SPEC® CFP2006 Result

NEC Corporation

$SPECfp®\_rate2006 = 345$

Express5800/R120e-1M (Intel Xeon E5-2697 v2)

$SPECfp\_rate\_base2006 = 335$

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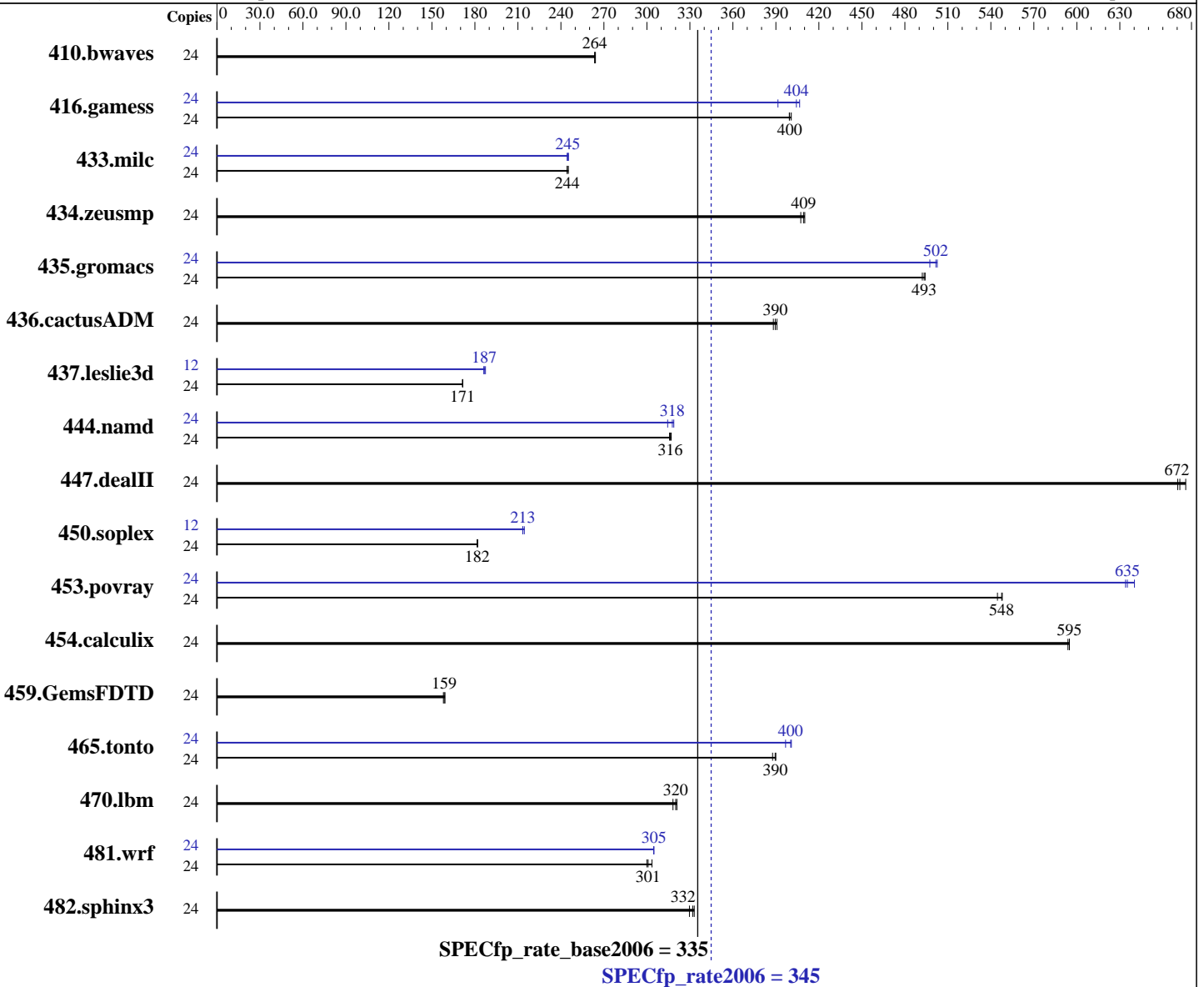**Test sponsor:** NEC Corporation
Tested by: NEC Corporation

Test date: Oct-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Benchmark	Copies	Result
410.bwaves	24	264
416.gamess	24 / 24	404 / 400
433.milc	24 / 24	245 / 244
434.zeusmp	24	409
435.gromacs	24 / 24	502 / 493
436.cactusADM	24	390
437.leslie3d	12 / 24	187 / 171
444.namd	24 / 24	318 / 316
447.dealII	24	672
450.soplex	12 / 24	213 / 182
453.povray	24 / 24	635 / 548
454.calculix	24	595
459.GemsFDTD	24	159
465.tonto	24 / 24	400 / 390
470.lbm	24	320
481.wrf	24 / 24	305 / 301
482.sphinx3	24	332

SPECfp_rate_base2006 = 335
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Hardware

CPU Name: Intel Xeon E5-2697 v2
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz: 2700
FPU: Integrated
CPU(s) enabled: 12 cores, 1 chip, 12 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 6.4 (Santiago)
Kernel 2.6.32-358.18.1.el6.x86_64
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4
Continued on next page

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L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	64 GB (4 x 16 GB 2Rx4 PC3-14900R-13, ECC)
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	24	**1237**	**264**	1237	264	1235	264	24	**1237**	**264**	1237	264	1235	264
416.gamess	24	1177	399	**1176**	**400**	1173	401	24	1156	407	1200	391	**1162**	**404**
433.milc	24	902	244	898	245	**901**	**244**	24	**900**	**245**	902	244	898	245
434.zeusmp	24	532	410	536	407	**534**	**409**	24	532	410	536	407	**534**	**409**
435.gromacs	24	347	494	**347**	**493**	348	492	24	344	497	341	503	**342**	**502**
436.cactusADM	24	734	391	**736**	**390**	739	388	24	734	391	**736**	**390**	739	388
437.leslie3d	24	**1316**	**171**	1317	171	1315	172	12	602	187	606	186	**605**	**187**
444.namd	24	607	317	**608**	**316**	609	316	24	**606**	**318**	604	319	612	314
447.dealII	24	**409**	**672**	410	670	406	676	24	**409**	**672**	410	670	406	676
450.soplex	24	1100	182	1102	182	**1102**	**182**	12	**469**	**213**	469	213	467	215
453.povray	24	**233**	**548**	233	548	234	545	24	**201**	**635**	199	640	201	634
454.calculix	24	**333**	**595**	333	594	333	595	24	**333**	**595**	333	594	333	595
459.GemsFDTD	24	**1606**	**159**	1611	158	1600	159	24	**1606**	**159**	1611	158	1600	159
465.tonto	24	606	390	**606**	**390**	609	388	24	595	397	**590**	**400**	589	401
470.lbm	24	1036	318	**1030**	**320**	1027	321	24	1036	318	**1030**	**320**	1027	321
481.wrf	24	**891**	**301**	894	300	883	304	24	879	305	**879**	**305**	880	305
482.sphinx3	24	**1409**	**332**	1404	333	1419	330	24	**1409**	**332**	1404	333	1419	330

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:
Energy Performance: Performance

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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>
 The Express5800/R120e-1M and
 the Express5800/R120e-2M models are electronically equivalent.
 The results have been measured on the Express5800/R120e-1M model.
```

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
```

SPEC CFP2006 Result

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CPU2006 license: 9006		**Test date:**	Oct-2013
Test sponsor: NEC Corporation		**Hardware Availability:**	Sep-2013
Tested by: NEC Corporation		**Software Availability:**	Sep-2013

Base Optimization Flags

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

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

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

Benchmarks using both Fortran and C:
```
-xAVX -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
```

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
   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
```

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

Test date: Oct-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Peak 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
```

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

```
       470.lbm: basepeak = yes
```

```
    482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
      444.namd: -xAVX(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: -xAVX(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: -xAVX(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:

```
      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-
```

```
      434.zeusmp: basepeak = yes
```

```
      437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch
```

```
    459.GemsFDTD: basepeak = yes
```

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Peak Optimization Flags (Continued)

465.tonto: -xAVX(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: -xAVX(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: -xAVX -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-ic14.0-official-linux64.20140128.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-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.xml

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

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