SPEC® CFP2006 Result

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Dell Inc.

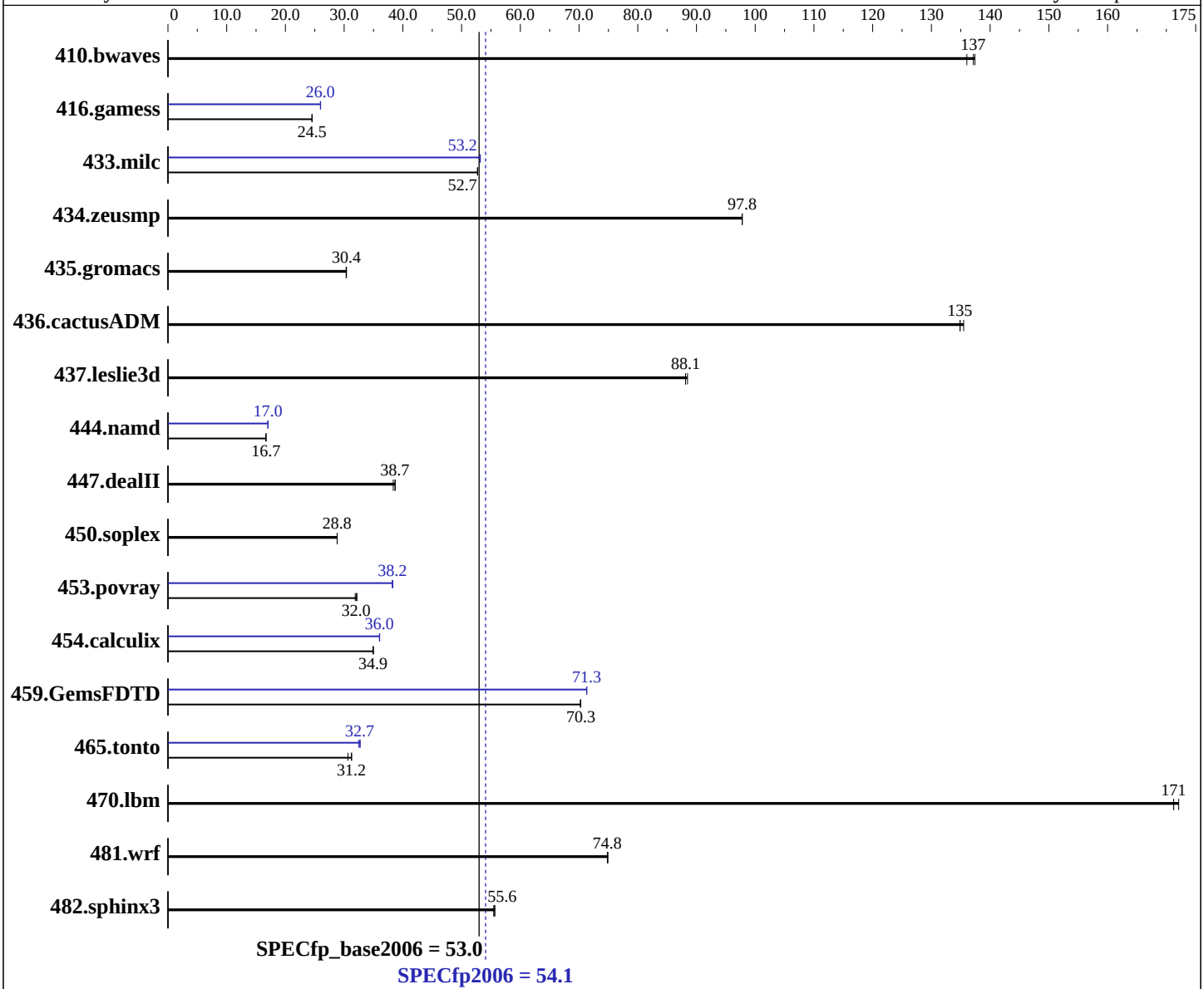
PowerEdge T320 (Intel Xeon E5-2407 v2, 2.40 GHz)

SPECfp®2006 = 54.1

SPECfp_base2006 = 53.0

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

Test date: Nov-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013



Hardware

CPU Name:	Intel Xeon E5-2407 v2
CPU Characteristics:	
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
CPU(s) orderable:	1 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:	Red Hat Enterprise Linux server release 6.4 2.6.32-358.el6.x86_64
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:	ext4
System State:	Run level 3 (multi-user)

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L3 Cache: 10 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (6 x 16 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: 300 GB 15000 RPM SAS
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	99.9	136	**99.1**	**137**	98.9	137	99.9	136	**99.1**	**137**	98.9	137
416.gamess	799	24.5	797	24.6	**798**	**24.5**	**754**	**26.0**	753	26.0	754	26.0
433.milc	**174**	**52.7**	174	52.7	174	52.7	**173**	**53.2**	173	53.2	173	53.2
434.zeusmp	93.1	97.8	**93.1**	**97.8**	93.1	97.8	93.1	97.8	**93.1**	**97.8**	93.1	97.8
435.gromacs	**235**	**30.4**	235	30.3	235	30.4	**235**	**30.4**	235	30.3	235	30.4
436.cactusADM	**88.6**	**135**	88.2	135	88.6	135	**88.6**	**135**	88.2	135	88.6	135
437.leslie3d	**107**	**88.1**	107	88.1	106	88.5	**107**	**88.1**	107	88.1	106	88.5
444.namd	481	16.7	**481**	**16.7**	481	16.7	**471**	**17.0**	471	17.0	471	17.0
447.dealII	296	38.7	298	38.4	**296**	**38.7**	296	38.7	298	38.4	**296**	**38.7**
450.soplex	289	28.8	290	28.8	**289**	**28.8**	289	28.8	290	28.8	**289**	**28.8**
453.povray	167	31.9	**166**	**32.0**	165	32.2	139	38.3	**139**	**38.2**	139	38.2
454.calculix	236	35.0	236	34.9	**236**	**34.9**	**229**	**36.0**	229	36.0	229	36.1
459.GemsFDTD	151	70.3	151	70.2	**151**	**70.3**	149	71.3	149	71.3	**149**	**71.3**
465.tonto	**315**	**31.2**	321	30.7	315	31.3	303	32.5	301	32.7	**301**	**32.7**
470.lbm	79.8	172	**80.2**	**171**	80.2	171	79.8	172	**80.2**	**171**	80.2	171
481.wrf	149	74.9	149	74.8	**149**	**74.8**	149	74.9	149	74.8	**149**	**74.8**
482.sphinx3	350	55.7	**350**	**55.6**	351	55.5	350	55.7	**350**	**55.6**	351	55.5

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
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on root Tue Nov  5 16:14:15 2013

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
```

Continued on next page

Platform Notes (Continued)

```
      http://www.spec.org/cpu2006/Docs/config.html#sysinfo

    From /proc/cpuinfo
       model name : Intel(R) Xeon(R) CPU E5-2407 v2 @ 2.40GHz
          1 "physical id"s (chips)
          4 "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 : 4
          siblings  : 4
          physical 0: cores 0 1 2 3
       cache size : 10240 KB

    From /proc/meminfo
       MemTotal:       98991332 kB
       HugePages_Total:       0
       Hugepagesize:       2048 kB

    /usr/bin/lsb_release -d
       Red Hat Enterprise Linux Server release 6.4 (Santiago)

    From /etc/*release* /etc/*version*
       redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
       system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
       system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

    uname -a:
       Linux root 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64
       x86_64 x86_64 GNU/Linux

    run-level 3 Nov 5 08:23

    SPEC is set to: /root/cpu2006-1.2
       Filesystem     Type    Size  Used Avail Use% Mounted on
       /dev/sda2      ext4    271G   12G  246G   5% /

    Additional information from dmidecode:
      BIOS Dell Inc. 2.0.21 09/23/2013
      Memory:
       6x 00AD00B300AD HMT42GR7MFR4A-PB 16 GB 1333 MHz 2 rank

    (End of data from sysinfo program)
```

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 = "4"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
```

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General Notes (Continued)

```
memory using RedHat EL 6.4
Transparent Huge Pages disabled with:
echo never  > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>       /proc/sys/vm/drop_caches
```

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

Continued on next page

Base Optimization Flags (Continued)

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: `basepeak = yes`

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`

Continued on next page

Peak Optimization Flags (Continued)

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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For other inquiries, please contact webmaster@spec.org.

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