



# SPEC<sup>®</sup> CFP2006 Result

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Tyan

(Test Sponsor: Advanced Micro Devices)

SPECfp<sup>®</sup>\_rate2006 = 52.1

n4250QE (S4985) AMD Opteron 2222 SE

SPECfp\_rate\_base2006 = 49.4

CPU2006 license: 49

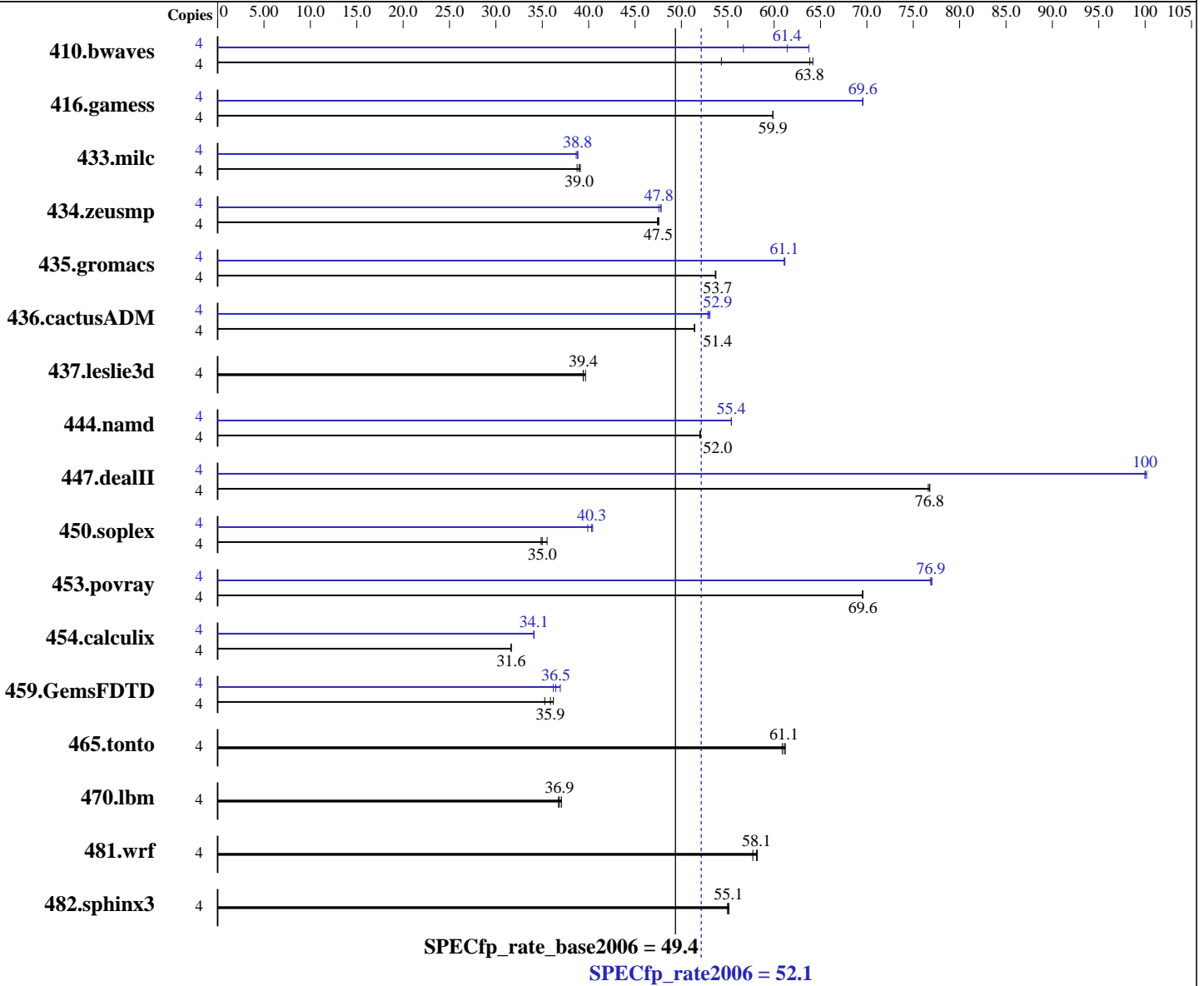
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Feb-2007

Hardware Availability: May-2007

Software Availability: Mar-2007



## Hardware

CPU Name: AMD Opteron 2222 SE  
 CPU Characteristics:  
 CPU MHz: 3000  
 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

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## Software

Operating System: SuSE Linux Enterprise Server 9 SP3 64-bit kernel  
 Compiler: QLogic PathScale  
 Compiler Suite, Release 3.0  
 Auto Parallel: No  
 File System: ext3  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 8 GB (8x1GB, DDR2-667 CL4 ECC Reg Dual Rank)  
Disk Subsystem: SATA, 80 GB  
Other Hardware: None

Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	<b>852</b>	<b>63.8</b>	1001	54.3	847	64.2	4	853	63.8	<b>885</b>	<b>61.4</b>	959	56.7
416.gamess	4	1308	59.9	<b>1308</b>	<b>59.9</b>	1308	59.9	4	<b>1126</b>	<b>69.6</b>	1126	69.5	1126	69.6
433.milc	4	<b>942</b>	<b>39.0</b>	939	39.1	947	38.8	4	<b>946</b>	<b>38.8</b>	950	38.7	945	38.8
434.zeusmp	4	765	47.6	<b>766</b>	<b>47.5</b>	768	47.4	4	<b>762</b>	<b>47.8</b>	761	47.8	765	47.6
435.gromacs	4	532	53.7	<b>532</b>	<b>53.7</b>	532	53.7	4	<b>467</b>	<b>61.1</b>	467	61.1	467	61.2
436.cactusADM	4	<b>930</b>	<b>51.4</b>	930	51.4	929	51.4	4	904	52.9	901	53.1	<b>903</b>	<b>52.9</b>
437.leslie3d	4	<b>954</b>	<b>39.4</b>	954	39.4	948	39.7	4	<b>954</b>	<b>39.4</b>	954	39.4	948	39.7
444.namd	4	<b>617</b>	<b>52.0</b>	617	52.0	616	52.0	4	579	55.4	<b>579</b>	<b>55.4</b>	579	55.4
447.dealII	4	597	76.6	<b>596</b>	<b>76.8</b>	596	76.8	4	457	100	<b>458</b>	<b>100</b>	458	100
450.soplex	4	<b>953</b>	<b>35.0</b>	957	34.9	939	35.5	4	836	39.9	825	40.4	<b>827</b>	<b>40.3</b>
453.povray	4	<b>306</b>	<b>69.6</b>	306	69.5	306	69.6	4	276	77.0	277	76.9	<b>277</b>	<b>76.9</b>
454.calculix	4	<b>1043</b>	<b>31.6</b>	1043	31.6	1043	31.6	4	967	34.1	<b>968</b>	<b>34.1</b>	968	34.1
459.GemsFDTD	4	1203	35.3	1172	36.2	<b>1183</b>	<b>35.9</b>	4	1173	36.2	1149	36.9	<b>1164</b>	<b>36.5</b>
465.tonto	4	<b>644</b>	<b>61.1</b>	643	61.2	647	60.9	4	<b>644</b>	<b>61.1</b>	643	61.2	647	60.9
470.lbm	4	<b>1491</b>	<b>36.9</b>	1482	37.1	1496	36.7	4	<b>1491</b>	<b>36.9</b>	1482	37.1	1496	36.7
481.wrf	4	768	58.2	<b>769</b>	<b>58.1</b>	774	57.7	4	768	58.2	<b>769</b>	<b>58.1</b>	774	57.7
482.sphinx3	4	1414	55.1	<b>1416</b>	<b>55.1</b>	1418	55.0	4	1414	55.1	<b>1416</b>	<b>55.1</b>	1418	55.0

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

## General Notes

taskset utility used to bind cores to processes  
All memory slots filled on all used CPU sockets

The tested system can be assembled using an SSI-MEB case and a Silverstone Zeus 650 watt ST65ZF ATX 12V Power Supply.

## Base Compiler Invocation

C benchmarks:  
pathcc

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## Base Compiler Invocation (Continued)

C++ benchmarks:

pathCC

Fortran benchmarks:

pathf95

Benchmarks using both Fortran and C:

pathcc pathf95

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
416.gamess: -DSPEC\_CPU\_LP64  
433.milc: -DSPEC\_CPU\_LP64  
434.zeusmp: -DSPEC\_CPU\_LP64  
435.gromacs: -DSPEC\_CPU\_LP64  
436.cactusADM: -DSPEC\_CPU\_LP64 -fno-second-underscore  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_TABLE\_WORKAROUND  
450.soplex: -DSPEC\_CPU\_LP64  
453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64  
459.GemsFDTD: -DSPEC\_CPU\_LP64  
465.tonto: -DSPEC\_CPU\_LP64  
470.lbm: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX -fno-second-underscore  
482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:

-Ofast

C++ benchmarks:

-Ofast

Fortran benchmarks:

-Ofast -OPT:malloc\_alg=1

Benchmarks using both Fortran and C:

-Ofast -OPT:malloc\_alg=1



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**Hardware Availability:** May-2007

**Software Availability:** Mar-2007

## Peak Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## Peak Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.lelie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_TABLE_WORKAROUND
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

## Peak Optimization Flags

C benchmarks:

433.milc: -Ofast -CG:cflow=off -LNO:prefetch=1 -OPT:malloc\_alg=1

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-exceptions

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## Peak Optimization Flags (Continued)

447.dealII: -Ofast -INLINE:aggressive=on -LNO:opt=0 -OPT:alias=disjoint  
-m32 -fno-exceptions

450.soplex: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:IEEE\_arith=3 -CG:load\_exe=0 -CG:movnti=1  
-LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

453.povray: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-fast-math

### Fortran benchmarks:

410.bwaves: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:Ofast -OPT:IEEE\_arith=3 -LNO:blocking=off  
-LNO:ignore\_feedback=off

416.gamess: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O2  
-OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256

434.zeusmp: -Ofast -CG:local\_fwd\_sched=on -LNO:blocking=off  
-LNO:interchange=off -LNO:fu=10 -LNO:full\_unroll\_outer=on

437.leslie3d: basepeak = yes

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: basepeak = yes

### Benchmarks using both Fortran and C:

435.gromacs: -O3 -OPT:rsqrt=2 -OPT:ro=3

436.cactusADM: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-LNO:prefetch=3 -LNO:prefetch\_ahead=5 -LNO:ou\_prod\_max=10  
-LNO:full\_unroll=5 -ipa

454.calculix: -Ofast -LNO:simd=0 -WOPT:mem\_opnds=on

481.wrf: basepeak = yes

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.26.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.26.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.26.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.26.xml)



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

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