SPEC® CFP2006 Result

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IBM Corporation

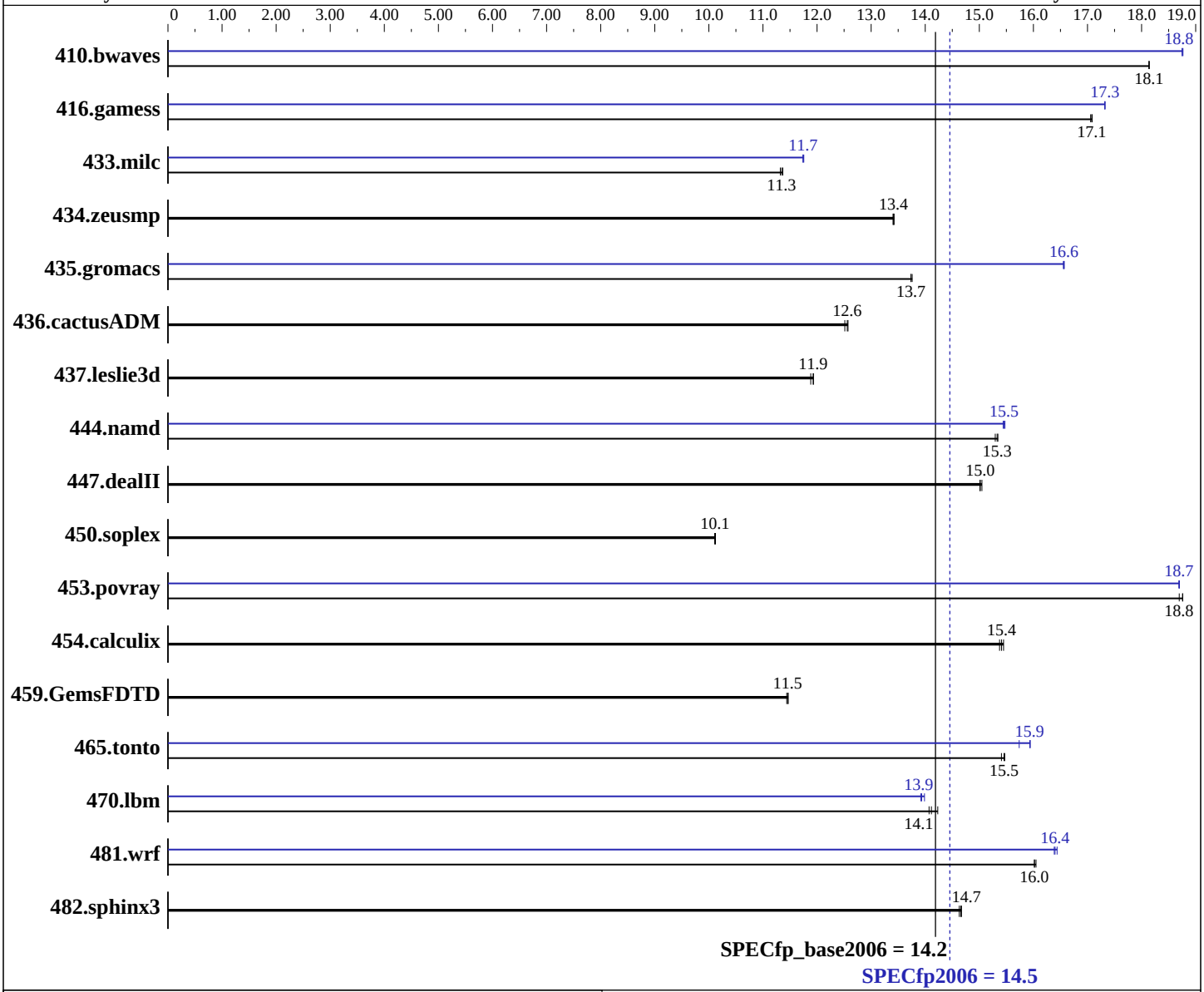
IBM System x3755 (AMD Opteron 8224 SE)

SPECfp®2006 = 14.5

SPECfp_base2006 = 14.2

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: Advanced Micro Devices

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



Hardware

CPU Name:	AMD Opteron 8224 SE
CPU Characteristics:	
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip
CPU(s) orderable:	1, 2, 3, 4 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 SP1 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: 32 GB (16 x 2GB DDR2-667 CL5 ECC REG Dual Rank)
Disk Subsystem: 1 x 73 GB SAS, 15000 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**749**	**18.1**	749	18.1	749	18.1	**725**	**18.8**	724	18.8	725	18.7
416.gamess	**1147**	**17.1**	1148	17.1	1146	17.1	**1130**	**17.3**	1130	17.3	1130	17.3
433.milc	811	11.3	808	11.4	**809**	**11.3**	**782**	**11.7**	782	11.7	781	11.8
434.zeusmp	678	13.4	**678**	**13.4**	679	13.4	678	13.4	**678**	**13.4**	679	13.4
435.gromacs	**520**	**13.7**	519	13.8	520	13.7	431	16.6	**431**	**16.6**	431	16.6
436.cactusADM	**952**	**12.6**	955	12.5	950	12.6	**952**	**12.6**	955	12.5	950	12.6
437.leslie3d	**788**	**11.9**	788	11.9	791	11.9	**788**	**11.9**	788	11.9	791	11.9
444.namd	523	15.3	**523**	**15.3**	524	15.3	**519**	**15.5**	519	15.4	518	15.5
447.dealII	760	15.0	**762**	**15.0**	762	15.0	760	15.0	**762**	**15.0**	762	15.0
450.soplex	824	10.1	**824**	**10.1**	825	10.1	824	10.1	**824**	**10.1**	825	10.1
453.povray	**284**	**18.8**	285	18.7	284	18.8	**285**	**18.7**	285	18.7	285	18.7
454.calculix	534	15.4	**535**	**15.4**	537	15.4	534	15.4	**535**	**15.4**	537	15.4
459.GemsFDTD	925	11.5	**926**	**11.5**	927	11.4	925	11.5	**926**	**11.5**	927	11.4
465.tonto	636	15.5	**637**	**15.5**	639	15.4	625	15.7	**618**	**15.9**	617	15.9
470.lbm	965	14.2	**974**	**14.1**	976	14.1	982	14.0	**986**	**13.9**	987	13.9
481.wrf	697	16.0	**697**	**16.0**	696	16.0	**681**	**16.4**	682	16.4	680	16.4
482.sphinx3	1332	14.6	**1330**	**14.7**	1329	14.7	1332	14.6	**1330**	**14.7**	1329	14.7

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=128 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

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Base Compiler Invocation (Continued)

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

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`

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Peak Optimization Flags (Continued)

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`

454.calculix: `basepeak = yes`

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

Peak Other Flags

C benchmarks:

`-w`

Continued on next page

Peak Other Flags (Continued)

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.20090714.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.01.xml

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