SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

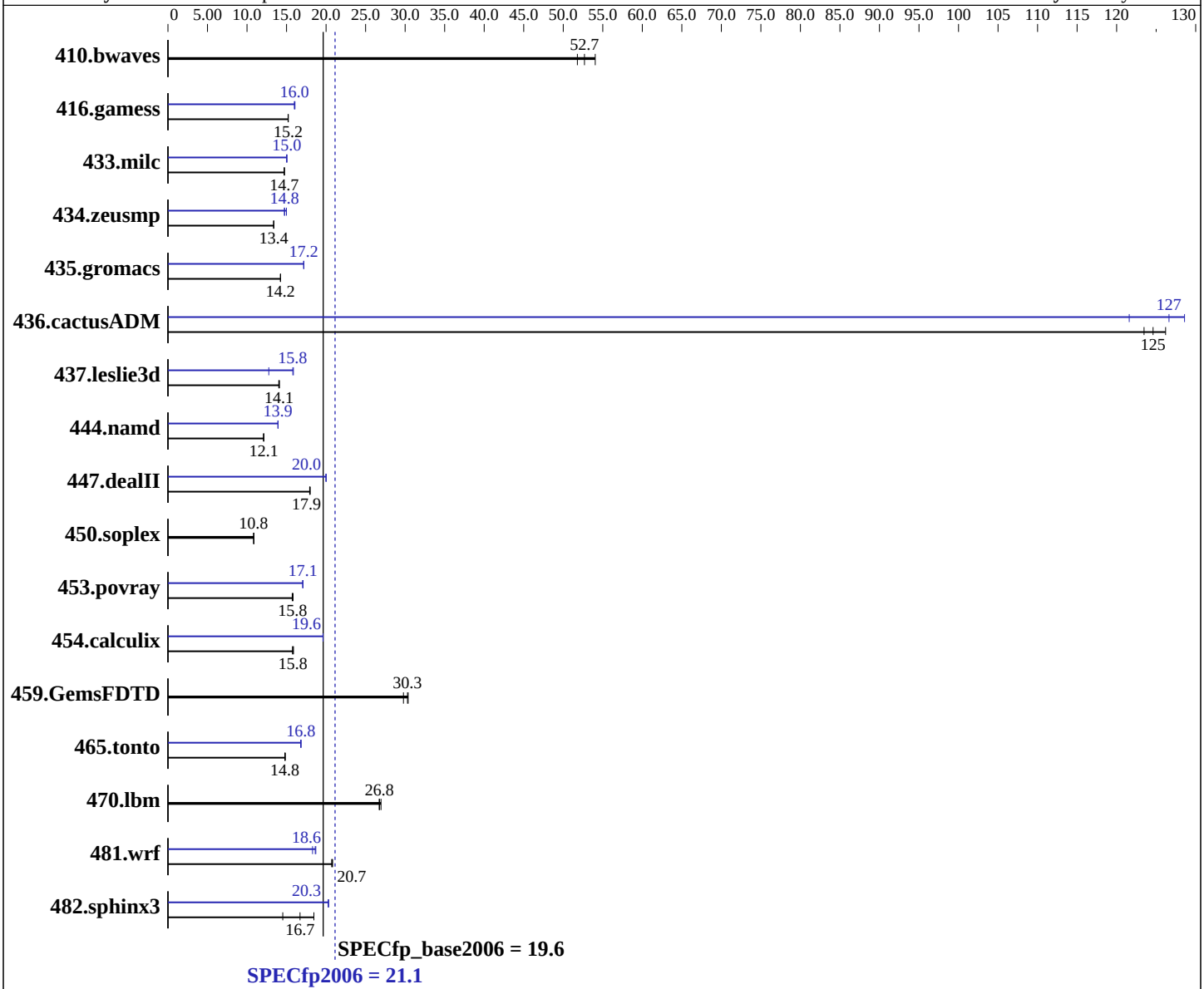
IBM BladeCenter LS42 (AMD Opteron 8380)

SPECfp®2006 = 21.1

SPECfp_base2006 = 19.6

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Nov-2008
Hardware Availability: Nov-2008
Software Availability: May-2008



Hardware

CPU Name:	AMD Opteron 8380
CPU Characteristics:	
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	1,2,3,4 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:	SuSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	PGI Server Complete Version 7.2
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	32/64-bit
Peak Pointers:	64-bit
Other Software:	binutils 2.18

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter LS42 (AMD Opteron 8380)

SPECfp2006 = 21.1

SPECfp_base2006 = 19.6

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Nov-2008
Hardware Availability: Nov-2008
Software Availability: May-2008

L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (16 x 4 GB DDR2-6400 ECC)
Disk Subsystem: 1 x 73 GB SAS, 10000 RPM
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	262	51.8	251	54.0	**258**	**52.7**	262	51.8	251	54.0	**258**	**52.7**
416.gamess	**1288**	**15.2**	1286	15.2	1289	15.2	1224	16.0	1219	16.1	**1223**	**16.0**
433.milc	624	14.7	623	14.7	**624**	**14.7**	**611**	**15.0**	611	15.0	611	15.0
434.zeusmp	679	13.4	681	13.4	**680**	**13.4**	**616**	**14.8**	618	14.7	607	15.0
435.gromacs	**501**	**14.2**	502	14.2	501	14.2	**416**	**17.2**	415	17.2	416	17.2
436.cactusADM	96.8	123	94.7	126	**95.9**	**125**	98.3	122	**94.4**	**127**	92.9	129
437.leslie3d	671	14.0	**669**	**14.1**	667	14.1	737	12.8	592	15.9	**595**	**15.8**
444.namd	661	12.1	**662**	**12.1**	664	12.1	576	13.9	**576**	**13.9**	577	13.9
447.dealII	636	18.0	638	17.9	**638**	**17.9**	572	20.0	572	20.0	**572**	**20.0**
450.soplex	767	10.9	769	10.8	**769**	**10.8**	767	10.9	769	10.8	**769**	**10.8**
453.povray	338	15.7	**338**	**15.8**	336	15.8	311	17.1	312	17.0	**312**	**17.1**
454.calculix	524	15.8	**522**	**15.8**	520	15.9	421	19.6	421	19.6	**421**	**19.6**
459.GemsFDTD	356	29.8	349	30.4	**350**	**30.3**	356	29.8	349	30.4	**350**	**30.3**
465.tonto	**665**	**14.8**	665	14.8	663	14.9	584	16.8	586	16.8	**585**	**16.8**
470.lbm	510	26.9	514	26.7	**513**	**26.8**	510	26.9	514	26.7	**513**	**26.8**
481.wrf	**539**	**20.7**	536	20.8	539	20.7	597	18.7	611	18.3	**600**	**18.6**
482.sphinx3	1056	18.5	1342	14.5	**1167**	**16.7**	960	20.3	961	20.3	**960**	**20.3**

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
```

General 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
```

Continued on next page

General Notes (Continued)

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/pgi72/linux_lib32:/cpu2006/pgi72/linux_lib64"
PGI_HUGE_PAGES = "14336"
SPEC_DIR = "/cpu2006"
NCPUS = "16"

Processor Performance States Disabled in BIOS
Memory ChipKill Disabled in BIOS
```

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 -Mconcur
-Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi
```

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

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

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

Base Other Flags

C benchmarks:
```
-Mipa=jobs:8
```

C++ benchmarks:
```
-Mipa=jobs:8
```

Fortran benchmarks:
```
-Mipa=jobs:8
```

Benchmarks using both Fortran and C:
```
-Mipa=jobs:8
```

Peak Compiler Invocation

C benchmarks:
```
pgcc
```

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

Fortran benchmarks:
```
pgf95
```

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

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 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -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

Peak Optimization Flags

C benchmarks:

433.milc: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Msafeptr -Mconcur -Mfprelaxed -Mipa=inline -Mipa=arg
-Mipa=const -Mipa=ptr -Mipa=shape -tp barcelona-64
-Bstatic_pgi

470.lbm: basepeak = yes

482.sphinx3: -Mpfi(pass 1) -Mpfo(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

447.dealII: -Mvect=cachesize:6291456 -fastsse -alias=ansi
-Msmartalloc=huge -Mprefetch=t0 -Mnovect -Mfprelaxed
--zc_eh -Mipa=fast -Mipa=inline -tp barcelona-32
-Bstatic_pgi

450.soplex: basepeak = yes

453.povray: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inlinenopfo:3(pass 2)
-Mipa=staticfunc(pass 2) -Mvect=cachesize:6291456 -fastsse

Continued on next page

Peak Optimization Flags (Continued)

453.povray (continued):
-Msmartalloc=huge -Mprefetch=t0 -Mfprelaxed
-tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
-Msmartalloc=huge -Mvect=noaltcode -Mprefetch=t0
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

434.zeusmp: -Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Mconcur
-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)
-Mconcur=noaltcode(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: basepeak = yes

465.tonto: -Mvect=cachesize:6291456 -fastsse -O4 -Mvect=noaltcode
-Msmartalloc=huge -Mprefetch=distance:8 -Mprefetch=t0
-Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64
-Bstatic_pgi

Benchmarks using both Fortran and C:

435.gromacs: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mfprelaxed -Mconcur -Mfpapprox=rsqrt -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

436.cactusADM: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mfprelaxed -Mconcur -Mdse -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
-Mloop32 -Mprefetch=t0 -Mpre -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

481.wrf: -Mvect=cachesize:6291456 -fastsse -Mvect=noaltcode
-Msmartalloc=huge -Mprefetch=distance:8 -Mconcur=noaltcode
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

Peak Other Flags

C benchmarks:
`-Mipa=jobs:8`(pass 2)

C++ benchmarks:
`-Mipa=jobs:8`(pass 2)

Fortran benchmarks:
`-Mipa=jobs:8`

Benchmarks using both Fortran and C (except as noted below):
`-Mipa=jobs:8`(pass 2)

481.wrf: `No flags used`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.00.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 21:05:48 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 9 December 2008.