SPEC® CFP2006 Result

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NEC Corporation

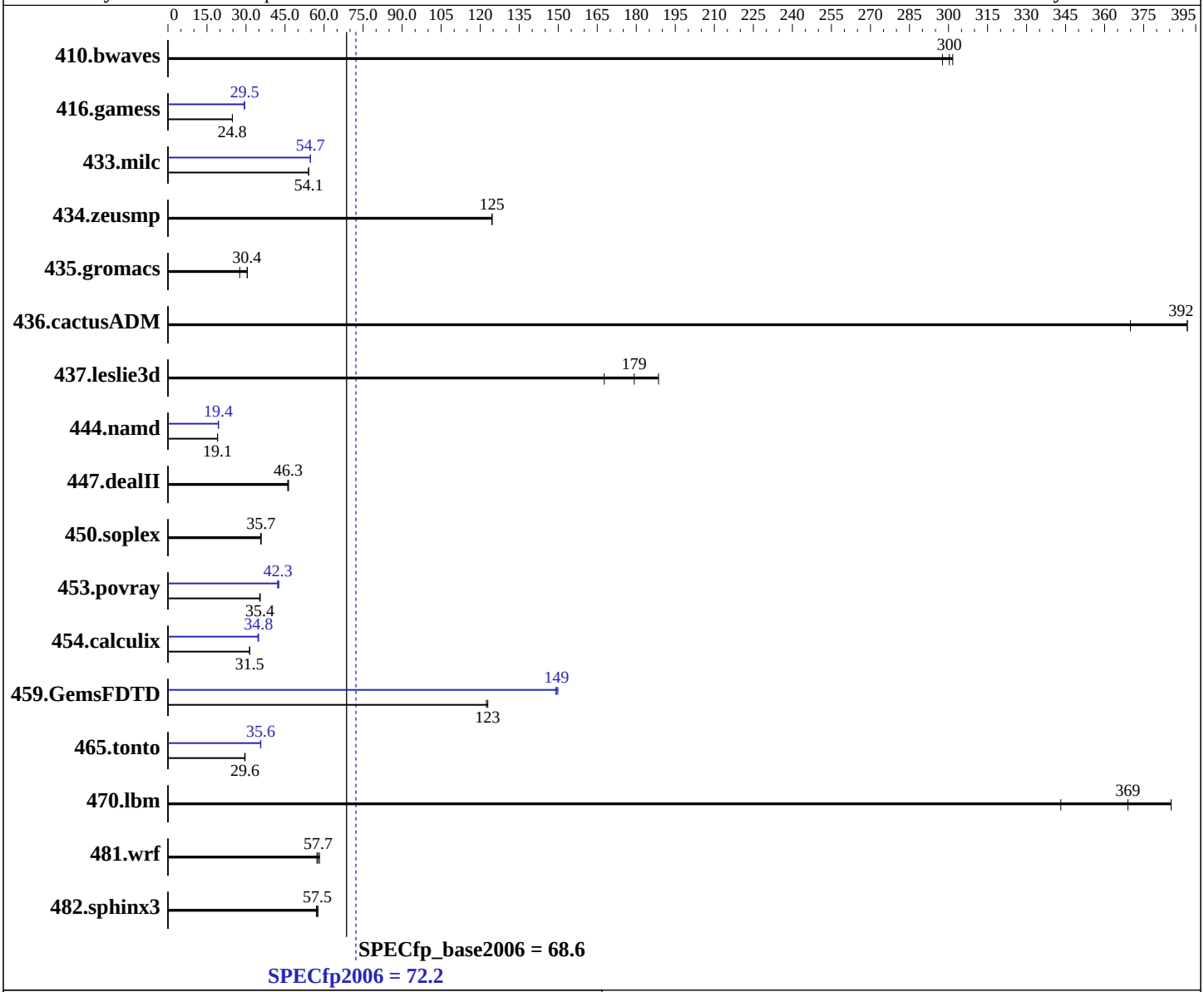
Express5800/B120d-h (Intel Xeon E5-2650)

SPECfp®2006 = 72.2

SPECfp_base2006 = 68.6

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

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



Hardware

CPU Name:	Intel Xeon E5-2650
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2000
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

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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

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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 (16 x 8 GB 2Rx4 PC3L-12800R-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 146.5 GB SAS, 15000 RPM	Other Software:	None
Other Hardware:	Express5800/AD106b for Disk Subsystem		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**45.3**	**300**	45.1	302	45.7	298	**45.3**	**300**	45.1	302	45.7	298
416.gamess	790	24.8	**791**	**24.8**	791	24.7	669	29.3	**665**	**29.5**	664	29.5
433.milc	170	54.1	**170**	**54.1**	170	54.1	168	54.7	**168**	**54.7**	168	54.8
434.zeusmp	73.1	125	**73.1**	**125**	73.1	125	73.1	125	**73.1**	**125**	73.1	125
435.gromacs	259	27.6	**235**	**30.4**	234	30.5	259	27.6	**235**	**30.4**	234	30.5
436.cactusADM	**30.5**	**392**	30.5	392	32.3	370	**30.5**	**392**	30.5	392	32.3	370
437.leslie3d	**52.5**	**179**	56.1	168	49.9	189	**52.5**	**179**	56.1	168	49.9	189
444.namd	421	19.1	**421**	**19.1**	421	19.0	**413**	**19.4**	414	19.4	413	19.4
447.dealII	247	46.3	249	46.0	**247**	**46.3**	247	46.3	249	46.0	**247**	**46.3**
450.soplex	233	35.8	234	35.7	**233**	**35.7**	233	35.8	234	35.7	**233**	**35.7**
453.povray	151	35.3	150	35.4	**150**	**35.4**	**126**	**42.3**	125	42.6	126	42.2
454.calculix	262	31.5	263	31.3	**262**	**31.5**	**237**	**34.8**	237	34.8	239	34.6
459.GemsFDTD	86.7	122	**86.3**	**123**	86.3	123	70.8	150	71.2	149	**71.0**	**149**
465.tonto	**333**	**29.6**	332	29.7	334	29.5	**276**	**35.6**	276	35.7	277	35.6
470.lbm	35.6	386	**37.2**	**369**	40.0	343	35.6	386	**37.2**	**369**	40.0	343
481.wrf	**194**	**57.7**	195	57.2	192	58.3	**194**	**57.7**	195	57.2	192	58.3
482.sphinx3	338	57.7	**339**	**57.5**	342	57.1	338	57.7	**339**	**57.5**	342	57.1

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

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: 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: -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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