SPEC® CFP2006 Result

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NEC Corporation

Express5800/B120e-h (Intel Xeon E5-2670 v2)

$SPECfp^{®}2006 =$ 96.4

$SPECfp\_base2006 =$ 92.5

CPU2006 license: 9006	**Test date:** Dec-2013
Test sponsor: NEC Corporation	**Hardware Availability:** Sep-2013
Tested by: NEC Corporation	**Software Availability:** Sep-2013

SPECfp_base2006 = 92.5

SPECfp2006 = 96.4

Benchmark	Value
410.bwaves	395
416.gamess	35.7 / 30.7
433.milc	66.9 / 65.6
434.zeusmp	162
435.gromacs	40.5
436.cactusADM	589
437.leslie3d	299
444.namd	23.2 / 22.8
447.dealII	58.6
450.soplex	45.6
453.povray	52.4 / 44.4
454.calculix	47.2 / 44.1
459.GemsFDTD	200 / 185
465.tonto	44.7 / 35.9
470.lbm	512
481.wrf	98.6
482.sphinx3	71.9

Hardware

CPU Name:	Intel Xeon E5-2670 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	20 cores, 2 chips, 10 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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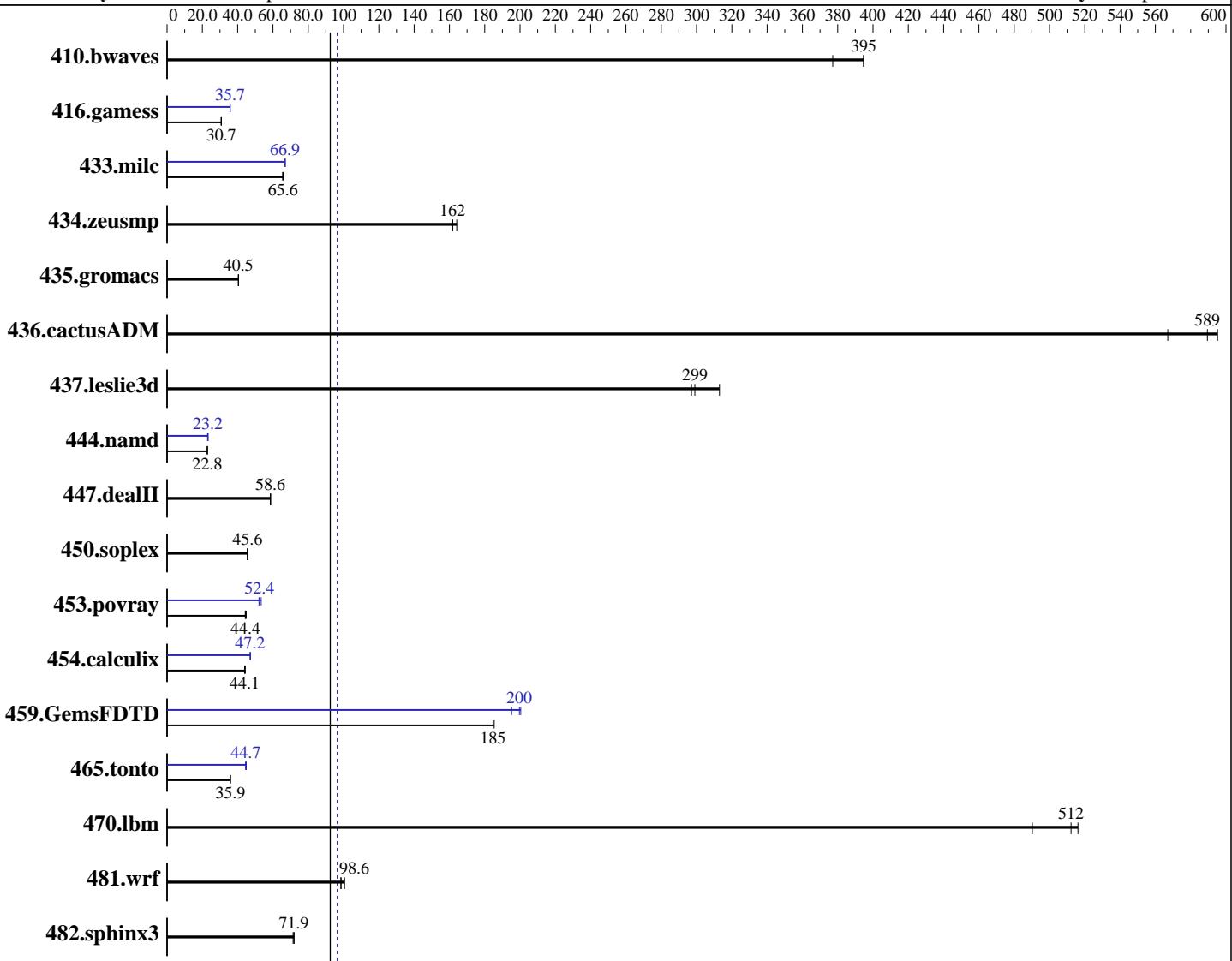|	
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Hardware Availability: Sep-2013

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L3 Cache:	25 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC3L-12800R-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 400 GB SATA, SSD	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	36.0	377	34.4	395	**34.4**	**395**	36.0	377	34.4	395	**34.4**	**395**
416.gamess	638	30.7	637	30.7	**637**	**30.7**	547	35.8	**548**	**35.7**	548	35.7
433.milc	**140**	**65.6**	140	65.6	140	65.6	137	66.9	**137**	**66.9**	137	66.9
434.zeusmp	56.2	162	55.4	164	**56.2**	**162**	56.2	162	55.4	164	**56.2**	**162**
435.gromacs	**176**	**40.5**	176	40.5	177	40.4	**176**	**40.5**	176	40.5	177	40.4
436.cactusADM	**20.3**	**589**	20.1	595	21.1	567	**20.3**	**589**	20.1	595	21.1	567
437.leslie3d	**31.4**	**299**	30.0	313	31.6	297	**31.4**	**299**	30.0	313	31.6	297
444.namd	**351**	**22.8**	351	22.9	353	22.7	349	23.0	**346**	**23.2**	345	23.2
447.dealII	**195**	**58.6**	195	58.6	195	58.6	**195**	**58.6**	195	58.6	195	58.6
450.soplex	183	45.7	**183**	**45.6**	183	45.5	183	45.7	**183**	**45.6**	183	45.5
453.povray	120	44.3	119	44.9	**120**	**44.4**	99.7	53.3	102	52.1	**102**	**52.4**
454.calculix	186	44.3	**187**	**44.1**	188	43.9	**175**	**47.2**	175	47.2	175	47.2
459.GemsFDTD	57.2	185	**57.4**	**185**	57.4	185	52.9	200	54.3	195	**53.1**	**200**
465.tonto	276	35.7	274	35.9	**274**	**35.9**	**220**	**44.7**	219	44.9	221	44.5
470.lbm	28.0	490	**26.8**	**512**	26.6	516	28.0	490	**26.8**	**512**	26.6	516
481.wrf	**113**	**98.6**	111	101	113	98.5	**113**	**98.6**	111	101	113	98.5
482.sphinx3	**271**	**71.9**	273	71.4	271	71.9	**271**	**71.9**	273	71.4	271	71.9

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
 Memory Voltage: 1.5 V
```

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"
```

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General Notes (Continued)

```
OMP_NUM_THREADS = "20"

 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
```

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

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$SPECfp_base2006 = $ 92.5

Base Optimization Flags (Continued)

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`

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`

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

Peak Optimization Flags (Continued)

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-R120-RevB.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-R120-RevB.xml

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