SPEC® CFP2006 Result

NEC Corporation

Express5800/B120d-h (Intel Xeon E5-2670)

$SPECfp^{®}2006 =$ 83.0
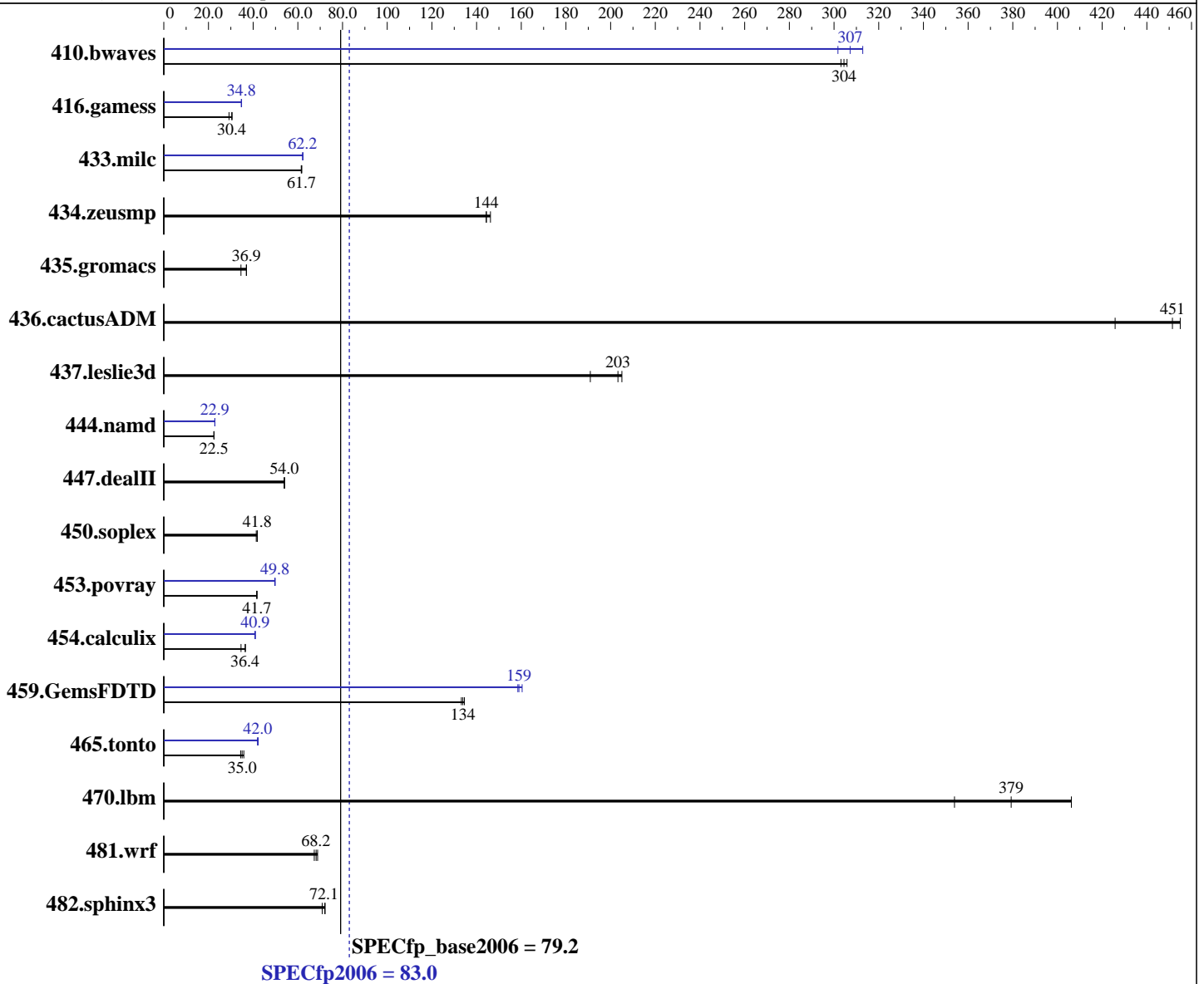
$SPECfp\_base2006 =$ 79.2

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

Test date: Jul-2012
Hardware Availability: Jun-2012
Software Availability: Feb-2012

Benchmark	base	peak
410.bwaves	304	307
416.gamess	30.4	34.8
433.milc	61.7	62.2
434.zeusmp	144	
435.gromacs	36.9	
436.cactusADM	451	
437.leslie3d	203	
444.namd	22.5	22.9
447.dealII	54.0	
450.soplex	41.8	
453.povray	41.7	49.8
454.calculix	36.4	40.9
459.GemsFDTD	134	159
465.tonto	35.0	42.0
470.lbm	379	
481.wrf	68.2	
482.sphinx3	72.1	

SPECfp_base2006 = 79.2
SPECfp2006 = 83.0

Hardware

CPU Name: Intel Xeon E5-2670
CPU Characteristics: Intel Turbo Boost Technology up to 3.30 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 6.2 (Santiago)
Kernel 2.6.32-220.el6.x86_64
Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
Continued on next page

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L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem:	1 x 146.5 GB SAS, 15000 RPM
Other Hardware:	Express5800/AD106b for Disk Subsystem

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	44.8	303	**44.6**	**304**	44.4	306	**44.2**	**307**	45.0	302	43.4	313
416.gamess	640	30.6	**644**	**30.4**	671	29.2	562	34.8	**563**	**34.8**	565	34.7
433.milc	149	61.7	**149**	**61.7**	149	61.5	148	62.1	**148**	**62.2**	147	62.3
434.zeusmp	**63.0**	**144**	62.2	146	63.0	144	**63.0**	**144**	62.2	146	63.0	144
435.gromacs	193	37.0	207	34.5	**193**	**36.9**	193	37.0	207	34.5	**193**	**36.9**
436.cactusADM	**26.5**	**451**	26.3	455	28.1	426	**26.5**	**451**	26.3	455	28.1	426
437.leslie3d	45.8	205	**46.2**	**203**	49.2	191	45.8	205	**46.2**	**203**	49.2	191
444.namd	357	22.5	357	22.4	**357**	**22.5**	351	22.8	**351**	**22.9**	351	22.9
447.dealII	212	53.9	212	54.0	**212**	**54.0**	212	53.9	212	54.0	**212**	**54.0**
450.soplex	**200**	**41.8**	202	41.4	199	41.9	**200**	**41.8**	202	41.4	199	41.9
453.povray	**128**	**41.7**	128	41.7	128	41.6	107	49.7	**107**	**49.8**	107	49.8
454.calculix	226	36.6	**227**	**36.4**	239	34.6	202	40.9	**202**	**40.9**	202	40.8
459.GemsFDTD	78.9	135	79.7	133	**79.3**	**134**	**66.7**	**159**	66.2	160	67.0	158
465.tonto	286	34.4	**281**	**35.0**	275	35.8	234	42.0	233	42.3	**234**	**42.0**
470.lbm	38.8	354	33.8	406	**36.2**	**379**	38.8	354	33.8	406	**36.2**	**379**
481.wrf	162	68.8	**164**	**68.2**	166	67.3	162	68.8	**164**	**68.2**	166	67.3
482.sphinx3	**270**	**72.1**	275	70.9	270	72.2	**270**	**72.1**	275	70.9	270	72.2

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,scatter"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"
```

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General Notes (Continued)

```
OMP_NUM_THREADS = "16"

 Added glibc-static-2.12-1.47.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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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:

Continued on next page

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Peak Optimization Flags (Continued)

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

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: -xSSE4.2(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-ic12.1-official-linux64.20120425.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-ic12.1-official-linux64.20120425.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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