SPEC® CFP2006 Result
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NEC Corporation

$SPECfp®_rate2006 = $ 365

Express5800/R120f-1E (Intel Xeon E5-2660 v3)
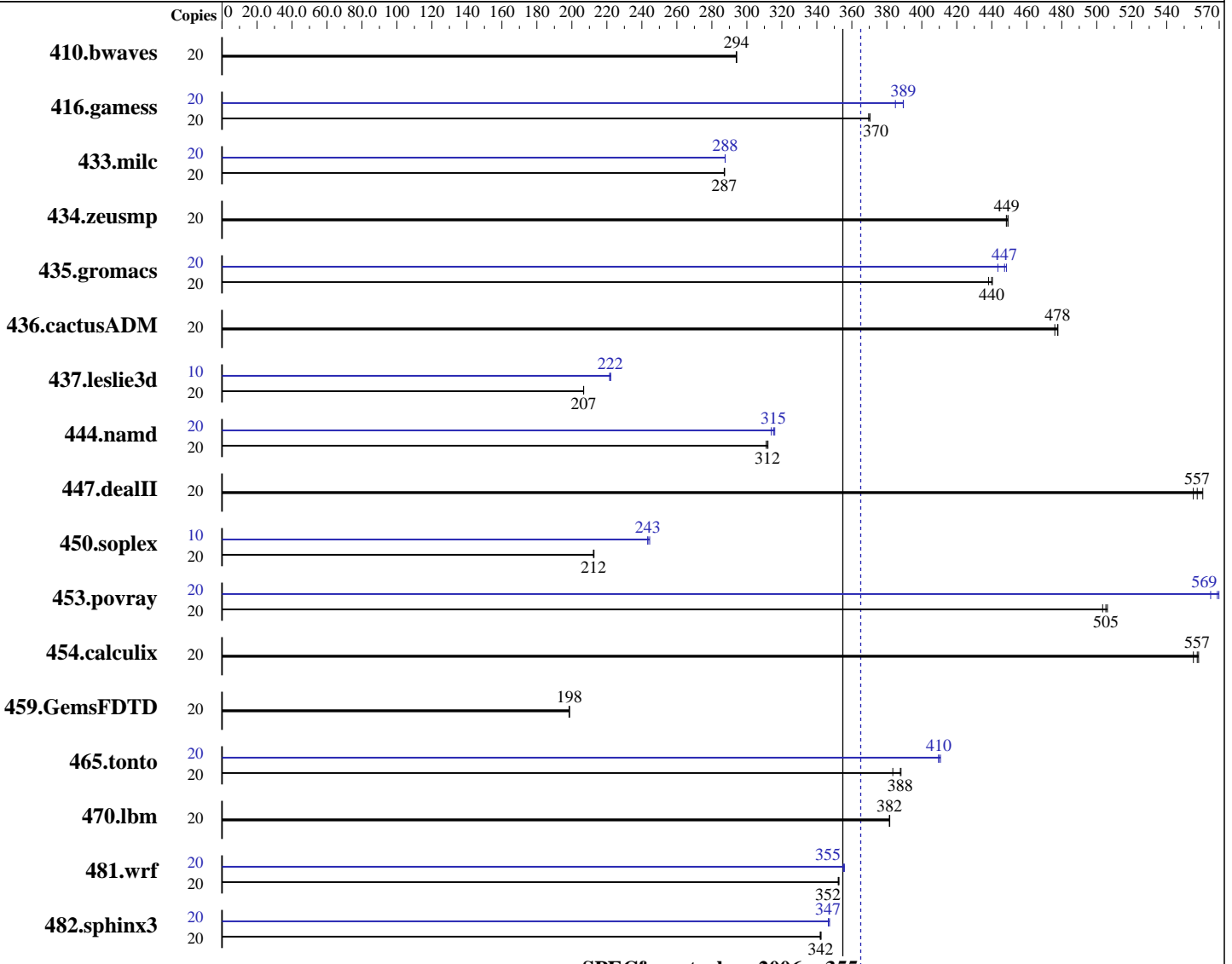
$SPECfp_rate_base2006 = $ 355

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

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

Benchmark	Copies	Result
410.bwaves	20	294
416.gamess	20	389
416.gamess	20	370
433.milc	20	288
433.milc	20	287
434.zeusmp	20	449
435.gromacs	20	447
435.gromacs	20	440
436.cactusADM	20	478
437.leslie3d	10	222
437.leslie3d	20	207
444.namd	20	315
444.namd	20	312
447.dealII	20	557
450.soplex	10	243
450.soplex	20	212
453.povray	20	569
453.povray	20	505
454.calculix	20	557
459.GemsFDTD	20	198
465.tonto	20	410
465.tonto	20	388
470.lbm	20	382
481.wrf	20	355
481.wrf	20	352
482.sphinx3	20	347
482.sphinx3	20	342

SPECfp_rate_base2006 = 355

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Hardware

CPU Name:	Intel Xeon E5-2660 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	10 cores, 1 chip, 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 6.5 (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:	No
File System:	ext4

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L3 Cache:	25 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
Other Hardware:	None

System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	20	**924**	**294**	925	294	924	294	20	**924**	**294**	925	294	924	294
416.gamess	20	1060	370	**1057**	**370**	1057	370	20	1017	385	1005	390	**1006**	**389**
433.milc	20	640	287	**639**	**287**	639	287	20	638	288	638	288	**638**	**288**
434.zeusmp	20	406	448	**406**	**449**	405	449	20	406	448	**406**	**449**	405	449
435.gromacs	20	**325**	**440**	324	440	326	438	20	318	448	322	443	**319**	**447**
436.cactusADM	20	**500**	**478**	502	476	500	478	20	**500**	**478**	502	476	500	478
437.leslie3d	20	909	207	910	207	**910**	**207**	10	423	222	**423**	**222**	424	222
444.namd	20	514	312	**515**	**312**	516	311	20	508	316	**509**	**315**	511	314
447.dealII	20	408	561	**410**	**557**	412	555	20	408	561	**410**	**557**	412	555
450.soplex	20	784	213	786	212	**785**	**212**	10	341	244	343	243	**343**	**243**
453.povray	20	**211**	**505**	210	506	211	503	20	**187**	**569**	188	565	187	570
454.calculix	20	297	555	296	558	**296**	**557**	20	297	555	296	558	**296**	**557**
459.GemsFDTD	20	1070	198	1068	199	**1069**	**198**	20	1070	198	1068	199	**1069**	**198**
465.tonto	20	507	388	513	383	**508**	**388**	20	480	410	**480**	**410**	479	411
470.lbm	20	**720**	**382**	720	382	720	382	20	**720**	**382**	720	382	720	382
481.wrf	20	**634**	**352**	633	353	634	352	20	629	355	**629**	**355**	628	356
482.sphinx3	20	1140	342	1138	342	**1139**	**342**	20	1122	347	**1124**	**347**	1125	347

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS Settings:
Power Management Policy: Custom
Energy Performance: Performance

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Platform Notes (Continued)

```
    Patrol Scrub: Disabled
```

General Notes

```
  Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

   Transparent Huge Pages enabled with:
   echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
   Filesystem page cache cleared with:
   echo 1 > /proc/sys/vm/drop_caches
   runspec command invoked through numactl i.e.:
   numactl --interleave=all runspec <etc>
```

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
```

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Base Portability Flags (Continued)

482.sphinx3: `-DSPEC_CPU_LP64`

Base Optimization Flags

C benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32`
`-ansi-alias -opt-mem-layout-trans=3`

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32`
`-ansi-alias -opt-mem-layout-trans=3`

Fortran benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`

Benchmarks using both Fortran and C:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32`
`-ansi-alias -opt-mem-layout-trans=3`

Peak Compiler Invocation

C benchmarks (except as noted below):
`icc    -m64`

482.sphinx3: `icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

C++ benchmarks (except as noted below):
`icpc    -m64`

450.soplex: `icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc    -m64 ifort -m64`

Peak Portability Flags

410.bwaves: `-DSPEC_CPU_LP64`
416.gamess: `-DSPEC_CPU_LP64`
433.milc: `-DSPEC_CPU_LP64`
434.zeusmp: `-DSPEC_CPU_LP64`

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Peak Portability Flags (Continued)

```
         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
          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
```

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)
                     -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
                     -auto-ilp32

            470.lbm: basepeak = yes

         482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                     -unroll2
```

C++ benchmarks:

```
           444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                     -O3(pass 2) -no-prec-div(pass 2)
                     -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
                     -auto-ilp32

           447.dealII: basepeak = yes

          450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                     -O3(pass 2) -no-prec-div(pass 2)
                     -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
                     -opt-malloc-options=3

          453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
                     -O3(pass 2) -no-prec-div(pass 2)
                     -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4
                     -ansi-alias
```

Fortran benchmarks:

NEC Corporation

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

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

Peak Optimization Flags (Continued)

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: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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) -unroll4
           -auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
             -O3(pass 2) -no-prec-div(pass 2)
             -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
             -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

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-RevC.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-RevC.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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