SPEC® CFP2006 Result

IBM Corporation

IBM BladeCenter LS41 (AMD Opteron 8220)

$SPECfp^{®}2006 =$ 12.9
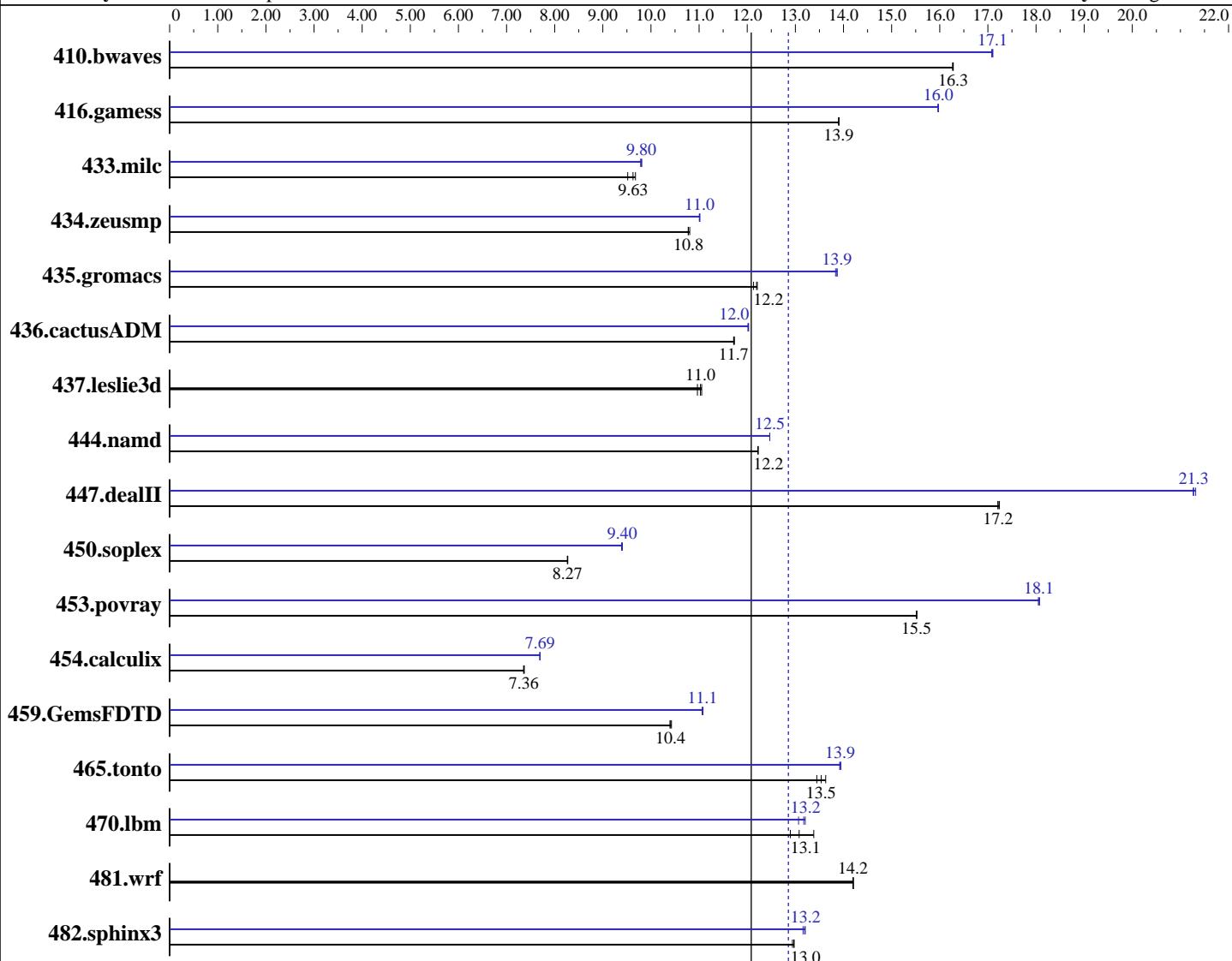
$SPECfp\_base2006 =$ 12.1

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

Test date: Feb-2007
Hardware Availability: Feb-2007
Software Availability: Aug-2006

SPECfp_base2006 = 12.1

SPECfp2006 = 12.9

Benchmark	Peak	Base
410.bwaves	17.1	16.3
416.gamess	16.0	13.9
433.milc	9.80	9.63
434.zeusmp	11.0	10.8
435.gromacs	13.9	12.2
436.cactusADM	12.0	11.7
437.leslie3d		11.0
444.namd	12.5	12.2
447.dealII	21.3	17.2
450.soplex	9.40	8.27
453.povray	18.1	15.5
454.calculix	7.69	7.36
459.GemsFDTD	11.1	10.4
465.tonto	13.9	13.5
470.lbm	13.2	13.1
481.wrf		14.2
482.sphinx3	13.2	13.0

Hardware

CPU Name: AMD Opteron 8220
CPU Characteristics:
CPU MHz: 2800
FPU: Integrated
CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip
CPU(s) orderable: 1, 2, 4 chips
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core

Software

Operating System: SLES9 SP3 for AMD64/EM64T
Compiler: QLogic PathScale Compiler Suite 2.5
Auto Parallel: No
File System: ext3
System State: Multi-user, run level 3
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

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L3 Cache:	None
Other Cache:	None
Memory:	32 GB (16 x 2GB DDR2-5300 ECC)
Disk Subsystem:	1 x 74 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	836	16.3	835	16.3	**835**	**16.3**	796	17.1	**795**	**17.1**	795	17.1
416.gamess	1409	13.9	1408	13.9	**1408**	**13.9**	1227	16.0	1226	16.0	**1226**	**16.0**
433.milc	965	9.52	**954**	**9.63**	949	9.68	936	9.81	938	9.78	**937**	**9.80**
434.zeusmp	842	10.8	845	10.8	**844**	**10.8**	**826**	**11.0**	827	11.0	826	11.0
435.gromacs	589	12.1	**586**	**12.2**	585	12.2	515	13.9	516	13.8	**515**	**13.9**
436.cactusADM	1018	11.7	1020	11.7	**1020**	**11.7**	995	12.0	994	12.0	**994**	**12.0**
437.leslie3d	850	11.1	**852**	**11.0**	857	11.0	850	11.1	**852**	**11.0**	857	11.0
444.namd	656	12.2	656	12.2	**656**	**12.2**	643	12.5	**643**	**12.5**	643	12.5
447.dealII	**665**	**17.2**	665	17.2	664	17.2	538	21.3	537	21.3	**538**	**21.3**
450.soplex	1008	8.27	1009	8.26	**1009**	**8.27**	887	9.41	888	9.39	**887**	**9.40**
453.povray	343	15.5	343	15.5	**343**	**15.5**	295	18.0	294	18.1	**295**	**18.1**
454.calculix	1120	7.37	1122	7.35	**1121**	**7.36**	1073	7.69	1072	7.70	**1073**	**7.69**
459.GemsFDTD	1021	10.4	**1019**	**10.4**	1018	10.4	959	11.1	957	11.1	**958**	**11.1**
465.tonto	722	13.6	732	13.4	**727**	**13.5**	706	13.9	707	13.9	**706**	**13.9**
470.lbm	1027	13.4	1065	12.9	**1051**	**13.1**	1052	13.1	**1043**	**13.2**	1040	13.2
481.wrf	786	14.2	**787**	**14.2**	787	14.2	786	14.2	**787**	**14.2**	787	14.2
482.sphinx3	**1503**	**13.0**	1506	12.9	1502	13.0	**1478**	**13.2**	1476	13.2	1481	13.2

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

Operating System Notes

    tasket utility used to bind CPU(s) to processes

Base Compiler Invocation

C benchmarks:
      pathcc

C++ benchmarks:
      pathCC

Fortran benchmarks:
      pathf95

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Base Compiler Invocation (Continued)

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:
```
-march=auto -Ofast
```

C++ benchmarks:
```
-march=auto -Ofast
```

Fortran benchmarks:
```
-march=auto -Ofast
```

Benchmarks using both Fortran and C:
```
-march=auto -Ofast
```

Base Other Flags

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

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

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Base Other Flags (Continued)

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:
```
-march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

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

     447.dealII: -march=auto -Ofast -m32 -fno-exceptions

     450.soplex: -march=auto -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: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
                -Ofast -fno-fast-math
```

Fortran benchmarks:

```
     410.bwaves: -march=auto -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: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
                -O2 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

     434.zeusmp: -march=auto -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: -march=auto -Ofast -LNO:fission=2 -LNO:prefetch=0

       465.tonto: -march=auto -Ofast -CG:local_fwd_sched=on -IPA:plimit=525
```

Benchmarks using both Fortran and C:

```
     435.gromacs: -march=auto -O3 -OPT:rsqrt=2 -OPT:ro=3

   436.cactusADM: -march=auto -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: -march=auto -Ofast -CG:prefetch=off -LNO:simd=0
                -OPT:unroll_times_max=8 -WOPT:mem_opnds=on

        481.wrf: basepeak = yes
```

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SPECfp_base2006 =	12.1

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.20090714.17.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.17.xml

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

Tested with SPEC CPU2006 v1.0.
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