SPEC® CFP2006 Result

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NEC Corporation

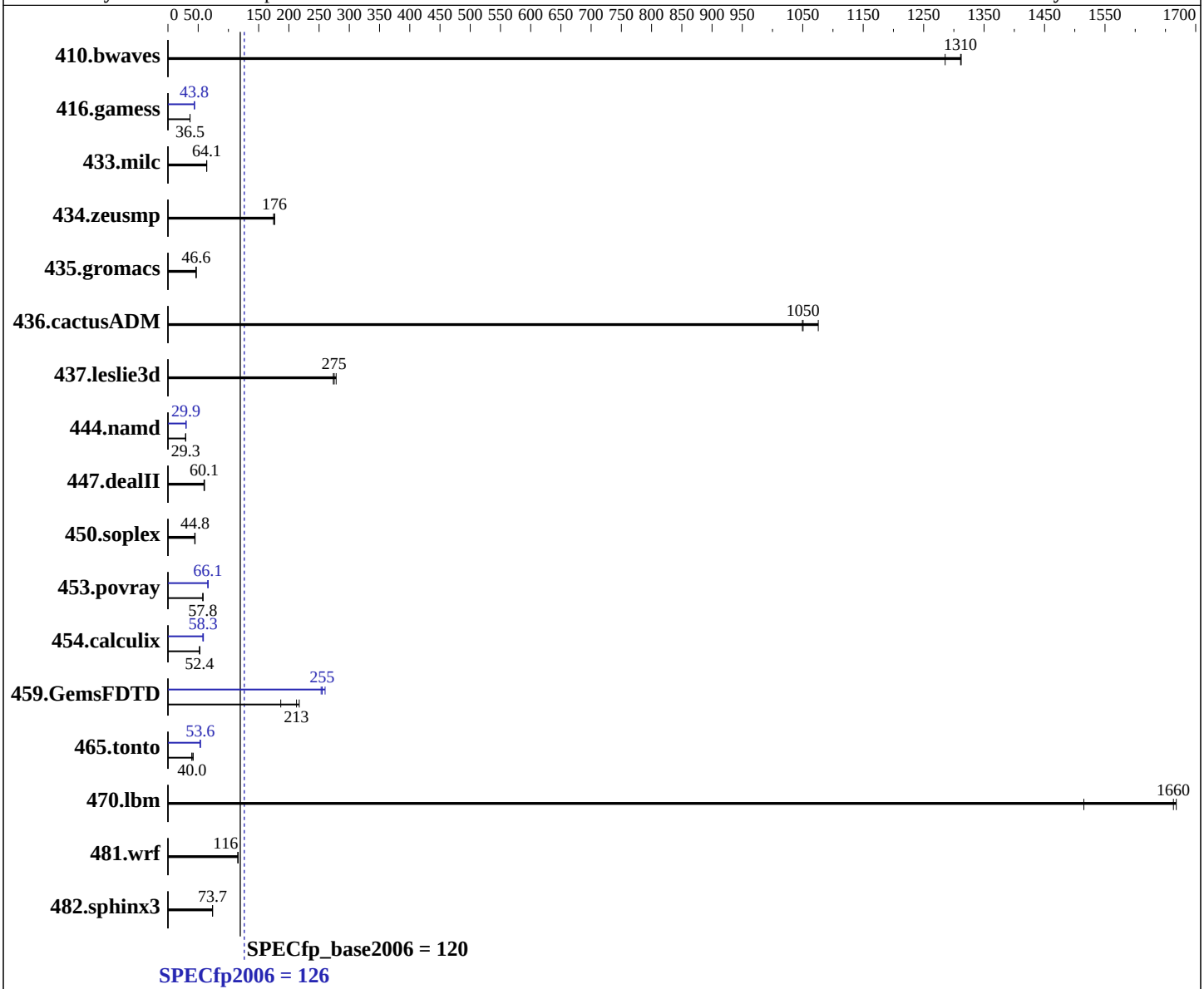
Express5800/A2040d (Intel Xeon E7-8867 v4)

SPECfp®2006 = 126

SPECfp_base2006 = 120

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

Test date: Apr-2017
Hardware Availability: Sep-2016
Software Availability: Nov-2016



Hardware

CPU Name:	Intel Xeon E7-8867 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	72 cores, 4 chips, 18 cores/chip
CPU(s) orderable:	2,3,4 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:	Red Hat Enterprise Linux Server release 7.3 (Maipo) Kernel 3.10.0-514.el7.x86_64
Compiler:	C/C++: Version 16.0.3.210 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.3.210 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs

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L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (32 x 32 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 1 x 600 GB SAS, 15000 RPM, RAID 0
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	**10.4**	**1310**	10.4	1310	10.6	1290	**10.4**	**1310**	10.4	1310	10.6	1290
416.gamess	536	36.5	538	36.4	**537**	**36.5**	448	43.7	**447**	**43.8**	447	43.8
433.milc	144	63.9	143	64.1	**143**	**64.1**	144	63.9	143	64.1	**143**	**64.1**
434.zeusmp	**51.7**	**176**	51.5	177	52.1	175	**51.7**	**176**	51.5	177	52.1	175
435.gromacs	**153**	**46.6**	153	46.6	153	46.6	**153**	**46.6**	153	46.6	153	46.6
436.cactusADM	11.1	1080	**11.4**	**1050**	11.4	1050	11.1	1080	**11.4**	**1050**	11.4	1050
437.leslie3d	33.8	278	34.4	274	**34.2**	**275**	33.8	278	34.4	274	**34.2**	**275**
444.namd	**274**	**29.3**	274	29.3	274	29.3	268	29.9	268	29.9	**268**	**29.9**
447.dealII	192	59.6	189	60.4	**190**	**60.1**	192	59.6	189	60.4	**190**	**60.1**
450.soplex	**186**	**44.8**	186	44.9	188	44.2	**186**	**44.8**	186	44.9	188	44.2
453.povray	**92.0**	**57.8**	92.2	57.7	91.9	57.9	80.0	66.5	**80.4**	**66.1**	80.8	65.9
454.calculix	158	52.4	157	52.4	**158**	**52.4**	143	57.6	**141**	**58.3**	141	58.7
459.GemsFDTD	56.9	187	**49.9**	**213**	48.9	217	40.8	260	41.9	253	**41.6**	**255**
465.tonto	**246**	**40.0**	235	41.8	249	39.5	186	52.9	**184**	**53.6**	183	53.8
470.lbm	9.07	1520	8.24	1670	**8.26**	**1660**	9.07	1520	8.24	1670	**8.26**	**1660**
481.wrf	**96.4**	**116**	96.2	116	96.7	116	**96.4**	**116**	96.2	116	96.7	116
482.sphinx3	264	73.8	**264**	**73.7**	264	73.7	264	73.8	**264**	**73.7**	264	73.7

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:
 Memory RAS Mode: Independent mode
 VT-x : Disabled
 Processor C6 Report : Disabled
 OS Performance Tuning : Disabled
 Energy Performance : Performance
 Patrol Scrub : Disabled
 Demand Scrub : Disabled
 Memory P.E. Retry : Disabled
```

Continued on next page

Platform Notes (Continued)

```
Hyper-Threading : Disabled
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/opt/SmartHeap_10mc/lib:/opt/SmartHeap_10mc/lib64:/opt/intel/compilers_and_libraries_2016.3.210/linux/compiler/lib/ia32_lin:/opt/intel/compilers_and_libraries_2016.3.210/linux/compiler/lib/intel64_lin"
OMP_NUM_THREADS = "72"
```

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: `basepeak = yes`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

Continued on next page

Peak Optimization Flags (Continued)

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

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-A2040d-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-A2040d-RevB.xml

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

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