SPEC® CFP2006 Result
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Dell Inc.

PowerEdge M610 (Intel Xeon E5607, 2.26 GHz)

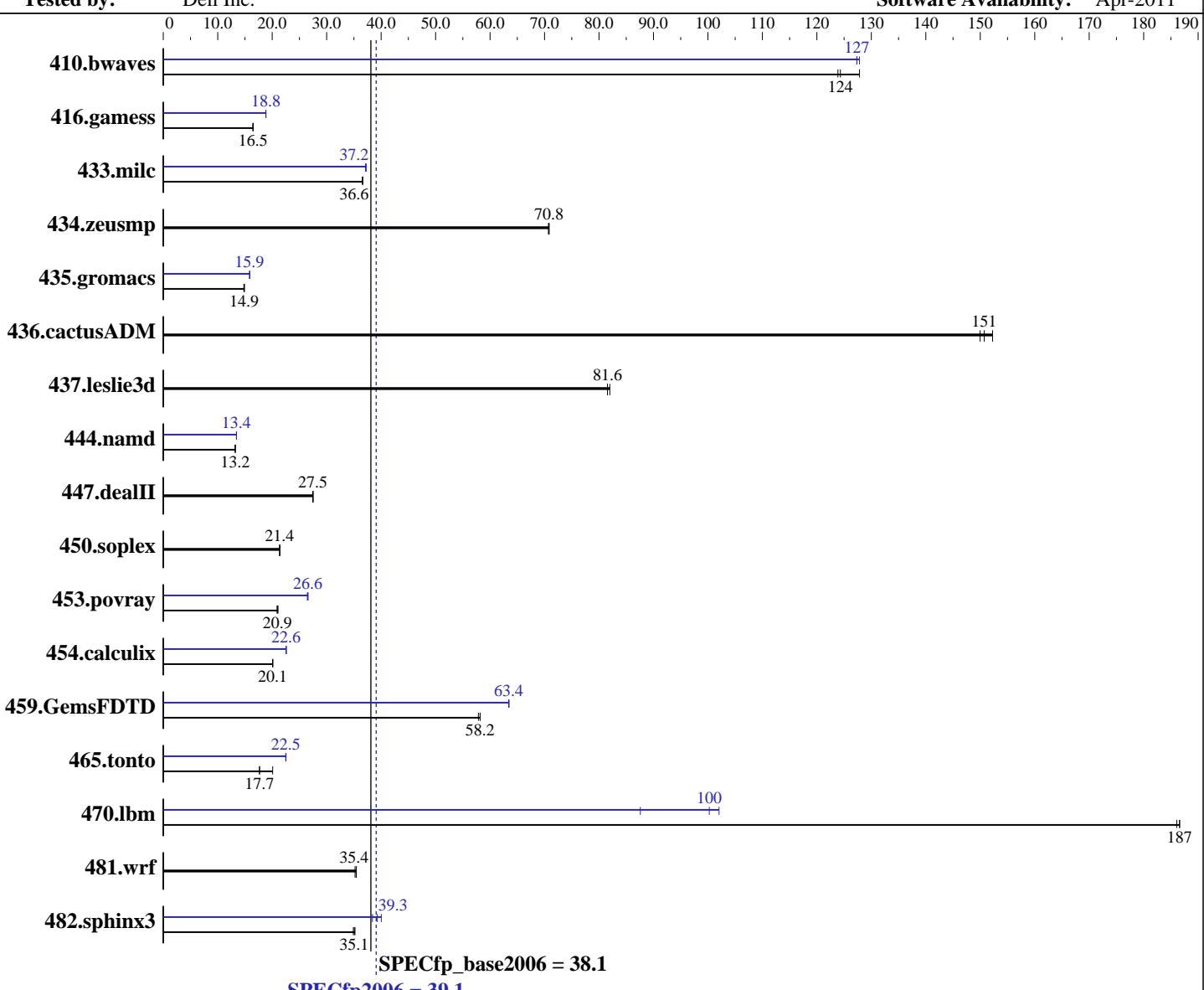$SPECfp®2006 =$ 39.1

$SPECfp\_base2006 =$ 38.1

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

Test date: Apr-2011
Hardware Availability: Feb-2011
Software Availability: Apr-2011

SPECfp_base2006 = 38.1
SPECfp2006 = 39.1

410.bwaves	127 / 124
416.gamess	18.8 / 16.5
433.milc	37.2 / 36.6
434.zeusmp	70.8
435.gromacs	15.9 / 14.9
436.cactusADM	151
437.leslie3d	81.6
444.namd	13.4 / 13.2
447.dealII	27.5
450.soplex	21.4
453.povray	26.6 / 20.9
454.calculix	22.6 / 20.1
459.GemsFDTD	63.4 / 58.2
465.tonto	22.5 / 17.7
470.lbm	100 / 187
481.wrf	35.4
482.sphinx3	39.3 / 35.1

Hardware

CPU Name:	Intel Xeon E5607
CPU Characteristics:	
CPU MHz:	2267
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

Continued on next page

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:	8 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 15000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**109**	**124**	106	128	110	124	**107**	**127**	106	128	107	127
416.gamess	**1187**	**16.5**	1191	16.4	1185	16.5	1039	18.9	1040	18.8	**1039**	**18.8**
433.milc	251	36.6	251	36.6	**251**	**36.6**	**247**	**37.2**	247	37.2	246	37.3
434.zeusmp	128	70.8	129	70.7	**128**	**70.8**	128	70.8	129	70.7	**128**	**70.8**
435.gromacs	482	14.8	**481**	**14.9**	479	14.9	449	15.9	**450**	**15.9**	450	15.9
436.cactusADM	**79.3**	**151**	78.5	152	79.7	150	**79.3**	**151**	78.5	152	79.7	150
437.leslie3d	**115**	**81.6**	115	81.6	115	82.0	**115**	**81.6**	115	81.6	115	82.0
444.namd	607	13.2	**607**	**13.2**	607	13.2	596	13.4	597	13.4	**597**	**13.4**
447.dealII	416	27.5	416	27.5	**416**	**27.5**	416	27.5	416	27.5	**416**	**27.5**
450.soplex	390	21.4	390	21.4	**390**	**21.4**	390	21.4	390	21.4	**390**	**21.4**
453.povray	**254**	**20.9**	252	21.1	254	20.9	**200**	**26.6**	201	26.5	200	26.6
454.calculix	**411**	**20.1**	410	20.1	411	20.1	**366**	**22.6**	365	22.6	366	22.5
459.GemsFDTD	182	58.2	**182**	**58.2**	183	57.9	167	63.4	167	63.4	**167**	**63.4**
465.tonto	557	17.7	**557**	**17.7**	490	20.1	438	22.5	**437**	**22.5**	437	22.5
470.lbm	73.6	187	**73.6**	**187**	73.8	186	135	102	157	87.6	**137**	**100**
481.wrf	**315**	**35.4**	317	35.2	315	35.5	**315**	**35.4**	317	35.2	315	35.5
482.sphinx3	554	35.2	**556**	**35.1**	558	34.9	507	38.4	487	40.0	**496**	**39.3**

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)
```

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

    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

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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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