SPEC® CFP2006 Result
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NEC Corporation

Express5800/R120f-1M (Intel Xeon E5-2620 v3)

$SPECfp^{®}2006 =$ 98.7

$SPECfp\_base2006 =$ 93.5

Benchmark	Result
410.bwaves	406
416.gamess	41.1 / 32.9
433.milc	68.5 / 68.0
434.zeusmp	175
435.gromacs	40.1
436.cactusADM	573
437.leslie3d	220
444.namd	27.7 / 27.0
447.dealII	52.5
450.soplex	38.9
453.povray	61.9 / 54.5
454.calculix	56.8 / 51.2
459.GemsFDTD	226 / 202
465.tonto	51.3 / 37.3
470.lbm	530
481.wrf	91.1
482.sphinx3	70.3

SPECfp_base2006 = 93.5
SPECfp2006 = 98.7

Hardware

CPU Name: Intel Xeon E5-2620 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 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 6.5 (Santiago)
Kernel 2.6.32-431.17.1.el6.x86_64
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4

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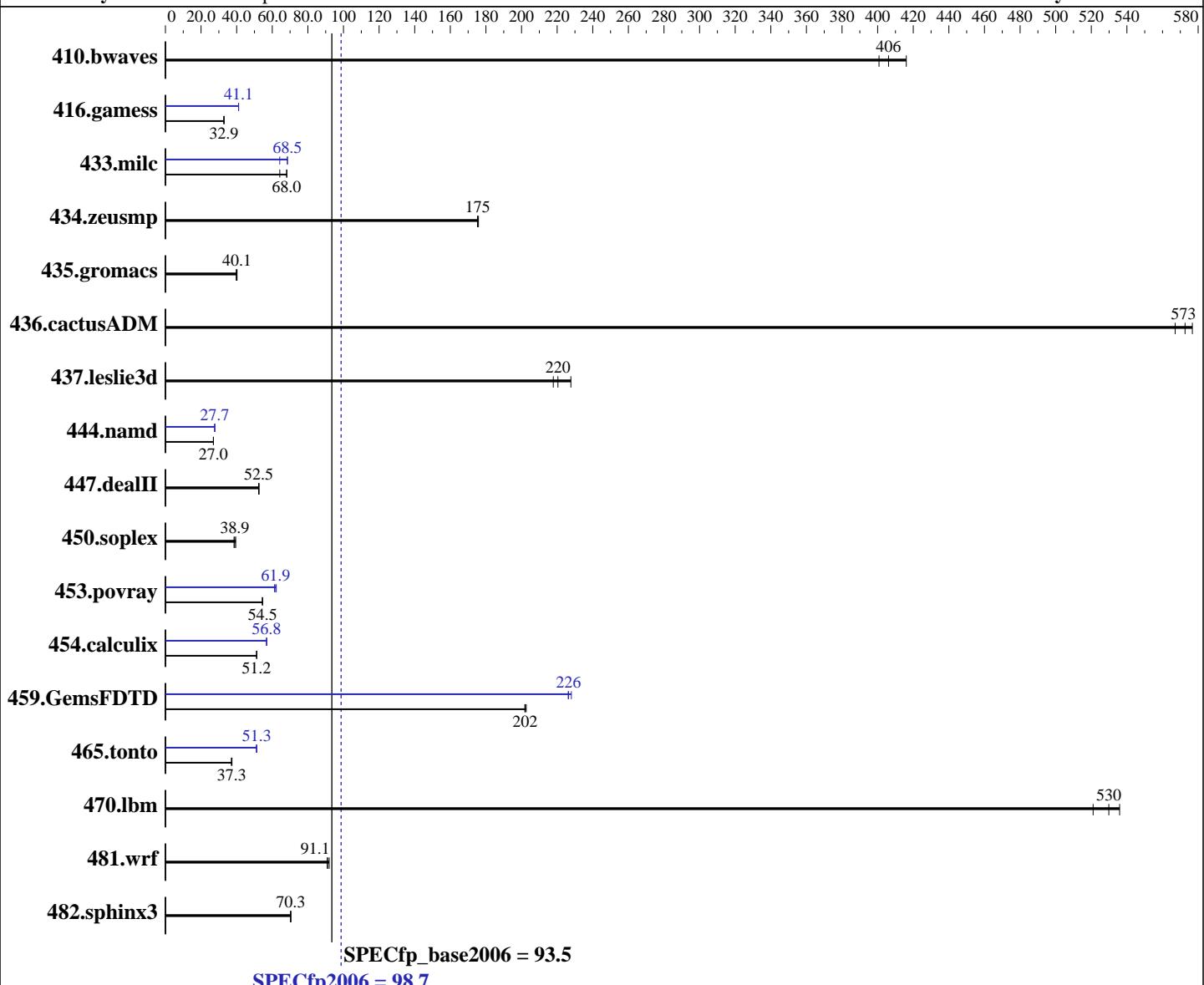|	
SPECfp2006 =	98.7
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CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: Oct-2014
Hardware Availability: Feb-2015
Software Availability: Jul-2014

L3 Cache:	15 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
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 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	33.9	401	**33.5**	**406**	32.7	416	33.9	401	**33.5**	**406**	32.7	416
416.gamess	596	32.9	**596**	**32.9**	595	32.9	476	41.1	**477**	**41.1**	477	41.1
433.milc	143	64.2	**135**	**68.0**	135	68.2	143	64.2	**134**	**68.5**	134	68.5
434.zeusmp	51.9	175	51.8	176	**51.9**	**175**	51.9	175	51.8	176	**51.9**	**175**
435.gromacs	180	39.7	**178**	**40.1**	178	40.2	180	39.7	**178**	**40.1**	178	40.2
436.cactusADM	20.7	577	**20.9**	**573**	21.1	567	20.7	577	**20.9**	**573**	21.1	567
437.leslie3d	41.3	228	**42.6**	**220**	43.2	218	41.3	228	**42.6**	**220**	43.2	218
444.namd	297	27.0	**298**	**27.0**	298	26.9	**290**	**27.7**	290	27.7	290	27.7
447.dealII	**218**	**52.5**	219	52.4	218	52.5	**218**	**52.5**	219	52.4	218	52.5
450.soplex	211	39.5	**214**	**38.9**	216	38.5	211	39.5	**214**	**38.9**	216	38.5
453.povray	97.5	54.6	97.7	54.4	**97.6**	**54.5**	86.9	61.2	**85.9**	**61.9**	85.4	62.3
454.calculix	**161**	**51.2**	161	51.2	161	51.4	**145**	**56.8**	145	56.9	145	56.7
459.GemsFDTD	**52.5**	**202**	52.6	202	52.4	203	**46.9**	**226**	46.5	228	46.9	226
465.tonto	266	37.0	263	37.4	**264**	**37.3**	192	51.3	**192**	**51.3**	193	51.1
470.lbm	26.4	521	**25.9**	**530**	25.6	536	26.4	521	**25.9**	**530**	25.6	536
481.wrf	**123**	**91.1**	123	90.9	121	92.0	**123**	**91.1**	123	90.9	121	92.0
482.sphinx3	277	70.5	**277**	**70.3**	277	70.3	277	70.5	**277**	**70.3**	277	70.3

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:
 Power Management Policy: Custom
 Energy Performance: Performance
 Patrol Scrub: Disabled
 Demand Scrub: Disabled
 Early Snoop: Disabled
 Hyper-Threading: Disabled
```

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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 = "12"

 The Express5800/R120f-1M (Intel Xeon E5-2620 v3) and
 the Express5800/R120f-2M (Intel Xeon E5-2620 v3) models are electronically equivalent.
 The results have been measured on the Express5800/R120f-2M (Intel Xeon E5-2620 v3) model.

 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
```

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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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
              -auto-ilp32 -ansi-alias

    470.lbm: basepeak = yes

    482.sphinx3: basepeak = yes
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

    444.namd: `-xCORE-AVX2(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: `-xCORE-AVX2(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: `-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: `basepeak = yes`

    459.GemsFDTD: `-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 -opt-prefetch -parallel`

    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)`
`-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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevB.html

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Tested by:	NEC Corporation	**Software Availability:**	Jul-2014

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-V1.2-120f-RevB.xml

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