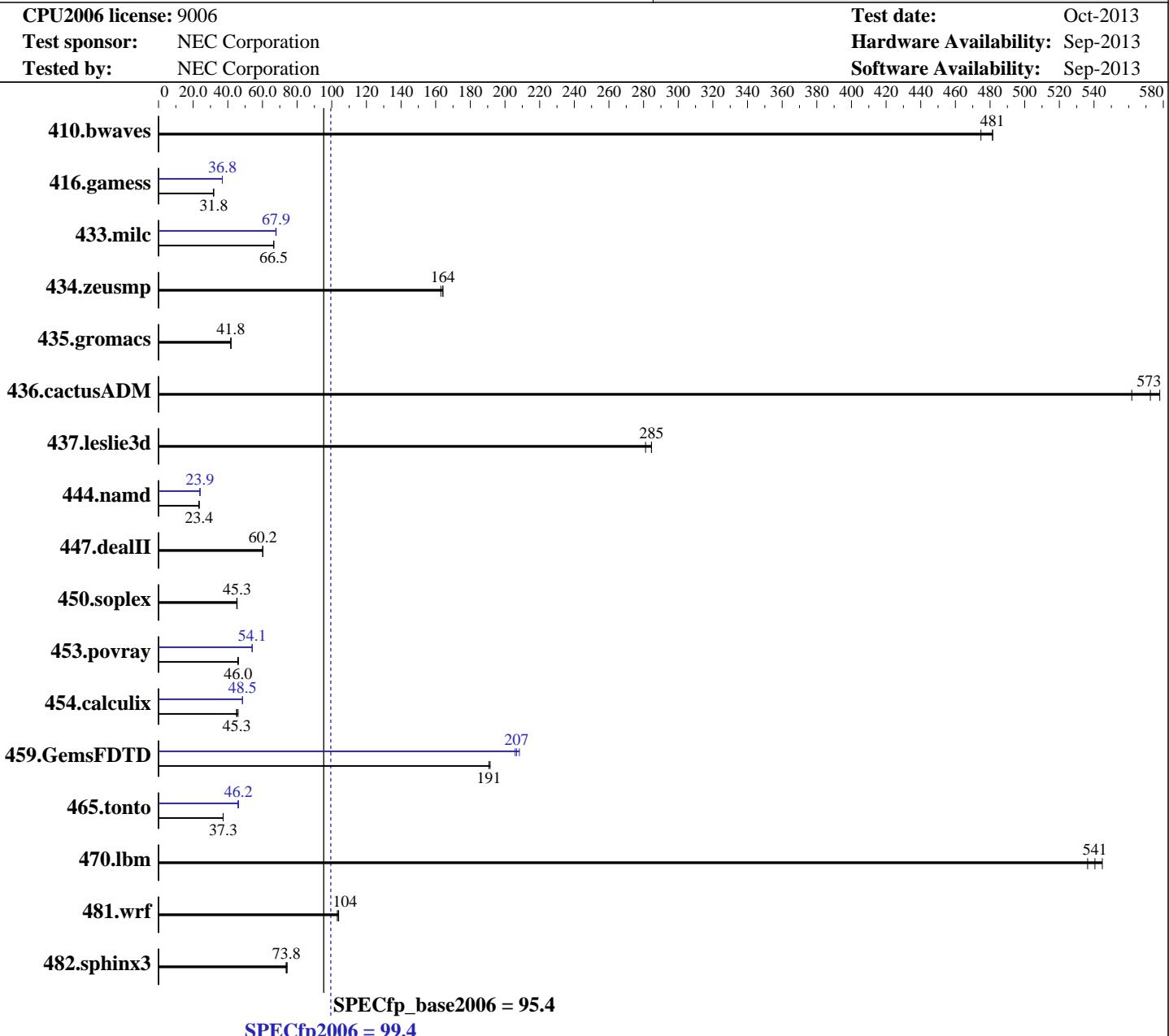# SPEC® CFP2006 Result
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NEC Corporation

Express5800/R120e-2M (Intel Xeon E5-2650 v2)

$SPECfp^{®}2006 =$ 99.4

$SPECfp\_base2006 =$ 95.4

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

Test date: Oct-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Benchmark results (scale 0–580):

Benchmark	Result
410.bwaves	481
416.gamess	36.8 / 31.8
433.milc	67.9 / 66.5
434.zeusmp	164
435.gromacs	41.8
436.cactusADM	573
437.leslie3d	285
444.namd	23.9 / 23.4
447.dealII	60.2
450.soplex	45.3
453.povray	54.1 / 46.0
454.calculix	48.5 / 45.3
459.GemsFDTD	207 / 191
465.tonto	46.2 / 37.3
470.lbm	541
481.wrf	104
482.sphinx3	73.8

SPECfp_base2006 = 95.4
SPECfp2006 = 99.4

Hardware

CPU Name:	Intel Xeon E5-2650 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 2 threads/core
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 6.4 (Santiago) Kernel 2.6.32-358.18.1.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

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L3 Cache:	20 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	**28.2**	**481**	28.2	481	28.6	475	**28.2**	**481**	28.2	481	28.6	475
416.gamess	615	31.8	**615**	**31.8**	619	31.7	531	36.9	532	36.8	**531**	**36.8**
433.milc	138	66.6	**138**	**66.5**	138	66.5	135	67.9	**135**	**67.9**	136	67.7
434.zeusmp	55.4	164	**55.4**	**164**	55.8	163	55.4	164	**55.4**	**164**	55.8	163
435.gromacs	171	41.8	**171**	**41.8**	171	41.7	171	41.8	**171**	**41.8**	171	41.7
436.cactusADM	20.7	578	21.3	562	**20.9**	**573**	20.7	578	21.3	562	**20.9**	**573**
437.leslie3d	**33.0**	**285**	33.0	285	33.4	281	**33.0**	**285**	33.0	285	33.4	281
444.namd	343	23.4	**342**	**23.4**	342	23.4	335	24.0	**335**	**23.9**	335	23.9
447.dealII	190	60.2	190	60.2	**190**	**60.2**	190	60.2	190	60.2	**190**	**60.2**
450.soplex	184	45.4	185	45.2	**184**	**45.3**	184	45.4	185	45.2	**184**	**45.3**
453.povray	**116**	**46.0**	116	45.8	115	46.1	**98.3**	**54.1**	98.2	54.2	98.6	54.0
454.calculix	**182**	**45.3**	179	46.0	183	45.0	170	48.5	**170**	**48.5**	170	48.5
459.GemsFDTD	**55.6**	**191**	55.6	191	55.4	191	51.5	206	**51.3**	**207**	50.9	208
465.tonto	264	37.3	**264**	**37.3**	264	37.3	213	46.2	**213**	**46.2**	215	45.8
470.lbm	25.6	536	**25.4**	**541**	25.2	545	25.6	536	**25.4**	**541**	25.2	545
481.wrf	107	104	**108**	**104**	108	103	107	104	**108**	**104**	108	103
482.sphinx3	**264**	**73.8**	262	74.3	264	73.7	**264**	**73.8**	262	74.3	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:
 Energy Performance: Performance
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "16"
```

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General Notes (Continued)

```
Added glibc-static-2.12-1.107.el6.x86_64.rpm
to enable static linking

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
The Express5800/R120e-1M and
the Express5800/R120e-2M models are electronically equivalent.
The results have been measured on the Express5800/R120e-1M model.
```

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
```

SPEC CFP2006 Result
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Tested by: NEC Corporation

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Hardware Availability: Sep-2013
Software Availability: Sep-2013

Base Optimization Flags

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

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -static -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) -static -auto-ilp32
          -ansi-alias
```

```
470.lbm: basepeak = yes
```

```
482.sphinx3: basepeak = yes
```

Continued on next page

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Peak Optimization Flags (Continued)

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`

    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- -static`

    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/NEC-Platform-Settings-V1.2-R120d-RevA.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/NEC-Platform-Settings-V1.2-R120d-RevA.xml

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

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