SPEC® CFP2006 Result

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Tyan
(Test Sponsor: Advanced Micro Devices)

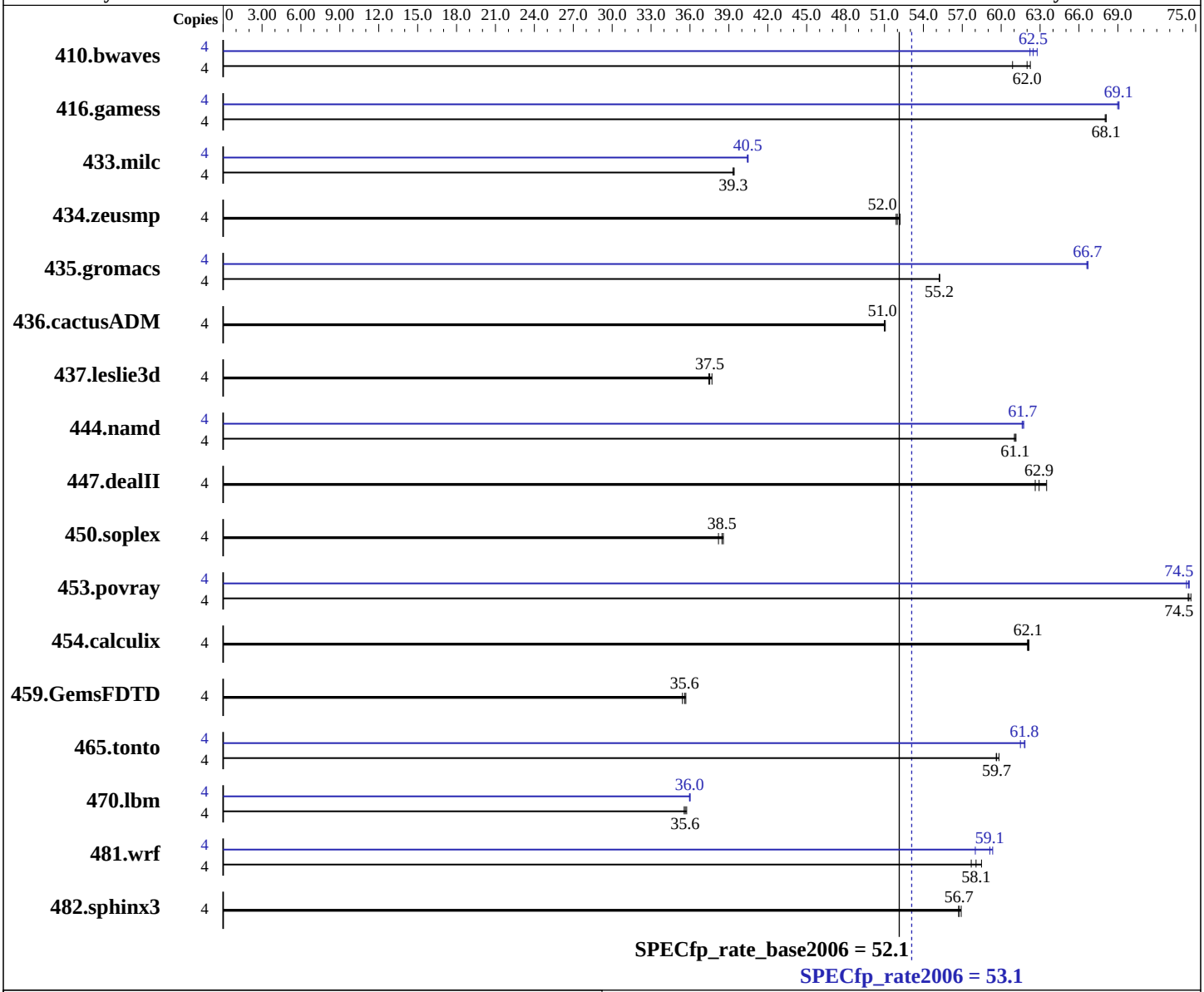
Thunder h2000M (S3992) AMD Opteron 2224 SE

SPECfp®_rate2006 = 53.1

SPECfp_rate_base2006 = 52.1

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

Test date: Jul-2007
Hardware Availability: Aug-2007
Software Availability: Oct-2007



Hardware

CPU Name:	AMD Opteron 2224 SE
CPU Characteristics:	
CPU MHz:	3200
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 10 64-bit kernel
Compiler:	The Portland Group (PGI) PGI pgf90 7.1-0 Fortran Compiler PGI pgcc 7.1-0 C Compiler PGI pgCC 7.1-0 C++ Compiler
Auto Parallel:	No
File System:	ext3
System State:	Multi-user, run level 3

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

Base Pointers: 64-bit
Peak Pointers: 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	893	60.9	**877**	**62.0**	873	62.2	4	866	62.8	874	62.2	**870**	**62.5**
416.gamess	4	1150	68.1	1151	68.0	**1150**	**68.1**	4	**1134**	**69.1**	1135	69.0	1134	69.1
433.milc	4	**933**	**39.3**	932	39.4	934	39.3	4	907	40.5	**907**	**40.5**	908	40.4
434.zeusmp	4	701	51.9	**700**	**52.0**	697	52.2	4	701	51.9	**700**	**52.0**	697	52.2
435.gromacs	4	517	55.3	517	55.2	**517**	**55.2**	4	429	66.6	**428**	**66.7**	428	66.7
436.cactusADM	4	936	51.1	**937**	**51.0**	937	51.0	4	936	51.1	**937**	**51.0**	937	51.0
437.leslie3d	4	997	37.7	**1002**	**37.5**	1004	37.4	4	997	37.7	**1002**	**37.5**	1004	37.4
444.namd	4	525	61.1	526	61.0	**525**	**61.1**	4	520	61.7	521	61.6	**520**	**61.7**
447.dealII	4	731	62.6	**727**	**62.9**	721	63.5	4	731	62.6	**727**	**62.9**	721	63.5
450.soplex	4	873	38.2	865	38.6	**867**	**38.5**	4	873	38.2	865	38.6	**867**	**38.5**
453.povray	4	286	74.4	**286**	**74.5**	285	74.6	4	286	74.5	286	74.3	**286**	**74.5**
454.calculix	4	**532**	**62.1**	532	62.0	531	62.1	4	**532**	**62.1**	532	62.0	531	62.1
459.GemsFDTD	4	1198	35.4	**1193**	**35.6**	1189	35.7	4	1198	35.4	**1193**	**35.6**	1189	35.7
465.tonto	4	660	59.6	658	59.8	**660**	**59.7**	4	**637**	**61.8**	637	61.8	640	61.5
470.lbm	4	1546	35.6	**1542**	**35.6**	1537	35.7	4	**1528**	**36.0**	1526	36.0	1528	36.0
481.wrf	4	764	58.5	**770**	**58.1**	774	57.7	4	753	59.3	770	58.0	**756**	**59.1**
482.sphinx3	4	1370	56.9	1374	56.7	**1374**	**56.7**	4	1370	56.9	1374	56.7	**1374**	**56.7**

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

Operating System Notes

```
Environment stack size set to 'unlimited'
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=512 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Component Notes

```
SUT requires a Tyan Thunder h2000M motherboard (BIOS rev 2.00), a Seagate
Barracuda 7200.10 SATA drive, a SSI EEB 3.51 specification compliant
form-factor case, and a Delta Electronics 500 watt DPS-500GB power supply.
```

General Notes

```
Submitted_by: "Raddatz, Dave" <Dave.Raddatz@amd.com>
Submitted: Tue Aug  7 13:14:49 2007
Submission: cpu2006-20070723-01516.sub
```

Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Fortran benchmarks:
pgf95

Benchmarks using both Fortran and C:
pgcc pgf95

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 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

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Base Optimization Flags (Continued)

C++ benchmarks:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
--zc_eh -tp k8-64 -Bstatic_pgi
```

Fortran benchmarks:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi
```

Benchmarks using both Fortran and C:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi
```

Base Other Flags

C benchmarks:
```
-w
```

C++ benchmarks:
```
-w
```

Fortran benchmarks:
```
-w
```

Benchmarks using both Fortran and C:
```
-w
```

Peak Compiler Invocation

C benchmarks:
```
pgcc
```

C++ benchmarks:
```
pgcpp
```

Fortran benchmarks:
```
pgf95
```

Benchmarks using both Fortran and C:
```
pgcc pgf95
```

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: `-Mpfi`(pass 1) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-Mipa=noarg`(pass 2) `-Mpfo`(pass 2) `-fast -O4 -Mdse -Mfprelaxed -Msmartalloc=huge:8 -tp k8-64 -Bstatic_pgi`

470.lbm: `-fast -Mfprelaxed -Msmartalloc=huge:8 -Mipa=fast -Mipa=noarg -tp k8-64 -Bstatic_pgi`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `-Mpfi`(pass 1) `-Mpfo`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-fast -O4 -Mfprelaxed -Msmartalloc=huge:32 --zc_eh -tp k8-64 -Bstatic_pgi`

447.dealII: `basepeak = yes`

450.soplex: `basepeak = yes`

453.povray: `-fast -Mfprelaxed -Msmartalloc=huge:32 -Mipa=fast -Mipa=inline --zc_eh -tp k8-64 -Bstatic_pgi`

Fortran benchmarks:

410.bwaves: `-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc -tp k8-64 -Bstatic_pgi`

416.gamess: `-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Mvect=noaltcode -Msmartalloc=huge:64 -tp k8-64 -Bstatic_pgi`

434.zeusmp: `basepeak = yes`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-fast -Mfprelaxed -Msmartalloc=huge:128 -Mipa=fast -Mipa=inline -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:

435.gromacs: `-fast -O4 -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:16 -tp k8-64 -Mfpapprox=rsqrt -Bstatic_pgi`

436.cactusADM: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

454.calculix: `basepeak = yes`

481.wrf: `-fast -Mfprelaxed -Msmartalloc=huge:32 -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Peak Other Flags

C benchmarks:
`-w`

C++ benchmarks:
`-w`

Fortran benchmarks:
`-w`

Benchmarks using both Fortran and C:
`-w`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.00.xml`

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