SPEC® CFP2006 Result
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NEC Corporation

Express5800/R110d-1M (Intel Xeon E5-2420)

$SPECfp^{®}2006 =$ 54.4

$SPECfp\_base2006 =$ 52.7

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

Test date: Jun-2012
Hardware Availability: May-2012
Software Availability: Dec-2011

410.bwaves 140 / 140
416.gamess 25.1 / 22.2
433.milc 51.1 / 50.4
434.zeusmp 93.6
435.gromacs 25.4
436.cactusADM 224
437.leslie3d 97.2
444.namd 16.6 / 16.3
447.dealII 40.4
450.soplex 31.1
453.povray 36.3 / 30.5
454.calculix 30.0 / 28.9
459.GemsFDTD 78.3 / 72.3
465.tonto 30.7 / 27.2
470.lbm 173
481.wrf 71.1
482.sphinx3 51.9

SPECfp_base2006 = 52.7
SPECfp2006 = 54.4

Hardware

CPU Name: Intel Xeon E5-2420
CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 6 cores, 1 chip, 6 cores/chip, 2 threads/core
CPU(s) orderable: 1 chip
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 12.1.2.273 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.2.273 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
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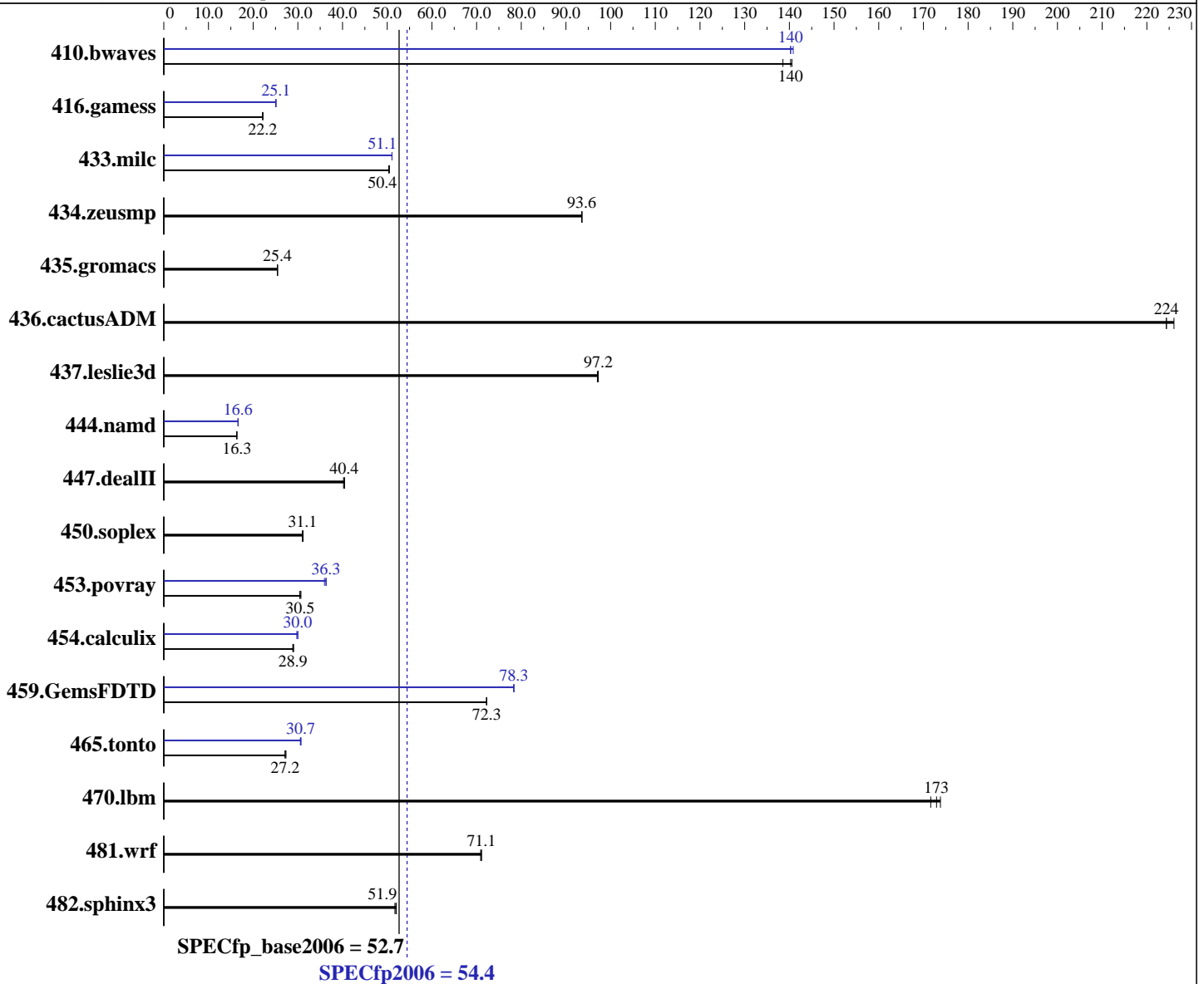**CPU2006 license:** 9006　　　　　　　　　　　　　　　　　**Test date:** Jun-2012
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L3 Cache:	15 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	48 GB (6 x 8 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz and CL9)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	98.1	139	96.7	141	**96.9**	**140**	96.9	140	**96.9**	**140**	96.5	141
416.gamess	883	22.2	**884**	**22.2**	886	22.1	**780**	**25.1**	779	25.1	783	25.0
433.milc	182	50.4	**182**	**50.4**	182	50.5	180	51.1	180	51.1	**180**	**51.1**
434.zeusmp	**97.3**	**93.6**	97.3	93.6	97.3	93.6	**97.3**	**93.6**	97.3	93.6	97.3	93.6
435.gromacs	281	25.4	281	25.4	**281**	**25.4**	281	25.4	281	25.4	**281**	**25.4**
436.cactusADM	52.9	226	**53.3**	**224**	53.3	224	52.9	226	**53.3**	**224**	53.3	224
437.leslie3d	**96.7**	**97.2**	96.7	97.2	96.9	97.0	**96.7**	**97.2**	96.7	97.2	96.9	97.0
444.namd	490	16.4	491	16.3	**491**	**16.3**	483	16.6	482	16.6	**483**	**16.6**
447.dealII	283	40.5	**283**	**40.4**	284	40.2	283	40.5	**283**	**40.4**	284	40.2
450.soplex	268	31.2	269	31.0	**269**	**31.1**	268	31.2	269	31.0	**269**	**31.1**
453.povray	173	30.7	175	30.5	**174**	**30.5**	**147**	**36.3**	148	36.0	146	36.3
454.calculix	284	29.1	285	28.9	**285**	**28.9**	275	30.0	**275**	**30.0**	277	29.8
459.GemsFDTD	147	72.3	**147**	**72.3**	147	72.2	135	78.3	135	78.3	**135**	**78.3**
465.tonto	362	27.1	360	27.3	**362**	**27.2**	**321**	**30.7**	320	30.7	322	30.6
470.lbm	80.1	172	79.1	174	**79.5**	**173**	80.1	172	79.1	174	**79.5**	**173**
481.wrf	158	70.9	157	71.1	**157**	**71.1**	158	70.9	157	71.1	**157**	**71.1**
482.sphinx3	**375**	**51.9**	374	52.1	377	51.7	**375**	**51.9**	374	52.1	377	51.7

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

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"
OMP_NUM_THREADS = "6"

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General Notes (Continued)

```
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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NEC Corporation	$SPECfp2006 =$	54.4
Express5800/R110d-1M (Intel Xeon E5-2420)	$SPECfp\_base2006 =$	52.7

CPU2006 license: 9006	**Test date:** Jun-2012
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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:

```
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
```

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Peak Optimization Flags (Continued)

        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: -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 -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-linux64.20111122.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-linux64.20111122.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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