SPEC® CFP2006 Result
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Dell Inc.

PowerEdge R510 (Intel Xeon E5520, 2.26 GHz)

$SPECfp^{®}\_rate2006 = \quad 160$

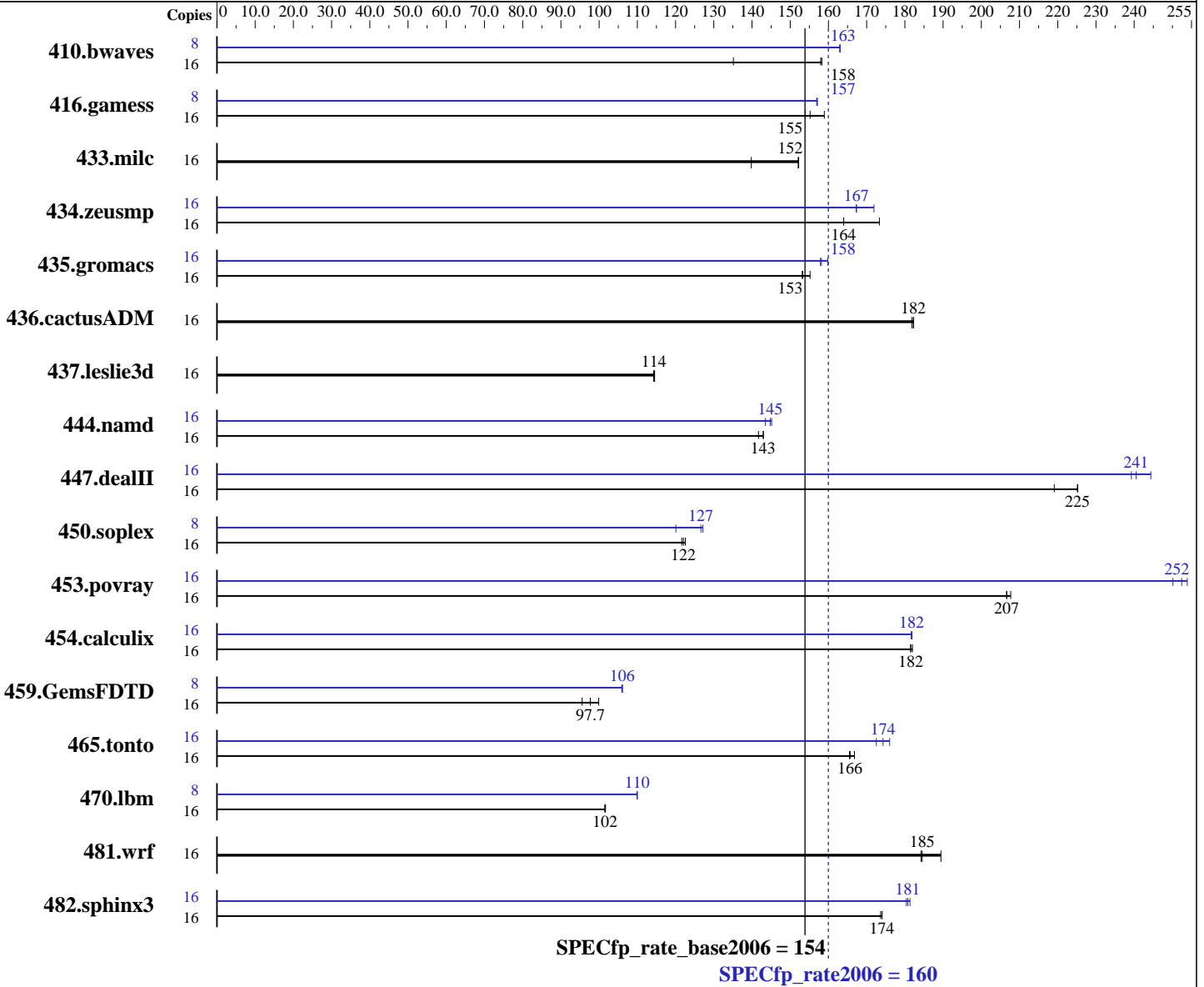$SPECfp\_rate\_base2006 = \quad 154$

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Aug-2009
Hardware Availability: Oct-2009
Software Availability: Feb-2009

SPECfp_rate_base2006 = 154

SPECfp_rate2006 = 160

	Hardware	
CPU Name:	Intel Xeon E5520	
CPU Characteristics:	Intel Turbo Boost Technology up to 2.53 GHz	
CPU MHz:	2267	
FPU:	Integrated	
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip, 2 threads/core	
CPU(s) orderable:	1,2 chips	
Primary Cache:	32 KB I + 32 KB D on chip per core	
Secondary Cache:	256 KB I+D on chip per core	

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	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 Professional 11.0 for Linux Build 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080	
Auto Parallel:	No	
File System:	ReiserFS	
System State:	Run level 3 (multi-user)	

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L3 Cache:	8 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	24 GB (6 x 4 GB DDR3-1333 DR RDIMM downclocked to 1066 MHz)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1 x 500 GB 7200 RPM SATA		
Other Hardware:	None		

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	16	1609	135	1374	158	**1376**	**158**	8	667	163	**667**	**163**	667	163
416.gamess	16	**2018**	**155**	1971	159	2035	154	8	997	157	998	157	**997**	**157**
433.milc	16	1051	140	**966**	**152**	965	152	16	1051	140	**966**	**152**	965	152
434.zeusmp	16	840	173	888	164	**888**	**164**	16	**870**	**167**	847	172	870	167
435.gromacs	16	736	155	746	153	**745**	**153**	16	715	160	724	158	**722**	**158**
436.cactusADM	16	1049	182	**1049**	**182**	1051	182	16	1049	182	**1049**	**182**	1051	182
437.leslie3d	16	1316	114	**1315**	**114**	1313	115	16	1316	114	**1315**	**114**	1313	115
444.namd	16	**898**	**143**	897	143	906	142	16	**886**	**145**	884	145	894	144
447.dealII	16	835	219	**813**	**225**	813	225	16	749	244	**761**	**241**	765	239
450.soplex	16	1097	122	**1093**	**122**	1089	123	8	556	120	**527**	**127**	525	127
453.povray	16	**412**	**207**	410	208	412	207	16	340	250	335	254	**337**	**252**
454.calculix	16	725	182	**727**	**182**	727	181	16	726	182	727	182	**726**	**182**
459.GemsFDTD	16	1777	95.5	**1738**	**97.7**	1699	99.9	8	800	106	**800**	**106**	801	106
465.tonto	16	951	166	944	167	**950**	**166**	16	**903**	**174**	913	173	894	176
470.lbm	16	2166	102	2162	102	**2165**	**102**	8	999	110	**1000**	**110**	1000	110
481.wrf	16	970	184	943	189	**968**	**185**	16	970	184	943	189	**968**	**185**
482.sphinx3	16	1792	174	**1792**	**174**	1796	174	16	1729	180	**1725**	**181**	1720	181

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

```
    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
```

Base Compiler Invocation

C benchmarks:
```
    icc
```

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Base Compiler Invocation (Continued)

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:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

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Peak Compiler Invocation

C benchmarks (except as noted below):
    icc

    482.sphinx3: icc -m32

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

    450.soplex: icpc -m32

Fortran benchmarks:
    ifort

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
    437.leslie3d: -DSPEC_CPU_LP64
      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
      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: basepeak = yes

    470.lbm: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
            -auto-ilp32

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

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Peak Optimization Flags (Continued)

C++ benchmarks:

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

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

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

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

Fortran benchmarks:

     410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

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

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

     437.leslie3d: basepeak = yes

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

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

Benchmarks using both Fortran and C:

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

   436.cactusADM: basepeak = yes

     454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

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Peak Optimization Flags (Continued)

481.wrf: `basepeak = yes`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090805.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090805.01.xml`

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

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