SPEC® CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

NEC Corporation

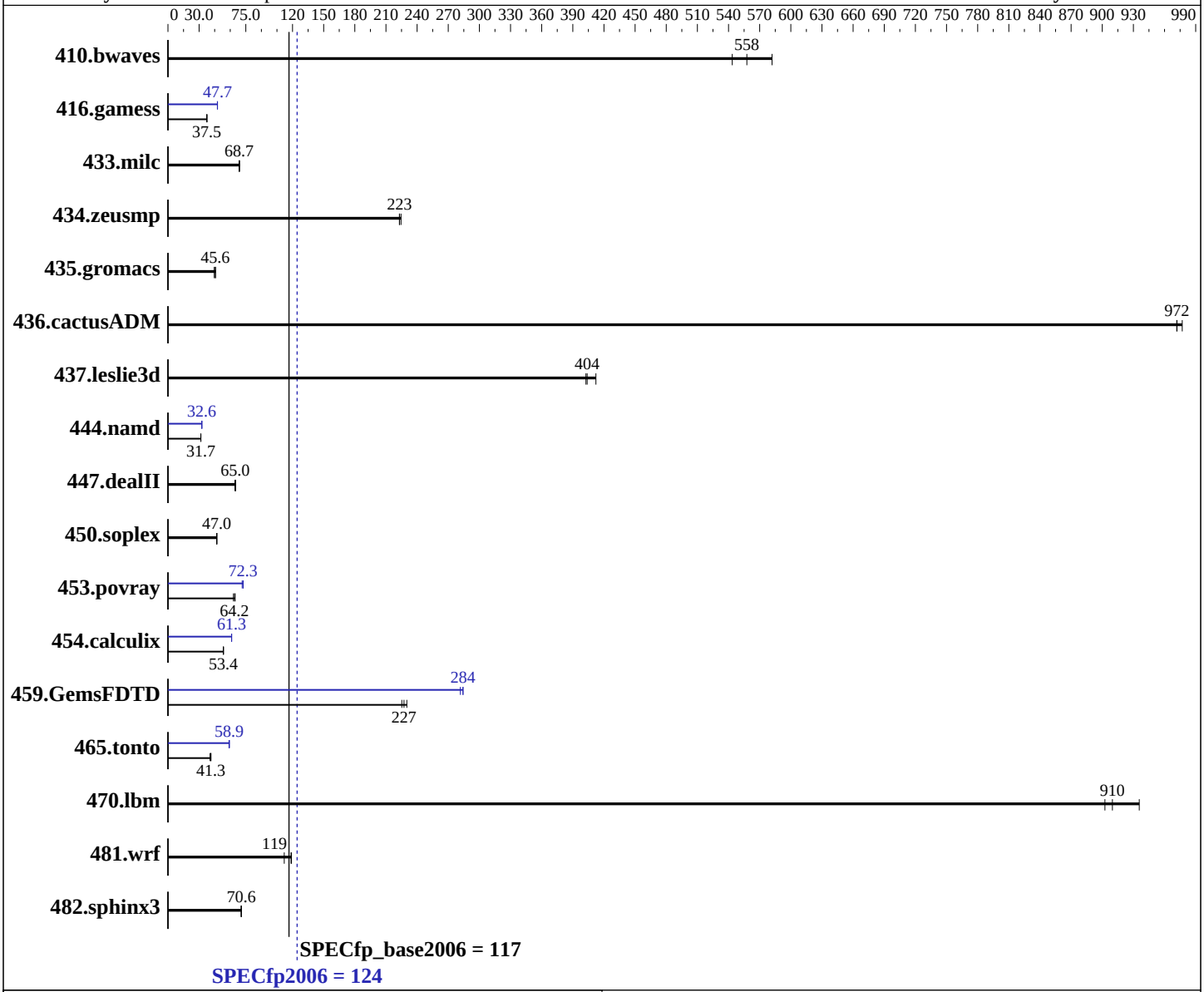
Express5800/B120g-h (Intel Xeon E5-2699 v4)

SPECfp®2006 = 124

SPECfp_base2006 = 117

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: Mar-2016
Hardware Availability: Dec-2016
Software Availability: Jan-2016



Hardware

CPU Name:	Intel Xeon E5-2699 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	44 cores, 2 chips, 22 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:	Red Hat Enterprise Linux Server release 7.2 (Maipo) Kernel 3.10.0-327.4.5.el7.x86_64
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

NEC Corporation

Express5800/B120g-h (Intel Xeon E5-2699 v4)

SPECfp2006 = 124

SPECfp_base2006 = 117

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: Mar-2016
Hardware Availability: Dec-2016
Software Availability: Jan-2016

L3 Cache: 55 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: NEC Storage M310 via Fibre Channel (See additional details below)
Other Hardware: None

System State: Run level 3 (multi-user)
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	23.4	582	**24.4**	**558**	25.0	544	23.4	582	**24.4**	**558**	25.0	544
416.gamess	**523**	**37.5**	524	37.3	521	37.6	410	47.7	**411**	**47.7**	411	47.6
433.milc	133	69.0	**134**	**68.7**	134	68.5	133	69.0	**134**	**68.7**	134	68.5
434.zeusmp	40.8	223	**40.8**	**223**	40.5	225	40.8	223	**40.8**	**223**	40.5	225
435.gromacs	160	44.6	156	45.8	**156**	**45.6**	160	44.6	156	45.8	**156**	**45.6**
436.cactusADM	**12.3**	**972**	12.2	977	12.3	972	**12.3**	**972**	12.2	977	12.3	972
437.leslie3d	22.8	412	23.3	403	**23.3**	**404**	22.8	412	23.3	403	**23.3**	**404**
444.namd	**253**	**31.7**	253	31.7	253	31.7	246	32.6	**246**	**32.6**	246	32.6
447.dealII	175	65.3	**176**	**65.0**	177	64.5	175	65.3	**176**	**65.0**	177	64.5
450.soplex	**177**	**47.0**	177	47.2	178	46.9	**177**	**47.0**	177	47.2	178	46.9
453.povray	84.3	63.1	82.2	64.7	**82.9**	**64.2**	**73.6**	**72.3**	73.4	72.5	74.5	71.4
454.calculix	154	53.5	**155**	**53.4**	155	53.4	134	61.4	135	61.3	**135**	**61.3**
459.GemsFDTD	**46.7**	**227**	47.1	225	46.1	230	**37.3**	**284**	37.7	282	37.3	284
465.tonto	**238**	**41.3**	243	40.5	238	41.4	167	58.8	166	59.3	**167**	**58.9**
470.lbm	**15.1**	**910**	14.7	936	15.2	903	**15.1**	**910**	14.7	936	15.2	903
481.wrf	**94.2**	**119**	99.7	112	93.9	119	**94.2**	**119**	99.7	112	93.9	119
482.sphinx3	276	70.6	276	70.6	**276**	**70.6**	276	70.6	276	70.6	**276**	**70.6**

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:
 Energy Performance: Performance
 Patrol Scrub: Disabled
 Snoop Mode: Home Snoop
 Hyper-Threading: Disabled

Storage Configuration for Disk Subsystem:
 NEC Storage M310 has 4 x 600 GB 10000 RPM SAS disks under RAID-10 configuration
 mounted over 8Gbps Fibre Channel interface with these options
```

Continued on next page

Platform Notes (Continued)

```
"defaults" in the /etc/fstab.
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "44"

 Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
 memory using RedHat EL 7.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

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

Continued on next page

Base Portability Flags (Continued)

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: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -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:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2 -inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -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

Continued on next page

Peak Optimization Flags (Continued)

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-ic16.0-official-linux64.html`
`http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-B120g-RevB.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml`
`http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-B120g-RevB.xml`

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Feb 7 17:00:30 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 February 2017.