SPEC® CFP2006 Result
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NEC Corporation

Express5800/E120f-M (Intel Xeon E5-2650L v3)

$SPECfp^{®}2006 =$ 92.7

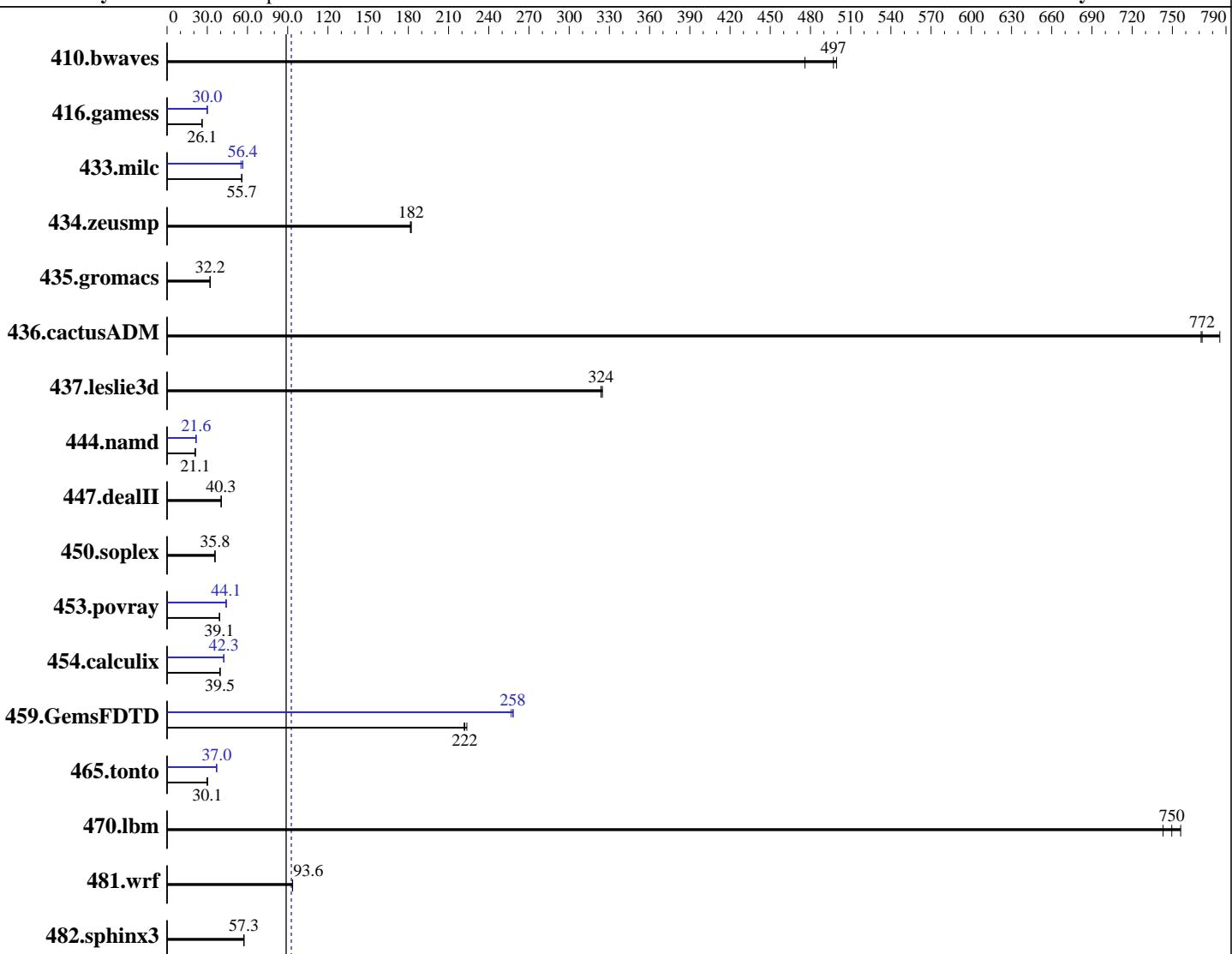$SPECfp\_base2006 =$ 88.8

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

Test date: Jan-2015
Hardware Availability: Jan-2015
Software Availability: Jul-2014

Benchmark	Value (peak)	Value (base)
410.bwaves	497	
416.gamess	30.0	26.1
433.milc	56.4	55.7
434.zeusmp	182	
435.gromacs	32.2	
436.cactusADM	772	
437.leslie3d	324	
444.namd	21.6	21.1
447.dealII	40.3	
450.soplex	35.8	
453.povray	44.1	39.1
454.calculix	42.3	39.5
459.GemsFDTD	258	222
465.tonto	37.0	30.1
470.lbm	750	
481.wrf	93.6	
482.sphinx3	57.3	

SPECfp_base2006 = 88.8
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Hardware

CPU Name: Intel Xeon E5-2650L v3
CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz
CPU MHz: 1800
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 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 2.6.32-431.20.3.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
Continued on next page

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L3 Cache:	30 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 PC4-2133P-R)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM	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	28.6	476	**27.3**	**497**	27.2	499	28.6	476	**27.3**	**497**	27.2	499
416.gamess	**749**	**26.1**	753	26.0	748	26.2	**652**	**30.0**	652	30.0	655	29.9
433.milc	**165**	**55.7**	165	55.7	164	55.8	**163**	**56.4**	167	55.1	162	56.5
434.zeusmp	**50.0**	**182**	50.1	182	49.9	182	**50.0**	**182**	50.1	182	49.9	182
435.gromacs	224	31.9	**221**	**32.2**	221	32.3	224	31.9	**221**	**32.2**	221	32.3
436.cactusADM	15.5	771	**15.5**	**772**	15.2	785	15.5	771	**15.5**	**772**	15.2	785
437.leslie3d	29.0	324	**29.0**	**324**	28.9	325	29.0	324	**29.0**	**324**	28.9	325
444.namd	381	21.1	**381**	**21.1**	381	21.1	371	21.6	**371**	**21.6**	371	21.6
447.dealII	284	40.3	282	40.5	**284**	**40.3**	284	40.3	282	40.5	**284**	**40.3**
450.soplex	233	35.8	234	35.7	**233**	**35.8**	233	35.8	234	35.7	**233**	**35.8**
453.povray	135	39.3	136	39.0	**136**	**39.1**	121	44.0	**121**	**44.1**	120	44.2
454.calculix	208	39.6	**209**	**39.5**	209	39.5	195	42.4	195	42.3	**195**	**42.3**
459.GemsFDTD	47.4	224	47.9	222	**47.8**	**222**	**41.1**	**258**	41.1	258	41.3	257
465.tonto	329	29.9	**327**	**30.1**	326	30.2	267	36.9	**266**	**37.0**	266	37.0
470.lbm	**18.3**	**750**	18.5	743	18.2	756	**18.3**	**750**	18.5	743	18.2	756
481.wrf	**119**	**93.6**	119	93.6	119	93.7	**119**	**93.6**	119	93.6	119	93.7
482.sphinx3	340	57.4	340	57.3	**340**	**57.3**	340	57.4	340	57.3	**340**	**57.3**

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
 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 = "24"

 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:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
    -ansi-alias

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Base Optimization Flags (Continued)

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
```

C++ benchmarks:

NEC Corporation

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Peak Optimization Flags (Continued)

```
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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevB.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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