



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

Express5800/120Bb-m6  
(Intel Xeon processor X5460)

SPECfp<sup>®</sup>\_rate2006 = 75.9

SPECfp\_rate\_base2006 = 67.3

CPU2006 license: 9006

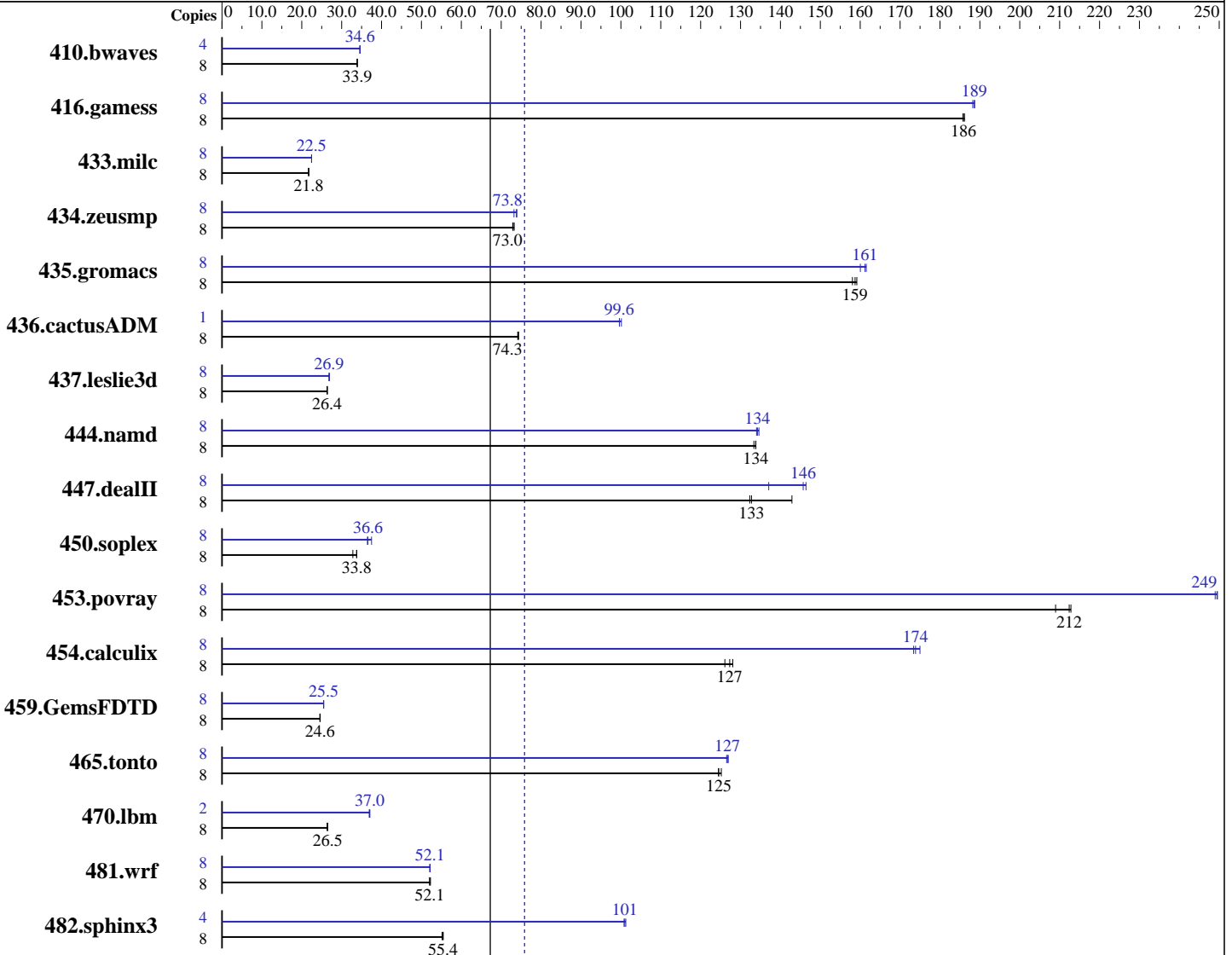
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2007

Hardware Availability: Dec-2007

Software Availability: Nov-2007



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### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 3166  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smpp  
 Compiler: Intel C++ and Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Multiuser, Runlevel 3  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x73.2 GB SAS, 10000RPM  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.tar.gz, Version 2.17

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3206	33.9	3207	33.9	<b><u>3207</u></b>	<b><u>33.9</u></b>	4	1572	34.6	<b><u>1572</u></b>	<b><u>34.6</u></b>	1571	34.6
416.gamess	8	843	186	841	186	<b><u>843</u></b>	<b><u>186</u></b>	8	832	188	<b><u>831</u></b>	<b><u>189</u></b>	830	189
433.milc	8	3387	21.7	3376	21.8	<b><u>3376</u></b>	<b><u>21.8</u></b>	8	3270	22.5	<b><u>3270</u></b>	<b><u>22.5</u></b>	3269	22.5
434.zeusmp	8	999	72.9	994	73.3	<b><u>997</u></b>	<b><u>73.0</u></b>	8	985	73.9	<b><u>986</u></b>	<b><u>73.8</u></b>	995	73.2
435.gromacs	8	<b><u>360</u></b>	<b><u>159</u></b>	359	159	361	158	8	<b><u>354</u></b>	<b><u>161</u></b>	354	162	357	160
436.cactusADM	8	<b><u>1287</u></b>	<b><u>74.3</u></b>	1286	74.4	1290	74.1	1	<b><u>120</u></b>	<b><u>99.6</u></b>	119	100	120	99.6
437.leslie3d	8	2848	26.4	<b><u>2853</u></b>	<b><u>26.4</u></b>	2853	26.4	8	<b><u>2799</u></b>	<b><u>26.9</u></b>	2800	26.9	2796	26.9
444.namd	8	481	133	479	134	<b><u>480</u></b>	<b><u>134</u></b>	8	<b><u>478</u></b>	<b><u>134</u></b>	479	134	477	135
447.dealII	8	<b><u>689</u></b>	<b><u>133</u></b>	692	132	641	143	8	<b><u>628</u></b>	<b><u>146</u></b>	625	146	668	137
450.soplex	8	2034	32.8	1976	33.8	<b><u>1977</u></b>	<b><u>33.8</u></b>	8	1830	36.5	<b><u>1824</u></b>	<b><u>36.6</u></b>	1780	37.5
453.povray	8	204	209	<b><u>200</u></b>	<b><u>212</u></b>	200	213	8	<b><u>171</u></b>	<b><u>249</u></b>	171	249	171	250
454.calculix	8	515	128	<b><u>519</u></b>	<b><u>127</u></b>	524	126	8	377	175	<b><u>380</u></b>	<b><u>174</u></b>	381	173
459.GemsFDTD	8	3447	24.6	<b><u>3451</u></b>	<b><u>24.6</u></b>	3459	24.5	8	<b><u>3332</u></b>	<b><u>25.5</u></b>	3333	25.5	3328	25.5
465.tonto	8	629	125	<b><u>632</u></b>	<b><u>125</u></b>	632	124	8	620	127	622	127	<b><u>621</u></b>	<b><u>127</u></b>
470.lbm	8	4169	26.4	<b><u>4154</u></b>	<b><u>26.5</u></b>	4153	26.5	2	741	37.1	745	36.9	<b><u>742</u></b>	<b><u>37.0</u></b>
481.wrf	8	1717	52.0	1710	52.3	<b><u>1716</u></b>	<b><u>52.1</u></b>	8	1712	52.2	<b><u>1714</u></b>	<b><u>52.1</u></b>	1715	52.1
482.sphinx3	8	2812	55.5	<b><u>2814</u></b>	<b><u>55.4</u></b>	2826	55.2	4	<b><u>772</u></b>	<b><u>101</u></b>	770	101	773	101

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

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
'/usr/bin/taskset' used to bind processes to CPUs  
OMP\_NUM\_THREADS set to number of cores (default).

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, for peak, are compiled in 32-bit mode



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**Test sponsor:** NEC Corporation

**Tested by:** NEC Corporation

**Test date:** Dec-2007

**Hardware Availability:** Dec-2007

**Software Availability:** Nov-2007

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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:

-fast

C++ benchmarks:

-fast

Fortran benchmarks:

-fast

Benchmarks using both Fortran and C:

-fast



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## Peak Compiler Invocation

C benchmarks (except as noted below):

```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

Fortran benchmarks (except as noted below):

ifort

```
437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib  
-I/opt/intel/fc/10.1.008/include
```

Benchmarks using both Fortran and C:

icc ifort

## 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  
444.namd: -DSPEC_CPU_LP64  
447.deall: -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  
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

## Peak Optimization Flags

C benchmarks:

```
433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32
```

```
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-scalar-rep- -prefetch -opt-malloc-options=3
```

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090714.00.html>



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You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090714.00.xml>

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Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 16:14:01 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 29 January 2008.