SPEC® CFP2006 Result

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Dell Inc.

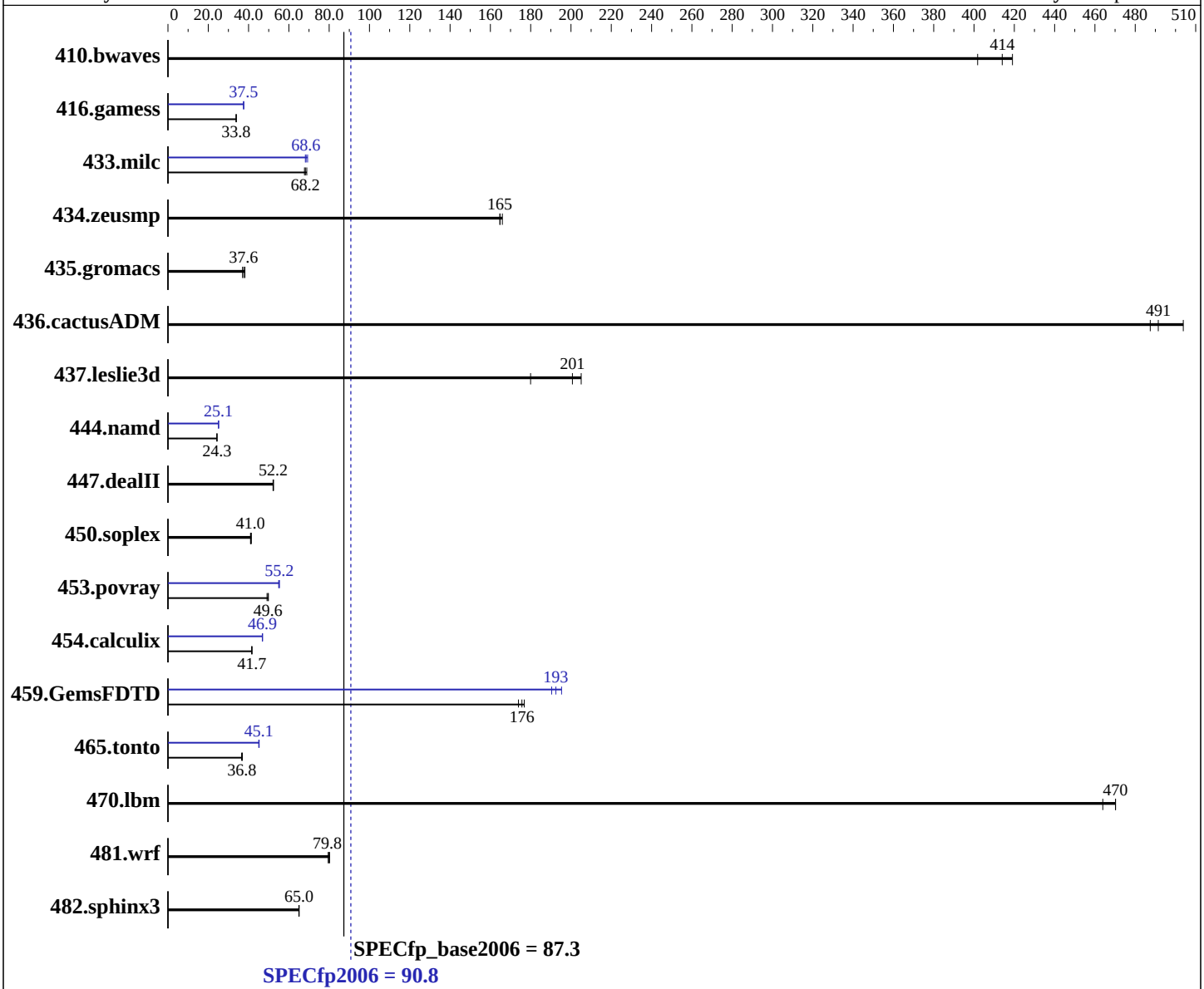
PowerEdge R730 (Intel Xeon E5-2670 v3, 2.30 GHz)

SPECfp®2006 = 90.8

SPECfp_base2006 = 87.3

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

Test date: Aug-2014
Hardware Availability: Sep-2014
Software Availability: Sep-2014



Hardware

CPU Name:	Intel Xeon E5-2670 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 cores/chip, 2 threads/core
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

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Software

Operating System:	CentOS release 6.5 (Final) 2.6.32-431.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:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	192 GB (8 x 16 GB, 8 x 8 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 50 GB SATA SSD
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	33.8	402	**32.8**	**414**	32.4	419	33.8	402	**32.8**	**414**	32.4	419
416.gamess	**579**	**33.8**	577	33.9	579	33.8	521	37.6	522	37.5	**521**	**37.5**
433.milc	**135**	**68.2**	136	67.7	133	68.9	132	69.3	**134**	**68.6**	135	68.2
434.zeusmp	55.2	165	**55.2**	**165**	54.8	166	55.2	165	**55.2**	**165**	54.8	166
435.gromacs	**190**	**37.6**	193	37.0	187	38.2	**190**	**37.6**	193	37.0	187	38.2
436.cactusADM	23.7	504	24.5	487	**24.3**	**491**	23.7	504	24.5	487	**24.3**	**491**
437.leslie3d	**46.8**	**201**	45.8	205	52.2	180	**46.8**	**201**	45.8	205	52.2	180
444.namd	330	24.3	330	24.3	**330**	**24.3**	**320**	**25.1**	320	25.1	319	25.1
447.dealII	**219**	**52.2**	219	52.1	218	52.4	**219**	**52.2**	219	52.1	218	52.4
450.soplex	**203**	**41.0**	204	41.0	201	41.4	**203**	**41.0**	204	41.0	201	41.4
453.povray	**107**	**49.6**	108	49.2	107	49.9	**96.3**	**55.2**	96.3	55.3	96.8	54.9
454.calculix	198	41.6	198	41.7	**198**	**41.7**	176	46.9	176	46.8	**176**	**46.9**
459.GemsFDTD	60.0	177	61.0	174	**60.4**	**176**	**55.1**	**193**	55.7	190	54.3	195
465.tonto	**268**	**36.8**	267	36.9	269	36.6	**218**	**45.1**	218	45.1	217	45.3
470.lbm	29.6	464	29.2	470	**29.2**	**470**	29.6	464	29.2	470	**29.2**	**470**
481.wrf	**140**	**79.8**	140	79.5	139	80.2	**140**	**79.8**	140	79.5	139	80.2
482.sphinx3	299	65.1	300	65.0	**300**	**65.0**	299	65.1	300	65.0	**300**	**65.0**

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:
Snoop Mode set to Home Snoop
Virtualization Technology disabled
Execute Disable disabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Thu Aug 21 17:18:41 2014
```

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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 E5-2670 v3 @ 2.30GHz
      2 "physical id"s (chips)
      48 "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 : 12
      siblings  : 24
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       198232912 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   CentOS release 6.5 (Final)

From /etc/*release* /etc/*version*
   centos-release: CentOS release 6.5 (Final)
   redhat-release: CentOS release 6.5 (Final)
   system-release: CentOS release 6.5 (Final)
   system-release-cpe: cpe:/o:centos:linux:6:GA

uname -a:
   Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Fri Nov 22 03:15:09
   UTC 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 21 16:21

SPEC is set to: /root/cpu2006-1.2
   Filesystem                     Type  Size  Used Avail Use% Mounted on
   /dev/mapper/VolGroup-lv_root ext4   50G  9.7G   38G  21% /

Additional information from dmidecode:
  BIOS Dell Inc. 1.0.2 08/12/2014
  Memory:
   1x 00AD00B300AD HMA42GR7MFR4N-TFTD 16 GB 2133 MHz 2 rank
   5x 00AD063200AD HMA42GR7MFR4N-TFT1 16 GB 2133 MHz 2 rank
   8x 00CE00B300CE M393A1G43DB0-CPB 8 GB 2133 MHz 2 rank
   2x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank
   8x Not Specified Not Specified

(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 = "24"

 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/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
```

Base Optimization Flags

C benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias`

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

Fortran benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xCORE-AVX2 -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: `-xCORE-AVX2`(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`

Continued on next page

Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2 -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-revC.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.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-revC.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.xml

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

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