SPEC® CFP2006 Result

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Tyan
(Test Sponsor: Advanced Micro Devices)

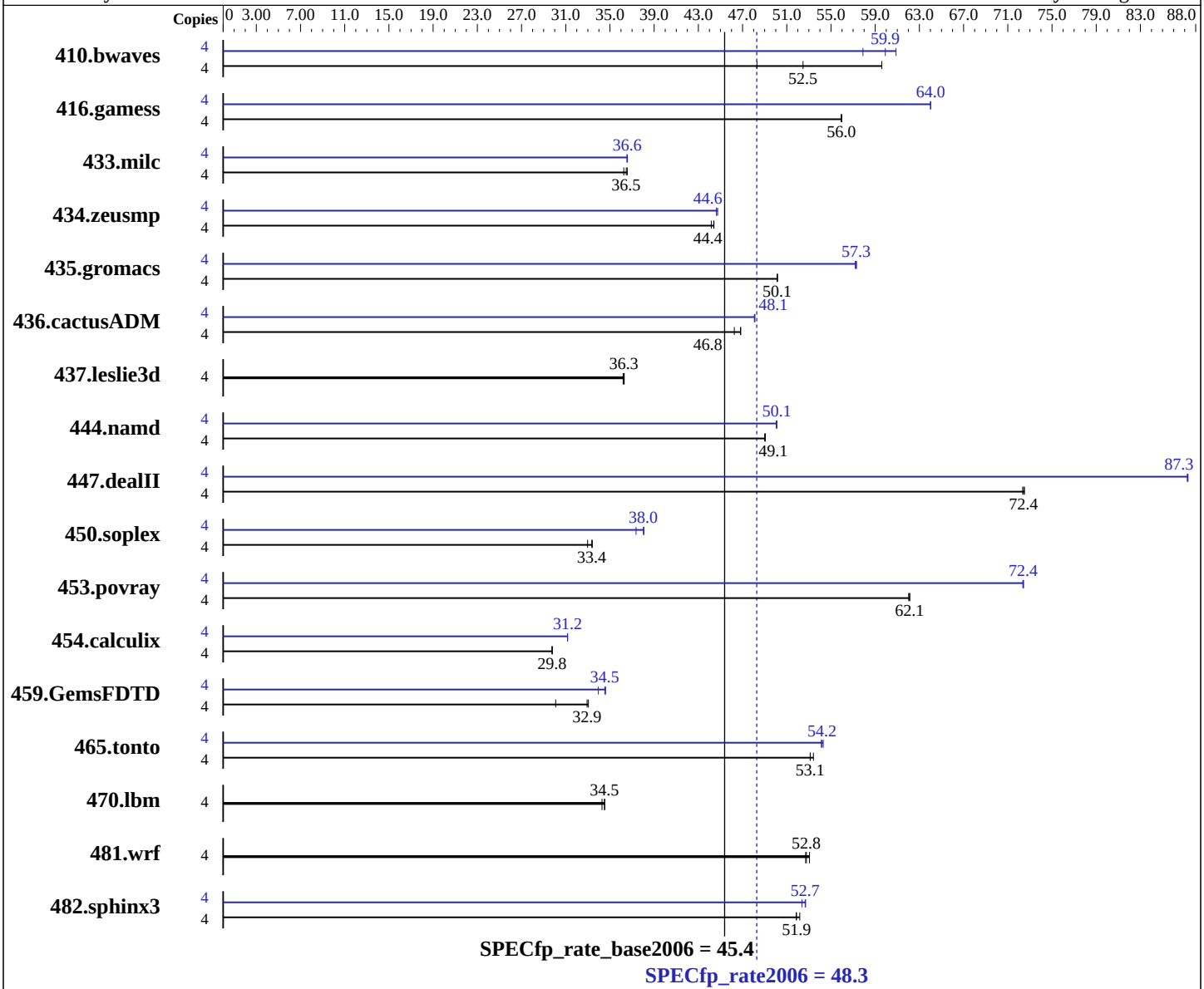
Thunder n4250QE (S4985) Opteron 2220 SE

SPECfp®_rate2006 = 48.3

SPECfp_rate_base2006 = 45.4

CPU2006 license: 49
Test sponsor: Advanced Micro Devices
Tested by: AMD

Test date: Jul-2006
Hardware Availability: Oct-2006
Software Availability: Aug-2006



Hardware

CPU Name:	AMD Opteron 2220 SE
CPU Characteristics:	
CPU MHz:	2800
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 2.5
	SmartHeap 8.0 32 bit Library for Linux
Auto Parallel:	No
File System:	ext3
System State:	Multi-user, run level 3
Base Pointers:	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, 74 GB
Other Hardware: None

Peak Pointers: 32/64-bit
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	1125	48.3	**1036**	**52.5**	912	59.6	4	**907**	**59.9**	893	60.9	939	57.9
416.gamess	4	**1400**	**56.0**	1400	56.0	1400	55.9	4	**1223**	**64.0**	1224	64.0	1223	64.0
433.milc	4	1004	36.6	**1007**	**36.5**	1013	36.3	4	1004	36.6	1005	36.5	**1004**	**36.6**
434.zeusmp	4	824	44.2	820	44.4	**820**	**44.4**	4	**815**	**44.6**	813	44.7	815	44.6
435.gromacs	4	569	50.2	**570**	**50.1**	570	50.1	4	**499**	**57.3**	499	57.2	498	57.3
436.cactusADM	4	1033	46.3	**1021**	**46.8**	1021	46.8	4	993	48.1	**994**	**48.1**	994	48.1
437.leslie3d	4	1036	36.3	1039	36.2	**1037**	**36.3**	4	1036	36.3	1039	36.2	**1037**	**36.3**
444.namd	4	654	49.1	655	49.0	**654**	**49.1**	4	641	50.0	640	50.1	**640**	**50.1**
447.dealII	4	**632**	**72.4**	633	72.3	631	72.5	4	525	87.2	**524**	**87.3**	524	87.3
450.soplex	4	**1000**	**33.4**	1012	33.0	999	33.4	4	893	37.4	876	38.1	**877**	**38.0**
453.povray	4	**343**	**62.1**	343	62.0	343	62.1	4	294	72.4	294	72.4	**294**	**72.4**
454.calculix	4	1109	29.8	1108	29.8	**1108**	**29.8**	4	1059	31.2	1059	31.2	**1059**	**31.2**
459.GemsFDTD	4	1411	30.1	**1289**	**32.9**	1284	33.0	4	1226	34.6	1250	33.9	**1229**	**34.5**
465.tonto	4	741	53.1	737	53.4	**741**	**53.1**	4	**726**	**54.2**	727	54.1	725	54.3
470.lbm	4	**1593**	**34.5**	1591	34.5	1603	34.3	4	**1593**	**34.5**	1591	34.5	1603	34.3
481.wrf	4	848	52.7	842	53.1	**847**	**52.8**	4	848	52.7	842	53.1	**847**	**52.8**
482.sphinx3	4	1503	51.9	1494	52.2	**1503**	**51.9**	4	**1480**	**52.7**	1489	52.4	1479	52.7

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
All memory slots filled on all chips

The tested system can be assembled using any 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

Benchmarks using both Fortran and C:
-Ofast

Base Other Flags

C benchmarks:
`-IPA:max_jobs=2`

C++ benchmarks:
`-IPA:max_jobs=2`

Fortran benchmarks:
`-IPA:max_jobs=2`

Benchmarks using both Fortran and C:
`-IPA:max_jobs=2`

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.leslie3d: `-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: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast`

470.lbm: `basepeak = yes`

482.sphinx3: `Same as 433.milc`

C++ benchmarks:

444.namd: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast`

447.dealII: `-Ofast -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 -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: `-Ofast -CG:local_fwd_sched=on -IPA:plimit=525`

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_ahead=5 -LNO:ou_prod_max=10 -LNO:full_unroll=5 -ipa`

454.calculix: `-Ofast -CG:prefetch=off -LNO:simd=0 -OPT:unroll_times_max=8 -WOPT:mem_opnds=on`

Continued on next page

Peak Optimization Flags (Continued)

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-IPA:max_jobs=2`

C++ benchmarks:
`-IPA:max_jobs=2`

Fortran benchmarks:
`-IPA:max_jobs=2`

Benchmarks using both Fortran and C:
`-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.20090714.25.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.25.xml`

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