SPEC® CFP2006 Result

Dell Inc.

$SPECfp^{®}\_rate2006 =$ 70.2

PowerEdge 2900 III (Intel Xeon E5410, 2.33 GHz)

$SPECfp\_rate\_base2006 =$ 65.5

CPU2006 license: 55
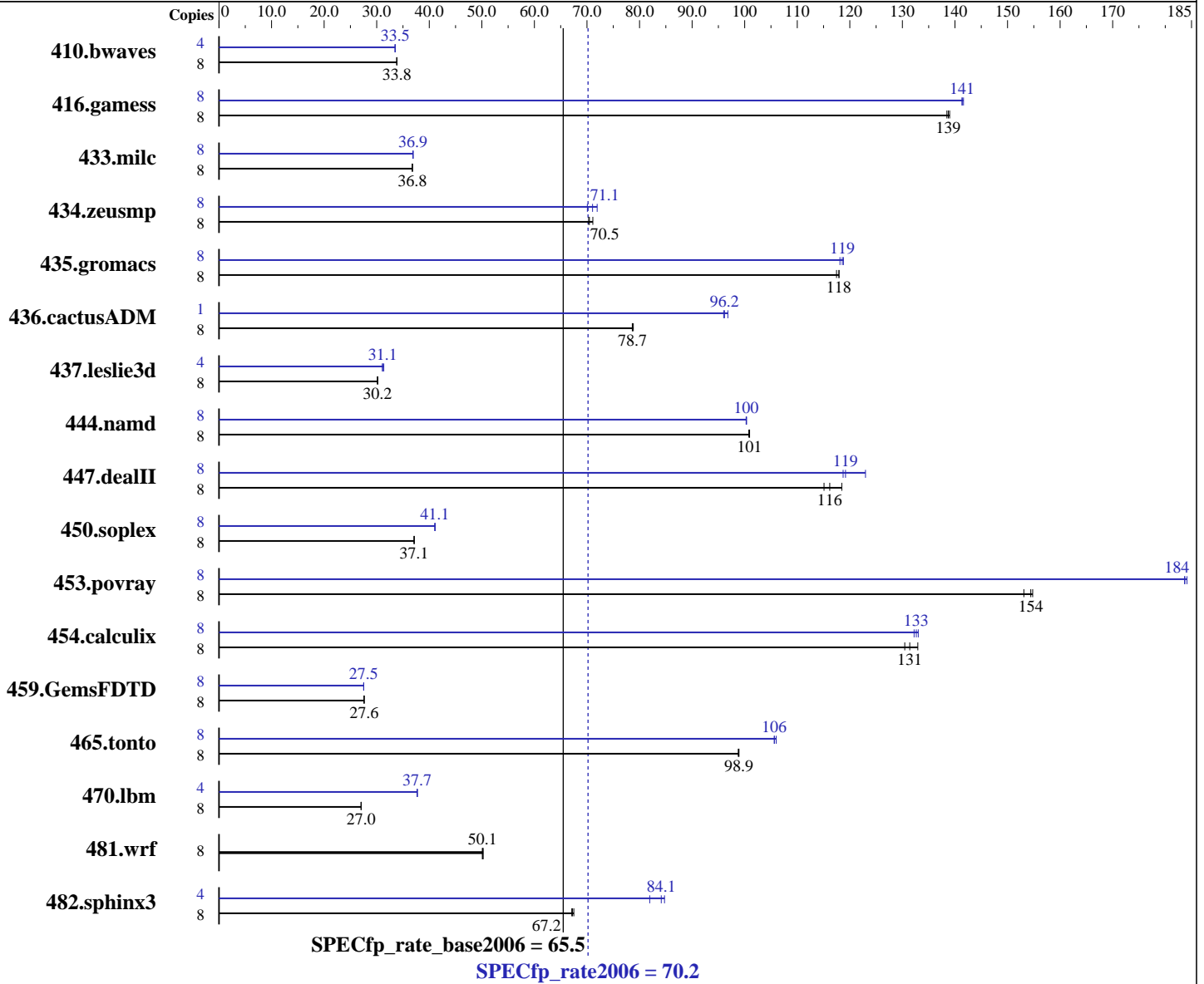
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Nov-2008

Hardware Availability: Sep-2008

Software Availability: Nov-2008

	Copies	
410.bwaves	4	33.5
	8	33.8
416.gamess	8	141
	8	139
433.milc	8	36.9
	8	36.8
434.zeusmp	8	71.1
	8	70.5
435.gromacs	8	119
	8	118
436.cactusADM	1	96.2
	8	78.7
437.leslie3d	4	31.1
	8	30.2
444.namd	8	100
	8	101
447.dealII	8	119
	8	116
450.soplex	8	41.1
	8	37.1
453.povray	8	184
	8	154
454.calculix	8	133
	8	131
459.GemsFDTD	8	27.5
	8	27.6
465.tonto	8	106
	8	98.9
470.lbm	4	37.7
	8	27.0
481.wrf	8	50.1
482.sphinx3	4	84.1
	8	67.2

SPECfp_rate_base2006 = 65.5

SPECfp_rate2006 = 70.2

Hardware

CPU Name:	Intel Xeon E5410
CPU Characteristics:	
CPU MHz:	2333
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip, 6 MB shared / 2 cores

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8 x 2 GB DDR2-667 FBDIMM)
Disk Subsystem:	2 x 73 GB 15000 RPM SAS
Other Hardware:	None

Peak Pointers:	32/64-bit
Other Software:	Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	8	**3214**	**33.8**	3212	33.8	3215	33.8	4	1621	33.5	1623	33.5	**1622**	**33.5**
416.gamess	8	1127	139	1131	138	**1129**	**139**	8	**1108**	**141**	1108	141	1106	142
433.milc	8	**1997**	**36.8**	1996	36.8	1997	36.8	8	**1990**	**36.9**	1990	36.9	1990	36.9
434.zeusmp	8	1035	70.3	1024	71.1	**1033**	**70.5**	8	**1024**	**71.1**	1039	70.1	1012	71.9
435.gromacs	8	**484**	**118**	484	118	486	117	8	481	119	484	118	**482**	**119**
436.cactusADM	8	1216	78.6	**1215**	**78.7**	1213	78.8	1	123	96.8	124	96.0	**124**	**96.2**
437.leslie3d	8	2488	30.2	**2493**	**30.2**	2497	30.1	4	**1208**	**31.1**	1199	31.3	1210	31.1
444.namd	8	637	101	636	101	**636**	**101**	8	640	100	639	100	**640**	**100**
447.dealII	8	773	118	**788**	**116**	795	115	8	771	119	744	123	**768**	**119**
450.soplex	8	1798	37.1	1796	37.1	**1797**	**37.1**	8	1625	41.0	**1624**	**41.1**	1622	41.1
453.povray	8	**276**	**154**	278	153	275	155	8	232	184	231	184	**232**	**184**
454.calculix	8	506	130	**502**	**131**	496	133	8	499	132	**498**	**133**	496	133
459.GemsFDTD	8	3075	27.6	**3074**	**27.6**	3074	27.6	8	3083	27.5	3084	27.5	**3083**	**27.5**
465.tonto	8	796	98.9	**796**	**98.9**	797	98.8	8	745	106	743	106	**745**	**106**
470.lbm	8	4068	27.0	4063	27.1	**4064**	**27.0**	4	1456	37.8	**1458**	**37.7**	1459	37.7
481.wrf	8	1778	50.3	1784	50.1	**1782**	**50.1**	8	1778	50.3	1784	50.1	**1782**	**50.1**
482.sphinx3	8	2323	67.1	**2319**	**67.2**	2310	67.5	4	951	81.9	920	84.8	**927**	**84.1**

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.
     taskset was used to bind processes to cores except
     for 436.cactusADM peak

Operating System Notes

     'ulimit -s unlimited' was used to set the stack size to unlimited prior to run

Platform Notes

     BIOS Settings:
     Hardware Prefetcher = Disabled (Default = Enabled)
     Adjacent Cache Line Prefetch = Disabled (Default = Enabled)

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

General Notes

```
OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 64M
```

Base Compiler Invocation

C benchmarks:
    icc

C++ benchmarks:
    icpc

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

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 -nofor_main
  436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
   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 -nofor_main
  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:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Continued on next page

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Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
        -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

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

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
        -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

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

```
437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort
        -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

Benchmarks using both Fortran and C:
```
icc ifort
```

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 -nofor_main
 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
      444.namd: -DSPEC_CPU_LP64
    447.dealII: -DSPEC_CPU_LP64
    453.povray: -DSPEC_CPU_LP64
   454.calculix: -DSPEC_CPU_LP64 -nofor_main
  459.GemsFDTD: -DSPEC_CPU_LP64
```

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Peak Portability Flags (Continued)

```
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
          -no-prec-div -static -fno-alias

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
         -auto-ilp32

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
          -no-prec-div -static -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -Ob0 -ansi-alias
            -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
              -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
              -no-prec-div -static -unroll2 -Ob0 -opt-prefetch
```

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Peak Optimization Flags (Continued)

465.tonto: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
`-no-prec-div -static -unroll4 -auto`

Benchmarks using both Fortran and C:

435.gromacs: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
`-no-prec-div -static -opt-prefetch -auto-ilp32`

436.cactusADM: `-prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3`
`-no-prec-div -static -unroll2 -opt-prefetch -parallel`
`-auto-ilp32`

454.calculix: `-xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.00.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.00.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.xml

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

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