



# SPEC® CINT2006 Result

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## IBM Corporation

### SPECint®\_rate2006 = 44.1

## IBM System x3655 (AMD Opteron 2214)

### SPECint\_rate\_base2006 = 39.7

CPU2006 license: 11

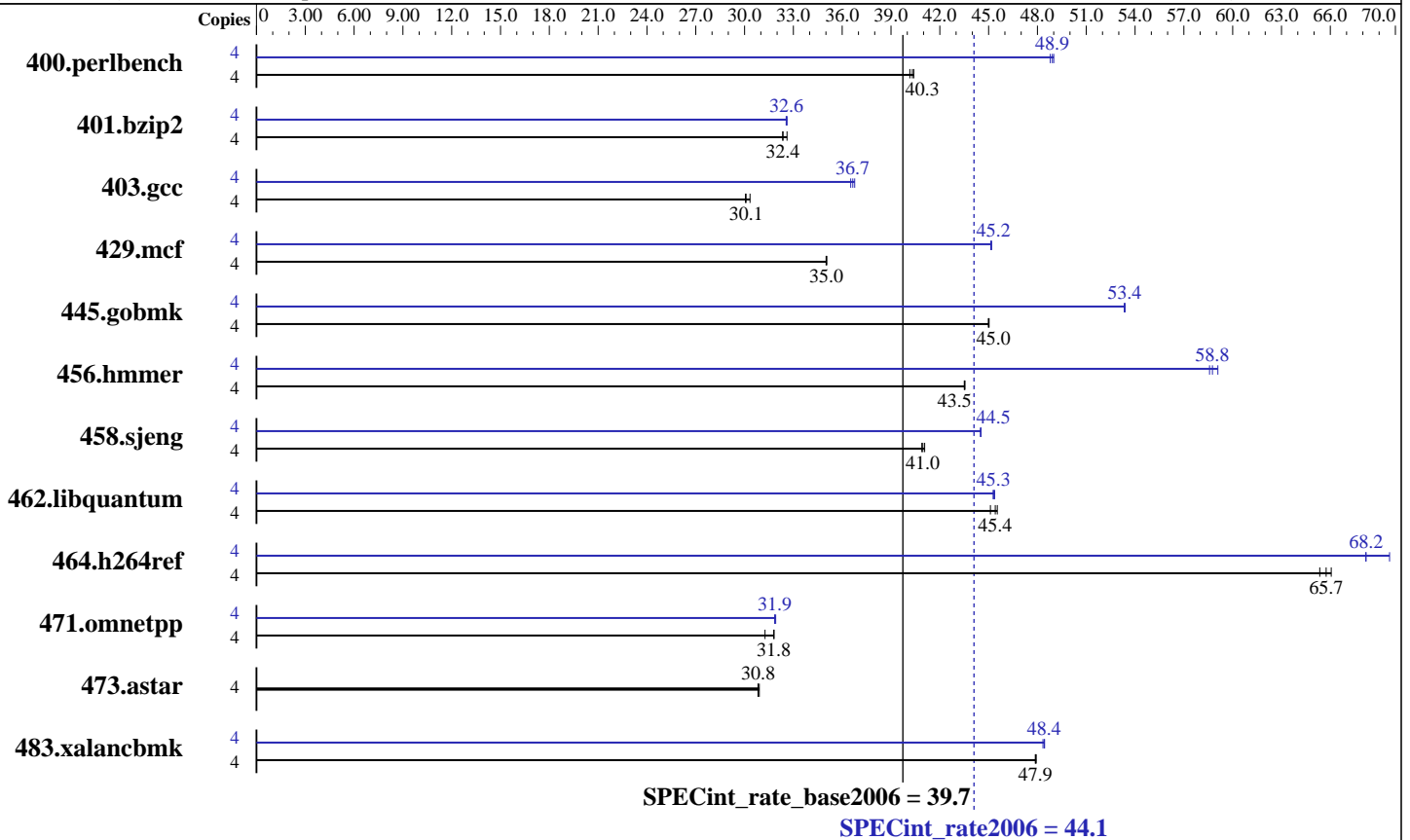
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2007

Hardware Availability: Oct-2006

Software Availability: Mar-2007



### Hardware

CPU Name: AMD Opteron 2214  
 CPU Characteristics:  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1, 2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 1 MB I+D on chip per core  
 L3 Cache: None  
 Other Cache: None  
 Memory: 16 GB (8 x 2GB DDR2-5300 ECC)  
 Disk Subsystem: 1 x 36 GB SAS, 10000 RPM  
 Other Hardware: None

### Software

Operating System: SLES 10 (x86\_64), 2.6.16.21-0.8-smp  
 Compiler: QLogic PathScale Compiler Suite, Release 3.0  
 Auto Parallel: No  
 File System: ext3  
 System State: Multi-user, run level 3  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap 8.1



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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	4	967	40.4	973	40.2	<b><u>969</u></b>	<b><u>40.3</u></b>	4	801	48.8	798	49.0	<b><u>799</u></b>	<b><u>48.9</u></b>
401.bzip2	4	1184	32.6	1194	32.3	<b><u>1193</u></b>	<b><u>32.4</u></b>	4	1186	32.6	<b><u>1185</u></b>	<b><u>32.6</u></b>	1184	32.6
403.gcc	4	1061	30.3	1071	30.1	<b><u>1070</u></b>	<b><u>30.1</u></b>	4	<b><u>879</u></b>	<b><u>36.7</u></b>	882	36.5	876	36.8
429.mcf	4	1041	35.0	1042	35.0	<b><u>1041</u></b>	<b><u>35.0</u></b>	4	808	45.1	807	45.2	<b><u>808</u></b>	<b><u>45.2</u></b>
445.gobmk	4	932	45.0	933	45.0	<b><u>932</u></b>	<b><u>45.0</u></b>	4	<b><u>786</u></b>	<b><u>53.4</u></b>	787	53.3	786	53.4
456.hammer	4	858	43.5	857	43.5	<b><u>858</u></b>	<b><u>43.5</u></b>	4	637	58.6	632	59.1	<b><u>635</u></b>	<b><u>58.8</u></b>
458.sjeng	4	1178	41.1	1184	40.9	<b><u>1182</u></b>	<b><u>41.0</u></b>	4	<b><u>1087</u></b>	<b><u>44.5</u></b>	1087	44.5	1088	44.5
462.libquantum	4	1837	45.1	<b><u>1825</u></b>	<b><u>45.4</u></b>	1820	45.5	4	<b><u>1829</u></b>	<b><u>45.3</u></b>	1827	45.4	1830	45.3
464.h264ref	4	1355	65.4	1340	66.1	<b><u>1346</u></b>	<b><u>65.7</u></b>	4	<b><u>1298</u></b>	<b><u>68.2</u></b>	1298	68.2	1271	69.6
471.omnetpp	4	786	31.8	800	31.3	<b><u>786</u></b>	<b><u>31.8</u></b>	4	783	31.9	785	31.9	<b><u>785</u></b>	<b><u>31.9</u></b>
473.astar	4	909	30.9	<b><u>911</u></b>	<b><u>30.8</u></b>	911	30.8	4	909	30.9	<b><u>911</u></b>	<b><u>30.8</u></b>	911	30.8
483.xalanbmk	4	576	47.9	577	47.9	<b><u>576</u></b>	<b><u>47.9</u></b>	4	<b><u>570</u></b>	<b><u>48.4</u></b>	570	48.4	571	48.3

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## General Notes

taskset utility used to bind CPU(s) to processes

## Base Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
403.gcc: -DSPEC\_CPU\_LP64  
429.mcf: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hammer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalanbmk: -DSPEC\_CPU\_LINUX



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## Base Optimization Flags

C benchmarks:

-Ofast -OPT:malloc\_alg=1

C++ benchmarks:

-Ofast -m32 -L/tools/SmartHeap\_8.1/lib -lsmartheap

## Base Other Flags

C benchmarks:

-IPA:max\_jobs=2

C++ benchmarks:

-IPA:max\_jobs=2

## Peak Compiler Invocation

C benchmarks:

pathcc

C++ benchmarks:

pathCC

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-LNO:opt=0

401.bzip2: -O3 -LNO:ou\_prod\_max=10 -OPT:Ofast -OPT:alias=disjoint

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## Peak Optimization Flags (Continued)

403.gcc: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:Ofast

429.mcf: -m32 -O3 -ipa -L/tools/SmartHeap\_8.1/lib -lsmartheap

445.gobmk: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off  
-WOPT:retype\_expr=on

456.hmmer: -O2 -OPT:alias=disjoint -OPT:malloc\_alg=1 -CG:cflow=0

458.sjeng: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-IPA:plimit=50000 -IPA:pu\_reorder=2

462.libquantum: -O3 -ipa -CG:local\_fwd\_sched=on -IPA:space=1000

464.h264ref: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-IPA:plimit=20000 -OPT:alias=disjoint -LNO:prefetch=0

C++ benchmarks:

471.omnetpp: -Ofast -CG:gcm=off -m32  
-L/tools/SmartHeap\_8.1/lib -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -Ofast -m32 -OPT:unroll\_times\_max=8  
-L/tools/SmartHeap\_8.1/lib -lsmartheap

## Peak Other Flags

C benchmarks:

-IPA:max\_jobs=2

C++ benchmarks:

-IPA:max\_jobs=2

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.13.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.13.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.xml)



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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