CMMG298-0000	Bull	1	1,301,299.00	2	2,602,598.00	
HARDWARE MANAGEMENT CONSOLE (HMC)	CSKG018-0000	Bull	1	1,860.00	1	1,860.00	
17" FLAT PANEL MONITOR	DMUG024-1000	Bull	1	890.00	1	890.00	
FULL WIDTH QUIET TOUCH KEYBOARD - USB, US	KBUG009-000E	Bull	1	100.00	1	100.00	
Power Cord (6-foot), To Wall (125V, 15A), Plug Type #4		Bull	1	0.00	2	0.00	
2-Port 10/100/1000 BASE-TX ETHERNET PCI-X ADAPTER	DCCG168-0000	Bull	1	755.00	1	755.00	
					<b>Subtotal</b>	<b>11,990,039</b>	<b>925,287</b>
<b>Storage</b>							
DS4800 Disk System Model 82 (4 GB Cache)	1815-82A	IBM	2	53995	68	3,671,660	
DS4800 8-Storage Partitions	8870	IBM	2	10000	68	680,000	
(22R4255) DS4800 AIX Host Kit	7711	IBM	2	7000	68	476,000	
DS4000 EXP810 Enclosure	1812-81A	IBM	2	6000	784	4,704,000	
Short Wave SFP	2410	IBM	2	998	504	502,992	
16-PAK 4 GBPS 73.4 GB/15K	5433	IBM	2	14816	687	10,178,592	
Fiber Cable 25m	5625	IBM	2	189	476	89,964	
Fiber Cable 1m	5601	IBM	2	79	1292	102,068	
3 Year Warranty Service Upgrade 1812-81A 24x7x4		IBM	2	960	784		752,640
3 Year Warranty Service Upgrade 1815-82A 24x7x4		IBM	2	3200	68		217,600
					<b>Subtotal</b>	<b>20,405,276</b>	<b>970,240</b>
<b>Server Software</b>							
AIX SUBSCRIPTION CLASS H 1 Year per CPU	SBYG016-IN01	Bull	1	232	192		44,544
AIX 5.3 CLASS H - LICENCE (per CPU)	EXSG295-VH00	Bull	1	2,495	64	159,680	108,288
AIX 5.3 EXPANSION PACK	EXSG312-VA00	Bull	1	50	1	50	
AIX 5.3 MEDIA KIT	UTSG191-VK00	Bull	1	50	1	50	
SOFTWARE DELIVERY ON DVDROM	MSDG002-0000	Bull	1		1	0	
XL C Enterprise Edition for AIX V9.0 per User	CLGG051-VA0A	Bull	1	1,080	1	1,080	
C for AIX user annual SW maint renewal	SBYG031-IN00	Bull	1	210	2		420
AIX IBM Management Edition for AIX	5765-AME	Bull	1	490	64	31,360	
AIX IBM Mgmt Edition of AIX Software Maintenance (3Y)	5773-AME-989	Bull	1	196	64		12,544
HMC Software SUB (3Y)	5773-0570	Bull	1	236	1		236
HMC Software Support (3Y)	5773-0569	Bull	1	675	1		675
DB2 9.5 ESE Lic&Mtce (278.52 perVU,p6 VU rating-120, 64 processors)		IBM	2	279	7680	2,139,034	
DB2 9.5 ESE MtceRenewal (13.27 perVU, VU rating-120, 64 processors, 2 years)		IBM	2	13	15360		203,827
					<b>Subtotal</b>	<b>2,331,254</b>	<b>370,534</b>



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<b>Client Hardware</b>							
IBM System x3550 (Dual-core Xeon 2.0GHz 4MB L2 Cache)	7978AC1	IBM	2	1906	128	243,968	
512MB PC2-5300 CL5 ECC DDR2 Chipkill FBDIMM 667MHz	546	IBM	2	65	256	16,640	
73GB 15K Hot-Swap SAS Disk	5161	IBM	2	309	128	39,552	
ServicePac for 3-Year 24x7x4 Support	96P2250	IBM	2	586	128		75,008
NetBAY S24 42U Standard Rack Cabinet	93074RX	IBM	2	1489	77	114,653	
Optical 3-Button Mouse-USB	40K9201	IBM	2	19	1	19	
Preferred Pro FullSize PS/2 Keyboard	40K9584	IBM	2	29	1	29	
IBM T115 15" TFT Monitor	494215U	IBM	2	209	1	209	
					<b>Subtotal</b>	<b>415,070</b>	<b>75,008</b>
<b>Third party Hardware/Software</b>							
Visual Studio Standard 2005	127-00012	Microsoft	3	250	1	250	
Microsoft Windows 2003 Server	P70-00275	Microsoft	3	399	128	51,072	
Microsoft Problem Resolution Services		Microsoft	3	245	1		245
3Com Baseline Switch 2824 24-port unmanaged Gigabit (+ 2 spares)	512294	Bull	1	290	10	2,900	
APC Smart-UPS XL 3000VA 208V	SUA3000XLT	APC	4	1375	4	5,500	
APC Smart-UPS XL 48V Battery Pack	SUA48XLBP	APC	4	589	4	2,356	
					<b>Subtotal</b>	<b>62,078</b>	<b>245</b>
					<b>TOTAL</b>	<b>35,203,717</b>	<b>2,341,314</b>
					<b>IBM Discount</b>	<b>-13,063,167</b>	
					<b>Bull Discount</b>	<b>-7,353,936</b>	
<b>Notes:</b>					<b>Three-Year Cost of Ownership: \$17,127,928</b> <b>tpmC Rating: 6085166</b> <hr/> <b>\$ / tpmC: 2.81</b>		
<b>Pricing: 1-Bull 2-IBM 3-Microsoft -4 APC</b>							
<b>Audited by Francois Raab of InfoSizing</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 reflects 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. Thank you.

## Numerical Quantities Summary for the Bull Escala PL6460R

MQTH, computed Maximum Qualified Throughput: 6,085,166 tpmC

<u>Response Times (in seconds)</u>	<u>90<sup>th</sup> %</u>	<u>Average</u>	<u>Maximum</u>
New Order	1.69	1.22	11.19
Payment	1.68	1.20	11.17
Order-Status	1.69	1.21	11.14
Delivery (interactive)	1.19	0.78	10.87
Delivery (deferred)	0.48	0.26	10.42
Stock-Level	1.68	1.20	11.14
Menu	1.20	0.78	10.88

Response time delay added for emulated components was 0.1 seconds

<u>Transaction Mix, in percent of total transactions</u>	<u>Percent</u>
New Order	44.95%
Payment	43.01%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.01%

<u>Keying/Think Times (in seconds)</u>	<u>Min.</u>	<u>Average</u>	<u>Max.</u>
New Order	18.00/0.01	18.01/12.02	18.03/164.95
Payment	3.00/0.01	3.01/12.02	3.03/167.95
Order-Status	2.00/0.01	2.01/10.01	2.02/114.85
Delivery	2.00/0.01	2.01/5.02	2.03/50.21
Stock-Level	2.00/0.01	2.01/5.02	2.02/50.20

### Test Duration

Ramp-up Time	1 hour 55 minutes 39 secs
Measurement interval	2 hours 10 minutes
Transactions during measurement interval (all types)	1,759,581,553
Ramp-down time	30 minutes

### Checkpoints

Number of checkpoints	N/A
Checkpoint interval	N/A