SPEC® CFP2006 Result

Dell Inc.

$SPECfp^{®}2006 =$ 73.1

PowerEdge R420 (Intel Xeon E5-2430L v2, 2.40 GHz)

$SPECfp\_base2006 =$ 69.9

CPU2006 license: 55
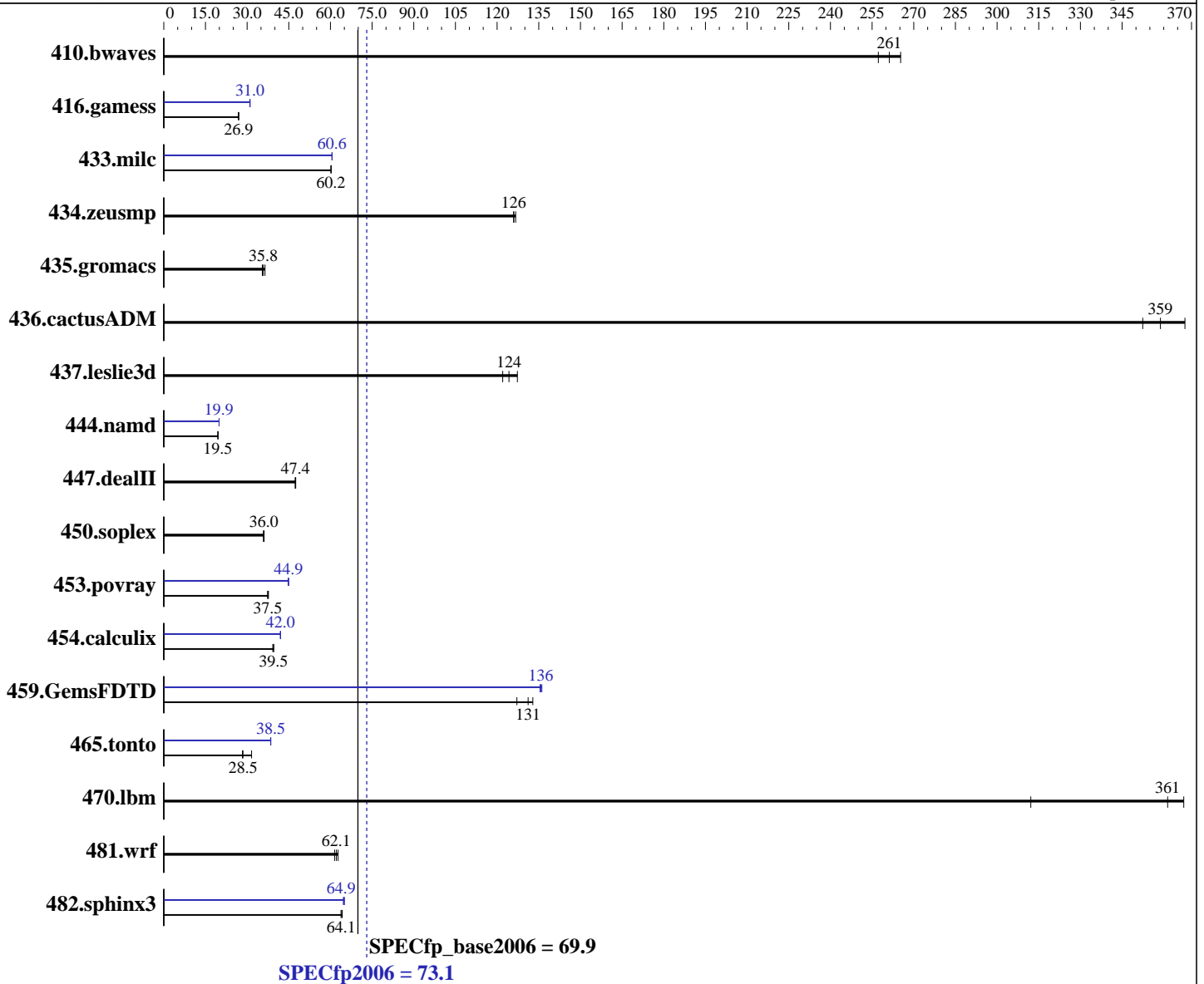
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Oct-2013

Hardware Availability: Jan-2014

Software Availability: Sep-2013

Benchmark	Base	Peak
410.bwaves		261
416.gamess	26.9	31.0
433.milc	60.2	60.6
434.zeusmp	126	
435.gromacs	35.8	
436.cactusADM		359
437.leslie3d	124	
444.namd	19.5	19.9
447.dealII	47.4	
450.soplex	36.0	
453.povray	37.5	44.9
454.calculix	39.5	42.0
459.GemsFDTD	131	136
465.tonto	28.5	38.5
470.lbm		361
481.wrf	62.1	
482.sphinx3	64.1	64.9

SPECfp_base2006 = 69.9

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Hardware

CPU Name:	Intel Xeon E5-2430L v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip
CPU(s) orderable:	1,2 chip
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 (x86_64) 3.0.76-0.11-default
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext2
System State:	Run level 3 (multi-user)

Continued on next page

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L3 Cache:	15 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	192 GB (12 x 16 GB 2Rx4 PC3L-12800R-11, ECC)	Other Software:	None
Disk Subsystem:	1 x 300 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	**52.0**	**261**	51.2	265	52.8	257	**52.0**	**261**	51.2	265	52.8	257
416.gamess	728	26.9	**727**	**26.9**	726	27.0	**631**	**31.0**	631	31.0	631	31.0
433.milc	**152**	**60.2**	152	60.2	152	60.2	**152**	**60.6**	152	60.6	152	60.6
434.zeusmp	71.8	127	**72.2**	**126**	72.2	126	71.8	127	**72.2**	**126**	72.2	126
435.gromacs	196	36.4	201	35.5	**199**	**35.8**	196	36.4	201	35.5	**199**	**35.8**
436.cactusADM	**33.3**	**359**	33.9	352	32.5	368	**33.3**	**359**	33.9	352	32.5	368
437.leslie3d	73.8	127	77.0	122	**75.6**	**124**	73.8	127	77.0	122	**75.6**	**124**
444.namd	411	19.5	411	19.5	**411**	**19.5**	403	19.9	403	19.9	**403**	**19.9**
447.dealII	242	47.3	**241**	**47.4**	241	47.5	242	47.3	**241**	**47.4**	241	47.5
450.soplex	231	36.1	**232**	**36.0**	233	35.9	231	36.1	**232**	**36.0**	233	35.9
453.povray	141	37.7	142	37.4	**142**	**37.5**	**118**	**44.9**	119	44.8	118	44.9
454.calculix	209	39.6	210	39.2	**209**	**39.5**	196	42.1	197	41.9	**196**	**42.0**
459.GemsFDTD	**80.9**	**131**	79.9	133	83.5	127	78.3	135	77.9	136	**78.1**	**136**
465.tonto	311	31.6	**345**	**28.5**	348	28.3	**256**	**38.5**	256	38.5	255	38.5
470.lbm	**38.0**	**361**	37.4	367	44.0	312	**38.0**	**361**	37.4	367	44.0	312
481.wrf	178	62.7	**180**	**62.1**	182	61.5	178	62.7	**180**	**62.1**	182	61.5
482.sphinx3	**304**	**64.1**	303	64.3	306	63.8	302	64.6	300	65.0	**301**	**64.9**

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
Logical Processor disabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Mon Oct 21 17:42:41 2013
```

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Platform Notes (Continued)

```
This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2430L v2 @ 2.40GHz
      2 "physical id"s (chips)
      12 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 6
      siblings  : 6
      physical 0: cores 0 1 2 3 4 5
      physical 1: cores 0 1 2 3 4 5
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       198410440 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 3

uname -a:
   Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 21 10:50 last=S

SPEC is set to: /root/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G  9.4G  257G   4% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.21 09/23/2013
  Memory:
   12x 00CE00B300CE M393B2G70BH0-YK0 16 GB 1600 MHz

(End of data from sysinfo program)
```

SPEC CFP2006 Result

Dell Inc.

PowerEdge R420 (Intel Xeon E5-2430L v2, 2.40 GHz)

$SPECfp2006 =$ 73.1

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General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "12"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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
```

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Base Optimization Flags

C benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
              -ansi-alias

    470.lbm: basepeak = yes

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

Continued on next page

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Peak Optimization Flags (Continued)

C++ benchmarks:

    444.namd: `-xAVX`(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`

    447.dealII: basepeak = yes

    450.soplex: basepeak = yes

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

Fortran benchmarks:

    410.bwaves: basepeak = yes

    416.gamess: `-xAVX`(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-`

    434.zeusmp: basepeak = yes

    437.leslie3d: basepeak = yes

  459.GemsFDTD: `-xAVX`(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`

    465.tonto: `-xAVX`(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`

Benchmarks using both Fortran and C:

    435.gromacs: basepeak = yes

    436.cactusADM: basepeak = yes

    454.calculix: `-xAVX -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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml

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