SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Tyan
(Test Sponsor: Advanced Micro Devices)

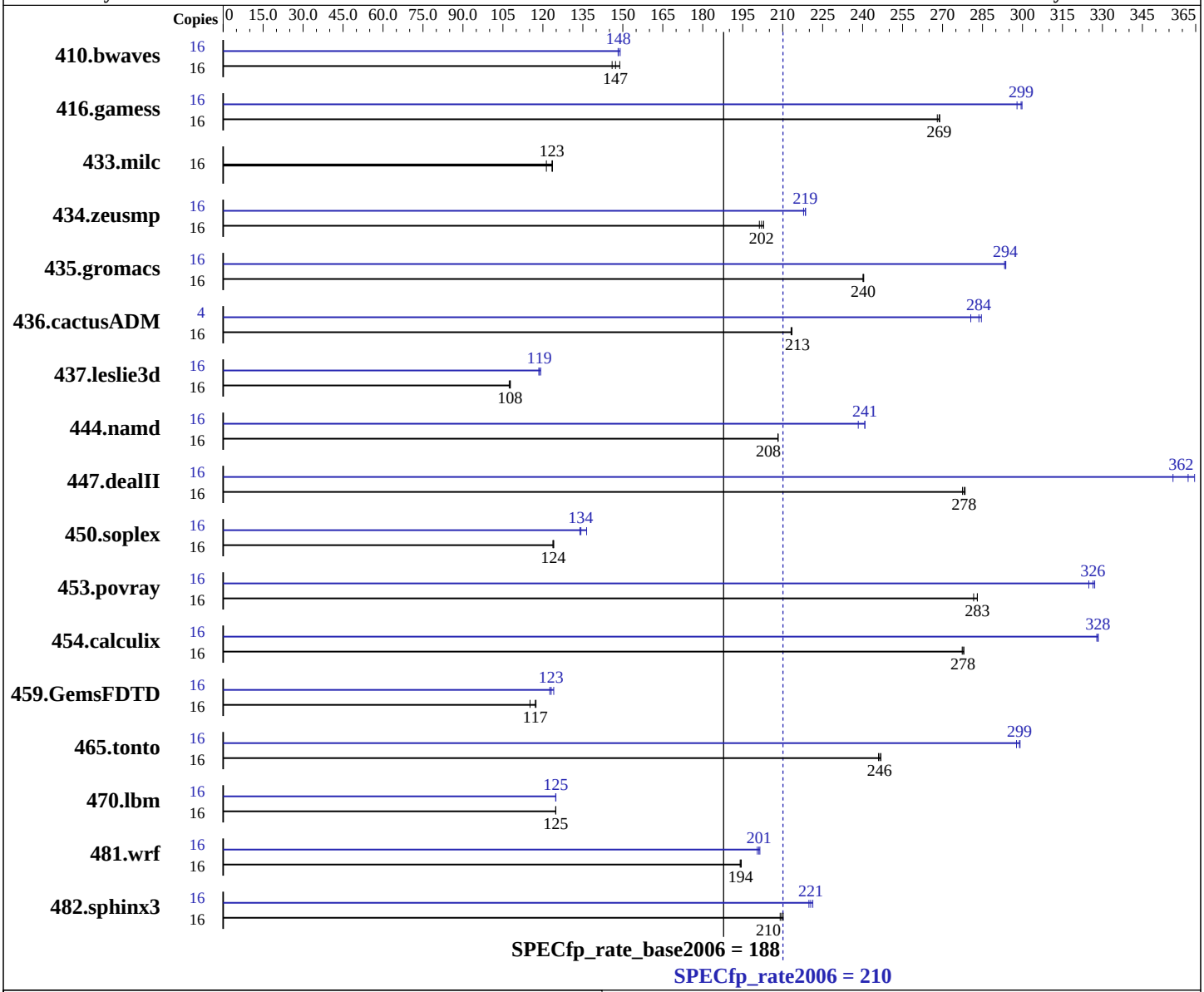
Transport TX46, AMD Opteron 8384

SPECfp®_rate2006 = 210

SPECfp_rate_base2006 = 188

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

Test date: Oct-2008
Hardware Availability: Nov-2008
Software Availability: Jun-2008



Hardware

CPU Name:	AMD Opteron 8384
CPU Characteristics:	
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	2,4 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 5.2, Advanced Platform, Kernel 2.6.18-92.el5
Compiler:	PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.2
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Tyan
(Test Sponsor: Advanced Micro Devices)

Transport TX46, AMD Opteron 8384

SPECfp_rate2006 = 210

SPECfp_rate_base2006 = 188

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

Test date: Oct-2008
Hardware Availability: Nov-2008
Software Availability: Jun-2008

L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (16x4 GB, DDR2-800, CL5, Reg, Dual Rank)
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
Other Hardware: None

Other Software: binutils 2.18
32-bit and 64-bit libhugetlbfs libraries

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1490	146	**1477**	**147**	1461	149	16	1467	148	**1466**	**148**	1459	149
416.gamess	16	1165	269	**1166**	**269**	1169	268	16	1051	298	**1046**	**299**	1045	300
433.milc	16	1188	124	1211	121	**1190**	**123**	16	1188	124	1211	121	**1190**	**123**
434.zeusmp	16	723	201	718	203	**720**	**202**	16	668	218	666	219	**666**	**219**
435.gromacs	16	475	240	**476**	**240**	476	240	16	390	293	389	294	**389**	**294**
436.cactusADM	16	896	214	897	213	**896**	**213**	4	170	281	**169**	**284**	168	285
437.leslie3d	16	**1397**	**108**	1401	107	1395	108	16	1269	118	1262	119	**1267**	**119**
444.namd	16	**616**	**208**	616	208	616	208	16	538	238	533	241	**533**	**241**
447.dealII	16	**658**	**278**	657	278	660	277	16	502	365	513	356	**505**	**362**
450.soplex	16	**1077**	**124**	1075	124	1078	124	16	997	134	**994**	**134**	978	136
453.povray	16	**301**	**283**	302	282	301	283	16	260	327	**261**	**326**	262	325
454.calculix	16	**475**	**278**	476	277	475	278	16	403	328	402	328	**402**	**328**
459.GemsFDTD	16	1474	115	1446	117	**1449**	**117**	16	1368	124	1385	123	**1379**	**123**
465.tonto	16	640	246	**639**	**246**	638	247	16	526	299	**527**	**299**	529	298
470.lbm	16	1761	125	1761	125	**1761**	**125**	16	1760	125	**1761**	**125**	1761	125
481.wrf	16	919	194	**920**	**194**	921	194	16	887	201	**889**	**201**	891	200
482.sphinx3	16	1492	209	**1488**	**210**	1484	210	16	1418	220	1409	221	**1414**	**221**

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

Submit Notes

```
The config file option 'submit' was used.
 'numactl' was used to bind copies to the cores
```

Operating System Notes

```
The libhugetlbfs libraries were installed using the
installation rpms that came with the distribution.

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=14336 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_MORECORE = "yes"
LD_LIBRARY_PATH = "/root/work/cpu2006v1.1/amd909gh-libs/64:/root/work/cpu2006v1.1/amd909gh-libs/32"
NCPUS = "4"
```

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:
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Continued on next page

Base Optimization Flags (Continued)

C++ benchmarks:
`-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed --zc_eh -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

Fortran benchmarks:
`-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc=huge -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:
`-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

Base Other Flags

C benchmarks:
`-Mipa=jobs:4`

C++ benchmarks:
`-Mipa=jobs:4`

Fortran benchmarks:
`-Mipa=jobs:4`

Benchmarks using both Fortran and C:
`-Mipa=jobs:4`

Peak Compiler Invocation

C benchmarks:
`pgcc`

C++ benchmarks (except as noted below):
`pathCC`

444.namd: `pgcpp`

Fortran benchmarks (except as noted below):
`pathf95`

410.bwaves: `pgf95`

434.zeusmp: `pgf95`

437.leslie3d: `pgf95`

Continued on next page

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C (except as noted below):
pgcc pgf95

435.gromacs: pathcc pathf95

481.wrf: 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 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -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_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mprefetch=t0 -Mloop32 -Mfprelaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

482.sphinx3: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
-Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge -Mnodepchk
-Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi

Continued on next page

Peak Optimization Flags (Continued)

447.dealII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-fno-exceptions -m32

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -L/usr/lib -lhugetlbfs(pass 2) -O3
-INLINE:aggressive=on -OPT:IEEE_arith=3
-OPT:IEEE_NaN_Inf=off -OPT:fold_unsigned_relops=on
-OPT:malloc_alg=1 -CG:load_exe=0 -fno-exceptions -m32

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on

Fortran benchmarks:

410.bwaves: -Mvect=cachesize:6291456 -fastsse -Msmartalloc
-Mprefetch=nta -Mfprelaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

416.gamess: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2)
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
-L/usr/lib64 -lhugetlbfs(pass 2) -O2 -OPT:Ofast -OPT:ro=3
-OPT:unroll_size=256

434.zeusmp: -Mvect=cachesize:6291456 -fastsse -Mfprelaxed
-Mprefetch=distance:8 -Mprefetch=t0 -Msmartalloc=huge
-Msmartalloc=hugebss -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

437.leslie3d: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Mvect=fuse
-Msmartalloc=huge -Mprefetch=distance:8 -Mprefetch=t0
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

459.GemsFDTD: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2
-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:prefer_lru_reg=off
-OPT:malloc_alg=1
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lhugetlbfs

465.tonto: -march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias
-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525
-OPT:malloc_alg=1
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lhugetlbfs

Benchmarks using both Fortran and C:

Continued on next page

Peak Optimization Flags (Continued)

435.gromacs: `-march=barcelona -Ofast -OPT:rsqrt=2 -OPT:malloc_alg=1 -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT -L/usr/lib64 -lhugetlbfs`

436.cactusADM: `-Mvect=cachesize:6291456 -fastsse -Mconcur -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

454.calculix: `-Mpfi=indirect`(pass 1) `-Mpfo=indirect`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mprefetch=t0 -Mpre -Mfprelaxed -tp barcelona-64 -Bstatic_pgi`

481.wrf: `-march=barcelona -Ofast -LNO:blocking=off -LNO:prefetch_ahead=10 -LANG:copyinout=off -IPA:callee_limit=5000 -GRA:prioritize_by_density=on -OPT:malloc_alg=1 -m3dnow -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT -L/usr/lib64 -lhugetlbfs`

Peak Other Flags

C benchmarks:
`-Mipa=jobs:4`(pass 2)

C++ benchmarks:

444.namd: `-Mipa=jobs:4`(pass 2)

Fortran benchmarks (except as noted below):
`-Mipa=jobs:4`(pass 2)

416.gamess: `No flags used`

459.GemsFDTD: `No flags used`

465.tonto: `No flags used`

Benchmarks using both Fortran and C (except as noted below):
`-Mipa=jobs:4`(pass 2)

435.gromacs: `No flags used`

481.wrf: `No flags used`

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/pgi72_linux_flags.html
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/pgi72_linux_flags.xml
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.xml

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 22:22:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 12 November 2008.