SPEC® CFP2006 Result

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SGI

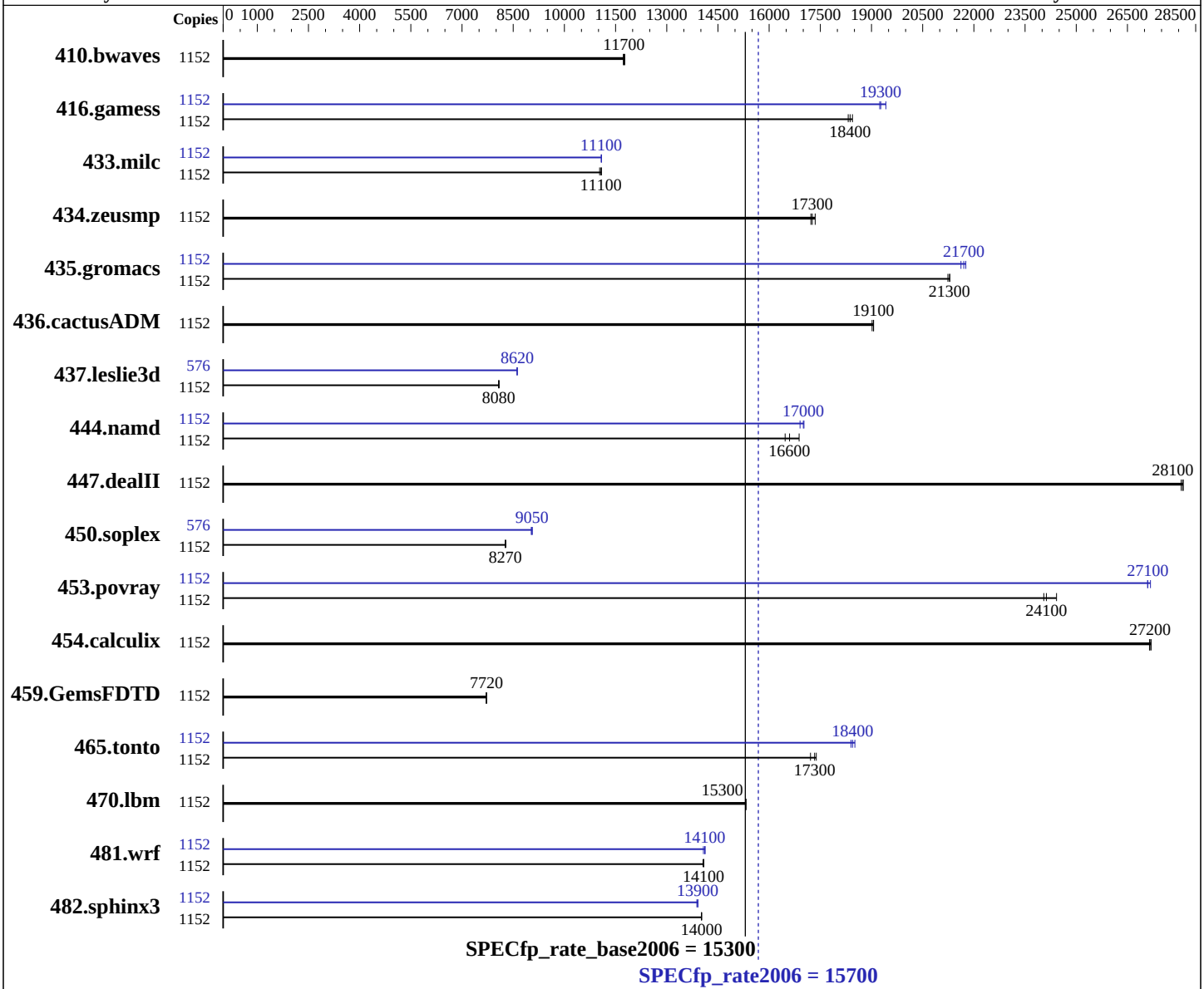
SGI UV 300 (Intel Xeon E7-8890 v3, 2.5 GHz)

SPECfp®_rate2006 = 15700

SPECfp_rate_base2006 = 15300

CPU2006 license: 4
Test sponsor: SGI
Tested by: SGI

Test date: Dec-2015
Hardware Availability: Sep-2015
Software Availability: Nov-2015



Hardware

CPU Name:	Intel Xeon E7-8890 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	576 cores, 32 chips, 18 cores/chip, 2 threads/core
CPU(s) orderable:	4-64 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 (x86_64) SP4, Kernel 3.0.101-65.1.9552.0.PTF-default
Compiler:	C/C++: Version 15.0.3.187 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.3.187 of Intel Fortran Studio XE for Linux
Auto Parallel:	No
File System:	tmpfs
System State:	Run level 3 (multi-user)

Continued on next page

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L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 16 TB (512 x 32 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 16 TB tmpfs
Other Hardware: None

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	1152	**1333**	**11700**	1335	11700	1330	11800	1152	**1333**	**11700**	1335	11700	1330	11800
416.gamess	1152	1231	18300	**1228**	**18400**	1223	18400	1152	**1170**	**19300**	1161	19400	1172	19200
433.milc	1152	954	11100	**955**	**11100**	959	11000	1152	954	11100	**954**	**11100**	954	11100
434.zeusmp	1152	609	17200	604	17300	**607**	**17300**	1152	609	17200	604	17300	**607**	**17300**
435.gromacs	1152	386	21300	**386**	**21300**	387	21200	1152	**379**	**21700**	378	21800	380	21600
436.cactusADM	1152	722	19100	**722**	**19100**	724	19000	1152	722	19100	**722**	**19100**	724	19000
437.leslie3d	1152	**1341**	**8080**	1339	8090	1342	8070	576	**628**	**8620**	629	8610	628	8620
444.namd	1152	547	16900	**557**	**16600**	561	16500	1152	543	17000	**543**	**17000**	547	16900
447.dealII	1152	469	28100	**469**	**28100**	468	28100	1152	469	28100	**469**	**28100**	468	28100
450.soplex	1152	1160	8280	**1161**	**8270**	1163	8260	576	**531**	**9050**	530	9060	532	9030
453.povray	1152	**254**	**24100**	255	24000	251	24400	1152	**226**	**27100**	226	27100	226	27200
454.calculix	1152	349	27200	**350**	**27200**	350	27100	1152	349	27200	**350**	**27200**	350	27100
459.GemsFDTD	1152	**1584**	**7720**	1586	7710	1584	7720	1152	**1584**	**7720**	1586	7710	1584	7720
465.tonto	1152	659	17200	**654**	**17300**	652	17400	1152	**615**	**18400**	616	18400	612	18500
470.lbm	1152	1034	15300	**1034**	**15300**	1033	15300	1152	1034	15300	**1034**	**15300**	1033	15300
481.wrf	1152	915	14100	913	14100	**914**	**14100**	1152	911	14100	**912**	**14100**	914	14100
482.sphinx3	1152	**1602**	**14000**	1601	14000	1602	14000	1152	1614	13900	1617	13900	**1615**	**13900**

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

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

Tmpfs filesystem set up with:
  mkdir -p /mnt/shm/cpu2006-ic15
  mount -t tmpfs -o size=16384G,rw tmpfs /mnt/shm/cpu2006-ic15

Turbo mode activated with:
```

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Operating System Notes (Continued)

```
modprobe acpi_cpufreq
cpupower frequency-set -u 3300MHz -d 3300MHz -g performance
```

Platform Notes

```
BT Mode set to Auto-select
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/mnt/shm/cpu2006-ic15/libs/32:/mnt/shm/cpu2006-ic15/libs/64:/mnt/shm/cpu2006-ic15/sh"

 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

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Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

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

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks (except as noted below):
icpc -m64

450.soplex: icpc -m32 -L/sw/sdev/intel/parallel_studio_xe_2015_update_3/composer_xe_2015.3.187/compiler/lib/ia32

Fortran benchmarks:
ifort -m64

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

Peak 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
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

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)
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
-auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
-unroll2

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2)
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2)
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
-opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2)
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4
-ansi-alias

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Peak Optimization Flags (Continued)

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: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/SGI-UV300-Platform-Flags.20160112.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/SGI-UV300-Platform-Flags.20160112.xml

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