



# SPEC® CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## NEC Corporation

**SPECfp®\_rate2006 = 685**

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

**SPECfp\_rate\_base2006 = 669**

CPU2006 license: 9006

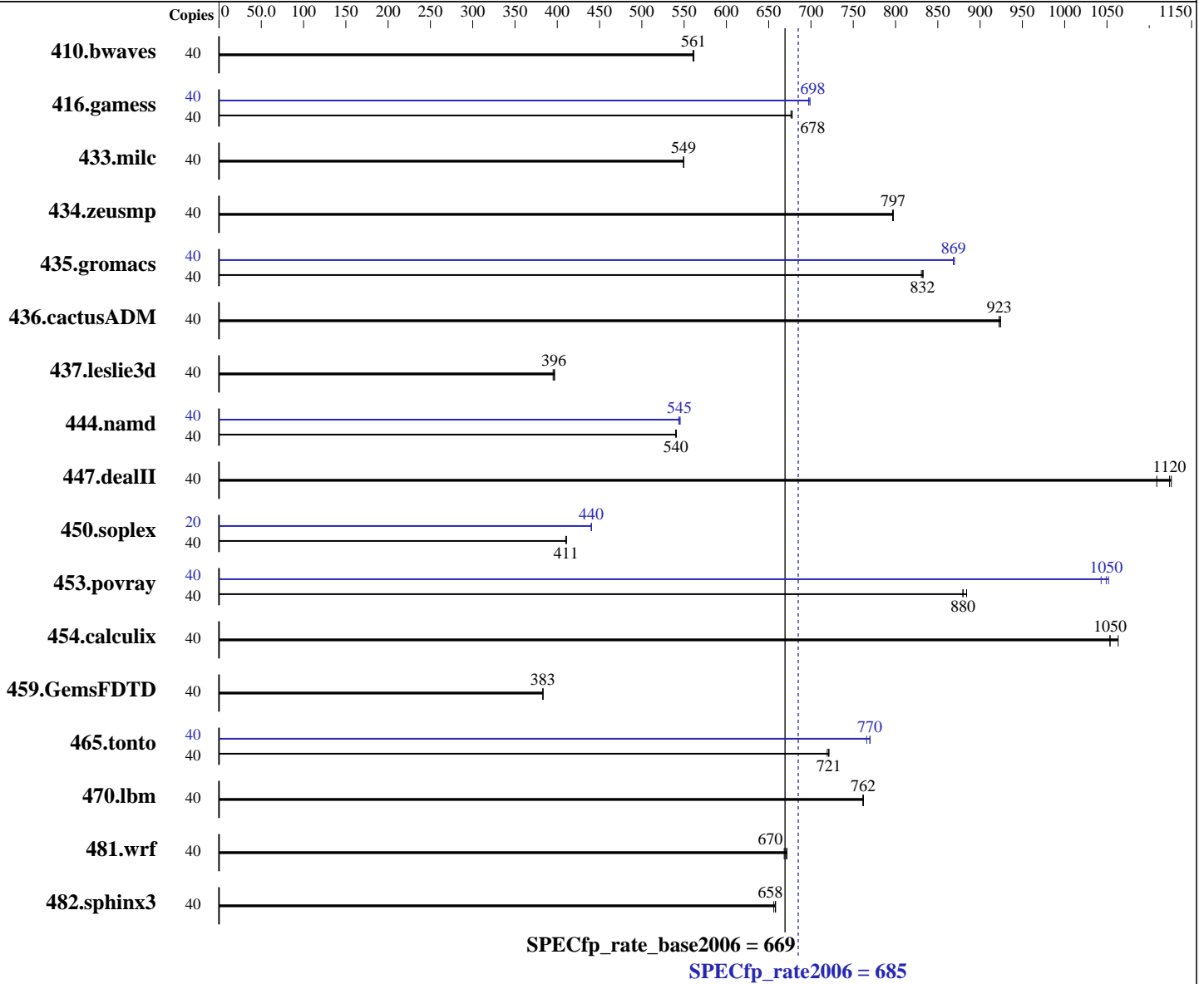
Test date: May-2016

Test sponsor: NEC Corporation

Hardware Availability: Jun-2016

Tested by: NEC Corporation

Software Availability: Jan-2016



### Hardware

CPU Name: Intel Xeon E5-2630 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 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 7.2 (Maipo)  
 Kernel 3.10.0-327.4.5.el7.x86\_64  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## NEC Corporation

SPECfp\_rate2006 = **685**

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

SPECfp\_rate\_base2006 = **669**

CPU2006 license: 9006

Test date: May-2016

Test sponsor: NEC Corporation

Hardware Availability: Jun-2016

Tested by: NEC Corporation

Software Availability: Jan-2016

L3 Cache: 25 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
 Disk Subsystem: 1 x 1 TB 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							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	40	<b>968</b>	<b>561</b>	968	562	970	560	40	<b>968</b>	<b>561</b>	968	562	970	560
416.gamess	40	1158	676	1156	678	<b>1156</b>	<b>678</b>	40	1121	699	<b>1123</b>	<b>698</b>	1123	697
433.milc	40	668	550	<b>668</b>	<b>549</b>	668	549	40	668	550	<b>668</b>	<b>549</b>	668	549
434.zeusmp	40	<b>457</b>	<b>797</b>	457	797	457	796	40	<b>457</b>	<b>797</b>	457	797	457	796
435.gromacs	40	<b>343</b>	<b>832</b>	343	833	344	831	40	329	868	<b>329</b>	<b>869</b>	328	870
436.cactusADM	40	518	923	517	924	<b>518</b>	<b>923</b>	40	518	923	517	924	<b>518</b>	<b>923</b>
437.leslie3d	40	952	395	<b>949</b>	<b>396</b>	947	397	40	952	395	<b>949</b>	<b>396</b>	947	397
444.namd	40	<b>594</b>	<b>540</b>	594	540	593	541	40	588	545	590	544	<b>589</b>	<b>545</b>
447.dealII	40	406	1130	413	1110	<b>407</b>	<b>1120</b>	40	406	1130	413	1110	<b>407</b>	<b>1120</b>
450.soplex	40	812	411	<b>812</b>	<b>411</b>	814	410	20	379	441	<b>379</b>	<b>440</b>	379	440
453.povray	40	242	880	<b>242</b>	<b>880</b>	241	884	40	202	1050	204	1040	<b>203</b>	<b>1050</b>
454.calculix	40	313	1050	<b>313</b>	<b>1050</b>	310	1060	40	313	1050	<b>313</b>	<b>1050</b>	310	1060
459.GemsFDTD	40	1108	383	1108	383	<b>1108</b>	<b>383</b>	40	1108	383	1108	383	<b>1108</b>	<b>383</b>
465.tonto	40	547	719	546	721	<b>546</b>	<b>721</b>	40	<b>511</b>	<b>770</b>	511	770	514	766
470.lbm	40	<b>721</b>	<b>762</b>	722	762	721	762	40	<b>721</b>	<b>762</b>	722	762	721	762
481.wrf	40	669	668	665	672	<b>667</b>	<b>670</b>	40	669	668	665	672	<b>667</b>	<b>670</b>
482.sphinx3	40	<b>1185</b>	<b>658</b>	1185	658	1188	656	40	<b>1185</b>	<b>658</b>	1185	658	1188	656

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

NEC Corporation

SPECfp\_rate2006 = 685

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

SPECfp\_rate\_base2006 = 669

CPU2006 license: 9006

Test date: May-2016

Test sponsor: NEC Corporation

Hardware Availability: Jun-2016

Tested by: NEC Corporation

Software Availability: Jan-2016

## Platform Notes (Continued)

Patrol Scrub: Disabled  
Snoop Mode: Home Snoop with Directory

## 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"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

NEC Corporation

SPECfp\_rate2006 = 685

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

SPECfp\_rate\_base2006 = 669

CPU2006 license: 9006

Test date: May-2016

Test sponsor: NEC Corporation

Hardware Availability: Jun-2016

Tested by: NEC Corporation

Software Availability: Jan-2016

## Base Portability Flags (Continued)

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 -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:

icc -m64

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

NEC Corporation

SPECfp\_rate2006 = 685

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

SPECfp\_rate\_base2006 = 669

CPU2006 license: 9006

Test date: May-2016

Test sponsor: NEC Corporation

Hardware Availability: Jun-2016

Tested by: NEC Corporation

Software Availability: Jan-2016

## Peak Portability Flags (Continued)

```

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: -D_FILE_OFFSET_BITS=64
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

```

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

```

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
         -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
         -par-num-threads=1(pass 1) -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:threadsafe(pass 1)
           -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
           -prof-use(pass 2) -opt-malloc-options=3

```

```

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

```

Fortran benchmarks:

410.bwaves: basepeak = yes

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## NEC Corporation

**SPECfp\_rate2006 = 685**

Express5800/R120g-1E (Intel Xeon E5-2630 v4)

**SPECfp\_rate\_base2006 = 669**

**CPU2006 license:** 9006

**Test date:** May-2016

**Test sponsor:** NEC Corporation

**Hardware Availability:** Jun-2016

**Tested by:** NEC Corporation

**Software Availability:** Jan-2016

## Peak Optimization Flags (Continued)

416.gamess: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-`

434.zeusmp: `basepeak = yes`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -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:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -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: `basepeak = yes`

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120g-RevC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120g-RevC.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.

Report generated on Thu Jun 30 14:05:52 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 14 June 2016.