



# SPEC® CINT2006 Result

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IBM Corporation

SPECint®2006 = 13.2

IBM System x3455 (AMD Opteron 2218)

SPECint\_base2006 = 12.0

CPU2006 license: 11

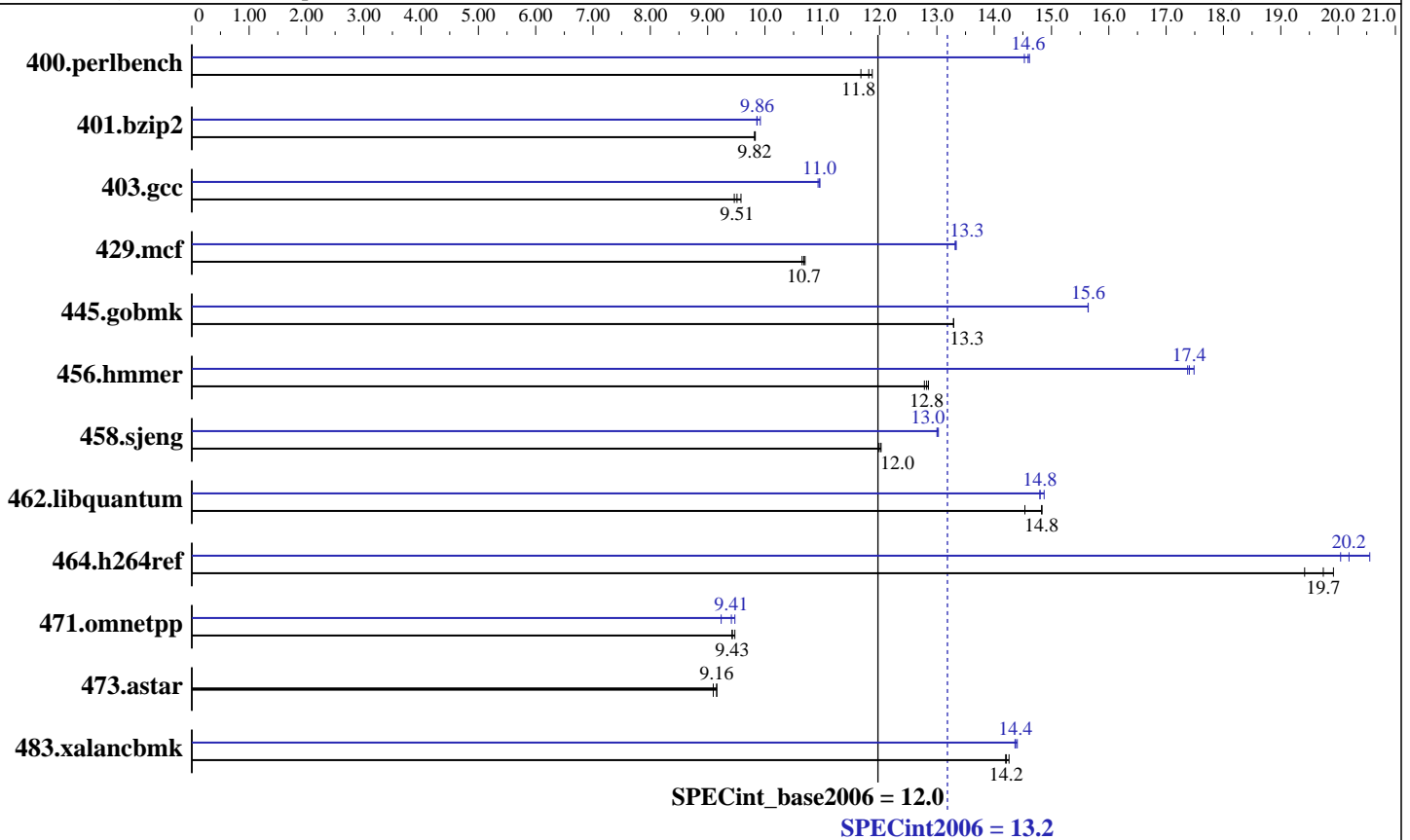
Test date: Jul-2007

Test sponsor: IBM Corporation

Hardware Availability: Oct-2006

Tested by: IBM Corporation

Software Availability: Mar-2007



## Hardware

CPU Name: AMD Opteron 2218  
 CPU Characteristics:  
 CPU MHz: 2600  
 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 160 GB Serial ATA, 7200 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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	837	11.7	823	11.9	<b>827</b>	<b>11.8</b>	673	14.5	668	14.6	<b>670</b>	<b>14.6</b>
401.bzip2	981	9.83	<b>983</b>	<b>9.82</b>	983	9.82	973	9.92	979	9.86	<b>978</b>	<b>9.86</b>
403.gcc	840	9.58	<b>846</b>	<b>9.51</b>	850	9.47	<b>735</b>	<b>11.0</b>	737	10.9	735	11.0
429.mcf	852	10.7	<b>854</b>	<b>10.7</b>	856	10.6	684	13.3	685	13.3	<b>684</b>	<b>13.3</b>
445.gobmk	789	13.3	<b>789</b>	<b>13.3</b>	789	13.3	671	15.6	671	15.6	<b>671</b>	<b>15.6</b>
456.hmmmer	730	12.8	<b>728</b>	<b>12.8</b>	726	12.9	534	17.5	<b>536</b>	<b>17.4</b>	537	17.4
458.sjeng	1006	12.0	1010	12.0	<b>1007</b>	<b>12.0</b>	<b>930</b>	<b>13.0</b>	931	13.0	929	13.0
462.libquantum	1425	14.5	1397	14.8	<b>1398</b>	<b>14.8</b>	1393	14.9	1400	14.8	<b>1400</b>	<b>14.8</b>
464.h264ref	<b>1121</b>	<b>19.7</b>	1140	19.4	1111	19.9	<b>1096</b>	<b>20.2</b>	1104	20.0	1077	20.6
471.omnetpp	660	9.48	<b>663</b>	<b>9.43</b>	663	9.43	660	9.48	<b>664</b>	<b>9.41</b>	677	9.24
473.astar	<b>767</b>	<b>9.16</b>	766	9.16	772	9.10	<b>767</b>	<b>9.16</b>	766	9.16	772	9.10
483.xalancbmk	484	14.3	<b>486</b>	<b>14.2</b>	486	14.2	479	14.4	<b>480</b>	<b>14.4</b>	480	14.4

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.hmmmer: -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

```



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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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