



# SPEC® CINT2006 Result

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## Supermicro

(Test Sponsor: Advanced Micro Devices)

### SPECint®\_rate2006 = 87.4

### A+ Server 1021M-UR+B, AMD Opteron 2347 HE

### SPECint\_rate\_base2006 = 76.0

CPU2006 license: 49

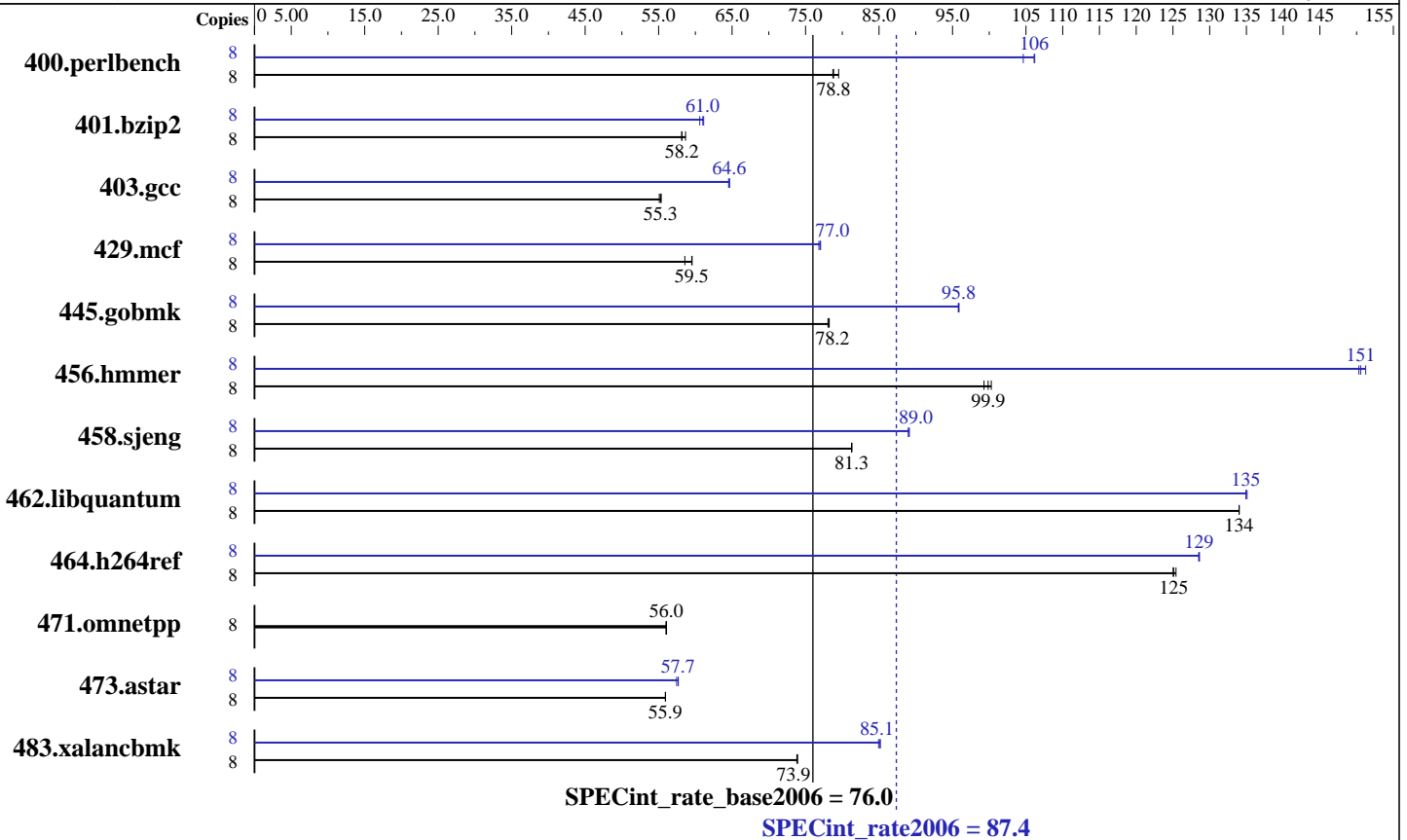
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Mar-2008

Hardware Availability: May-2008

Software Availability: May-2008



### Hardware

CPU Name: AMD Opteron 2347 HE  
 CPU Characteristics:  
 CPU MHz: 1900  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core  
 L3 Cache: 2 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 16 GB (8x2GB, DDR2-667, CL5, Reg, Dual Rank)  
 Disk Subsystem: 1 x 300 GB SATA, 7200 RPM  
 Other Hardware: None

### Software

Operating System: SuSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1  
 Auto Parallel: No  
 File System: ReiserFS  
 System State: Runlevel 3 (Full multiuser with network)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap 8.0 32-bit Library for Linux



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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	8	983	79.5	<u>992</u>	<u>78.8</u>	993	78.7	8	747	105	736	106	<u>737</u>	<u>106</u>
401.bzip2	8	1316	58.7	1328	58.1	<u>1327</u>	<u>58.2</u>	8	1274	60.6	1263	61.1	<u>1265</u>	<u>61.0</u>
403.gcc	8	1169	55.1	<u>1166</u>	<u>55.3</u>	1163	55.4	8	996	64.7	998	64.5	<u>996</u>	<u>64.6</u>
429.mcf	8	1246	58.6	1225	59.6	<u>1226</u>	<u>59.5</u>	8	950	76.8	947	77.0	<u>948</u>	<u>77.0</u>
445.gobmk	8	1073	78.2	1075	78.0	<u>1074</u>	<u>78.2</u>	8	876	95.8	<u>876</u>	<u>95.8</u>	875	95.9
456.hmmer	8	744	100	752	99.3	<u>748</u>	<u>99.9</u>	8	497	150	494	151	<u>496</u>	<u>151</u>
458.sjeng	8	1191	81.3	<u>1191</u>	<u>81.3</u>	1191	81.3	8	1086	89.1	1088	89.0	<u>1088</u>	<u>89.0</u>
462.libquantum	8	1237	134	<u>1237</u>	<u>134</u>	1237	134	8	1229	135	1227	135	<u>1228</u>	<u>135</u>
464.h264ref	8	1412	125	1416	125	<u>1415</u>	<u>125</u>	8	1377	129	1378	128	<u>1377</u>	<u>129</u>
471.omnetpp	8	<u>892</u>	<u>56.0</u>	893	56.0	892	56.1	8	<u>892</u>	<u>56.0</u>	893	56.0	892	56.1
473.astar	8	1004	55.9	<u>1004</u>	<u>55.9</u>	1004	55.9	8	978	57.4	974	57.7	<u>974</u>	<u>57.7</u>
483.xalancbmk	8	748	73.8	<u>747</u>	<u>73.9</u>	747	73.9	8	650	84.9	<u>648</u>	<u>85.1</u>	648	85.2

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

## Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

## Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

## 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.hmmer: -DSPEC_CPU_LP64
```

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## Base Portability Flags (Continued)

458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-fast -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed  
-Msmartalloc=huge:150 -tp barcelona-64 -Bstatic\_pgi

C++ benchmarks:

-fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed  
-Msmartalloc=huge:150 --zc\_eh -tp barcelona -Bstatic\_pgi

## Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

## Peak Compiler Invocation

C benchmarks (except as noted below):

pgcc

400.perlbench: pathcc

403.gcc: pathcc

445.gobmk: pathcc

C++ benchmarks (except as noted below):

pathCC

471.omnetpp: pgcpp



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## 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.xalanbmk: -DSPEC_CPU_LINUX

```

## Peak Optimization Flags

C benchmarks:

```

400.perlbench: -march=barcelona -fb_create fbdata(pass 1)
               -fb_opt fbdata(pass 2) -Ofast -IPA:plimit=20000 -LNO:opt=0
               -WOPT:if_conv=0 -CG:local_sched_alg=1

401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
           -Msmartalloc=huge:150 -Mnounroll -tp barcelona-64
           -Bstatic_pgi

403.gcc: -march=barcelona -fb_create fbdata(pass 1)
          -fb_opt fbdata(pass 2) -m32 -O3 -OPT:Ofast

429.mcf: -fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline:1
          -Msmartalloc=huge:150 -tp barcelona -Bstatic_pgi

445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
            -fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict -LNO:opt=0
            -CG:p2align=on

456.hmmer: -fastsse -Munroll=n:8 -Msmartalloc=huge:150 -Mfprelaxed
            -Mvect=partial -Msafeptr -Mipa=jobs:4 -Mipa=const
            -Mipa=ptr -Mipa=arg -Mipa=inline -tp barcelona-64
            -Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -Mipa=fast(pass 2)
            -Mipa=inline:1(pass 2) -Mipa=noarg(pass 2) -Mpfo(pass 2)
            -fastsse -Msmartalloc=huge:150 -Mfprelaxed
            -tp barcelona-64 -Bstatic_pgi

462.libquantum: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Munroll=m:8
                -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mipa=noarg
                -tp barcelona-64 -Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=jobs:4(pass 2)
              -Mipa=fast(pass 2) -Mipa=inline(pass 2)
              -Mpfo=indirect(pass 2) -fastsse -Msmartalloc=huge:150
              -Mfprelaxed -tp barcelona-64 -Bstatic_pgi

```

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## Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=barcelona -Ofast -TENV:frame\_pointer=off  
-WOPT:if\_conv=0 -GRA:optimize\_boundary=on -IPA:plimit=525  
-m32 -lsmarheap

483.xalancbmk: -march=barcelona -Ofast -m32 -OPT:unroll\_times\_max=8  
-CG:push\_pop\_int\_saved\_regs=off -CG:ptr\_load\_use=0  
-lsmarheap

## Peak Other Flags

C benchmarks (except as noted below):

-w

400.perlbench: No flags used

403.gcc: No flags used

445.gobmk: No flags used

C++ benchmarks (except as noted below):

-L/root/work/cpu2006/amd123GH.libs/32

471.omnetpp: -w

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.html>

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.xml>

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

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