SPEC® CFP2006 Result

Dell Inc.

PowerEdge M610 (Intel Xeon E5620, 2.40 GHz)

$SPECfp^{®}2006 =$ 48.5

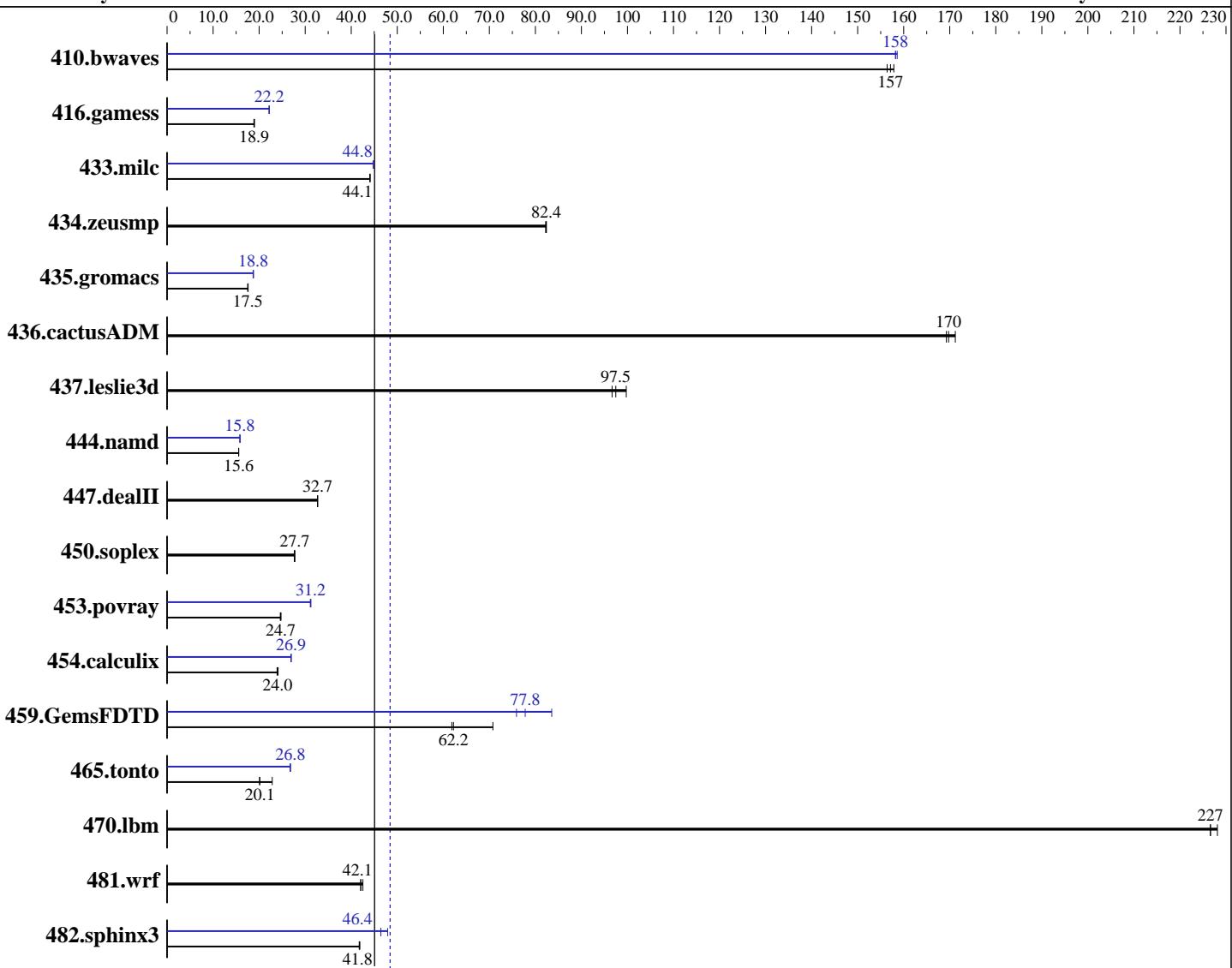$SPECfp\_base2006 =$ 45.1

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Jun-2011

Hardware Availability: Mar-2010

Software Availability: Dec-2009

410.bwaves 158 / 157
416.gamess 22.2 / 18.9
433.milc 44.8 / 44.1
434.zeusmp 82.4
435.gromacs 18.8 / 17.5
436.cactusADM 170
437.leslie3d 97.5
444.namd 15.8 / 15.6
447.dealII 32.7
450.soplex 27.7
453.povray 31.2 / 24.7
454.calculix 26.9 / 24.0
459.GemsFDTD 77.8 / 62.2
465.tonto 26.8 / 20.1
470.lbm 227
481.wrf 42.1
482.sphinx3 46.4 / 41.8

SPECfp_base2006 = 45.1

SPECfp2006 = 48.5

Hardware

CPU Name:	Intel Xeon E5620
CPU Characteristics:	Intel Turbo Boost Technology up to 2.66 GHz
CPU MHz:	2400
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:	256 KB I+D on chip per core

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Software

Operating System:	SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	12 MB I+D on chip per chip	Peak Pointers:	32/64-bit
Other Cache:	None	Other Software:	None
Memory:	48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC, running at 1066 MHz)		
Disk Subsystem:	1 x 146 GB 10000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	86.9	156	**86.5**	**157**	86.1	158	85.7	159	**85.9**	**158**	85.9	158
416.gamess	1038	18.9	**1034**	**18.9**	1032	19.0	884	22.1	**883**	**22.2**	881	22.2
433.milc	**208**	**44.1**	208	44.1	208	44.1	205	44.8	205	44.8	**205**	**44.8**
434.zeusmp	110	82.4	111	82.2	**110**	**82.4**	110	82.4	111	82.2	**110**	**82.4**
435.gromacs	**407**	**17.5**	407	17.5	405	17.6	381	18.8	382	18.7	**381**	**18.8**
436.cactusADM	70.6	169	69.8	171	**70.4**	**170**	70.6	169	69.8	171	**70.4**	**170**
437.leslie3d	97.2	96.7	**96.4**	**97.5**	94.2	99.7	97.2	96.7	**96.4**	**97.5**	94.2	99.7
444.namd	516	15.6	516	15.5	**516**	**15.6**	507	15.8	506	15.8	**507**	**15.8**
447.dealII	**350**	**32.7**	350	32.7	350	32.7	**350**	**32.7**	350	32.7	350	32.7
450.soplex	300	27.8	**301**	**27.7**	302	27.6	300	27.8	**301**	**27.7**	302	27.6
453.povray	**215**	**24.7**	216	24.6	215	24.7	170	31.2	171	31.1	**170**	**31.2**
454.calculix	342	24.1	**344**	**24.0**	345	23.9	306	26.9	**306**	**26.9**	306	26.9
459.GemsFDTD	150	70.8	172	61.9	**171**	**62.2**	**136**	**77.8**	127	83.6	140	75.9
465.tonto	431	22.8	**488**	**20.1**	490	20.1	368	26.8	367	26.8	**367**	**26.8**
470.lbm	60.2	228	60.6	227	**60.6**	**227**	60.2	228	60.6	227	**60.6**	**227**
481.wrf	**265**	**42.1**	263	42.5	266	42.1	**265**	**42.1**	263	42.5	266	42.1
482.sphinx3	465	41.9	467	41.7	**467**	**41.8**	**420**	**46.4**	420	46.4	407	47.9

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

Operating System Notes

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

'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
Data Reuse = Disabled (Default = Enabled)
Logical Processor = Disabled (Default = Enabled)
```

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General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5
```

Base Compiler Invocation

C benchmarks:
    icc   -m64

C++ benchmarks:
    icpc   -m64

Fortran benchmarks:
    ifort -m64

Benchmarks using both Fortran and C:
    icc   -m64 ifort -m64

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 -parallel -opt-prefetch
    -ansi-alias

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

Peak Compiler Invocation

C benchmarks:
```
icc    -m64
```

C++ benchmarks:
```
icpc   -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
          -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
          -ansi-alias
```

```
470.lbm: basepeak = yes
```

```
482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
             -parallel
```

C++ benchmarks:

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

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Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
            -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

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

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
            -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

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) -prof-use(pass 2) -unroll2
            -inline-level=0 -opt-prefetch -parallel
            -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4
            -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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) -prof-use(pass 2) -static -auto-ilp32
            -ansi-alias

436.cactusADM: basepeak = yes

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

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-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.xml

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

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