



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/120Rj-2  
(Intel Xeon X5470)

SPECfp®\_rate2006 = 81.5

SPECfp\_rate\_base2006 = 74.4

CPU2006 license: 9006

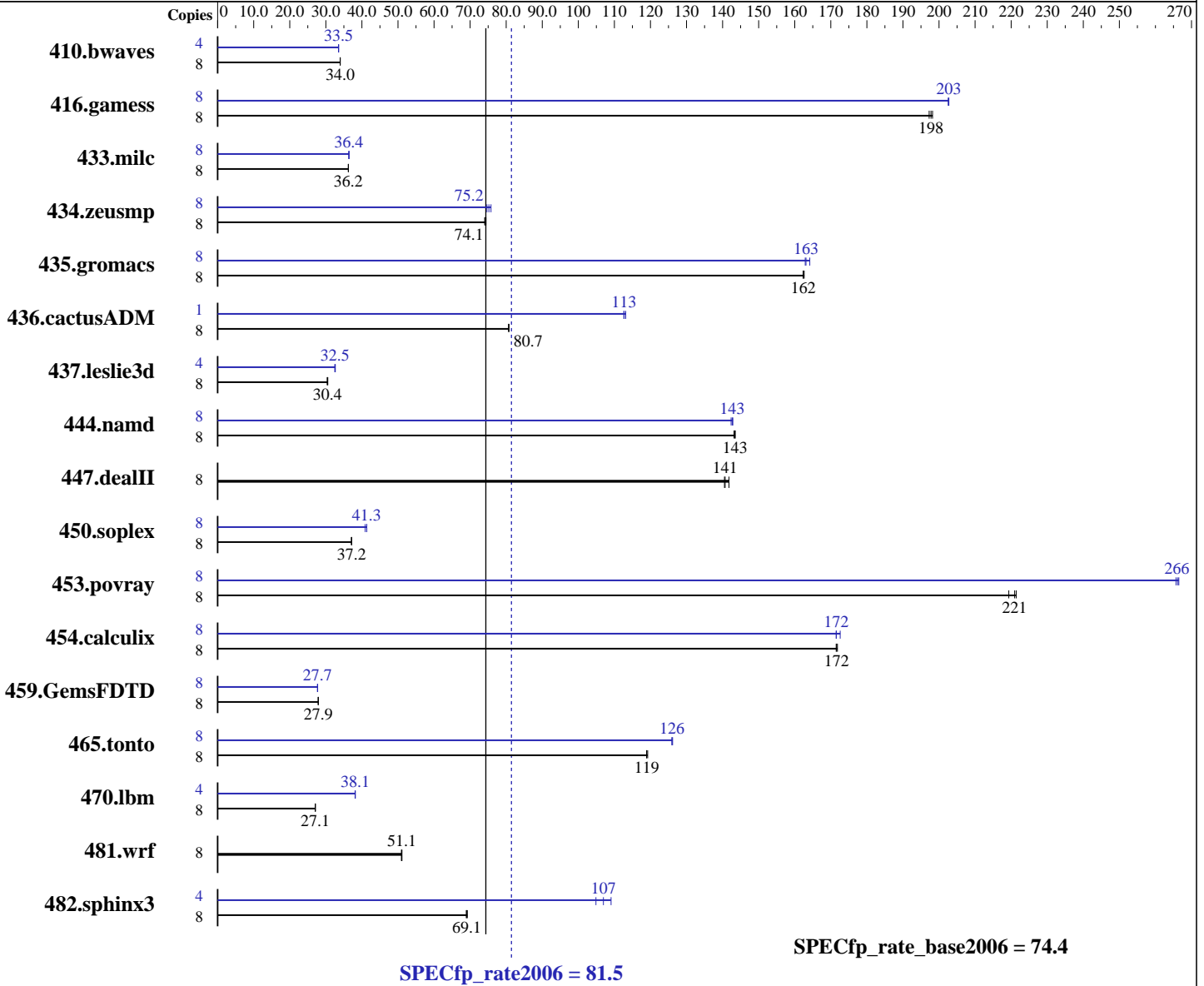
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Nov-2008

Hardware Availability: Oct-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon X5470  
 CPU Characteristics: 3.33 GHz, 2x6 MB L2 shared, 1333 MHz system bus  
 CPU MHz: 3333  
 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) SP2, Kernel 2.6.16.60-0.21-smpp  
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l\_cproc\_b\_11.0.044, l\_cprof\_b\_11.0.044  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x146.5 GB SAS, 15000RPM  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3200	34.0	3199	34.0	<b>3200</b>	<b>34.0</b>	4	<b>1621</b>	<b>33.5</b>	1623	33.5	1620	33.6
416.gamess	8	794	197	<b>792</b>	<b>198</b>	790	198	8	773	203	773	203	<b>773</b>	<b>203</b>
433.milc	8	<b>2026</b>	<b>36.2</b>	2026	36.3	2026	36.2	8	<b>2017</b>	<b>36.4</b>	2018	36.4	2017	36.4
434.zeusmp	8	979	74.4	983	74.1	<b>983</b>	<b>74.1</b>	8	975	74.7	<b>968</b>	<b>75.2</b>	961	75.8
435.gromacs	8	351	163	<b>352</b>	<b>162</b>	352	162	8	351	163	<b>350</b>	<b>163</b>	348	164
436.cactusADM	8	<b>1184</b>	<b>80.7</b>	1185	80.7	1184	80.8	1	106	113	<b>106</b>	<b>113</b>	106	113
437.leslie3d	8	2462	30.5	<b>2471</b>	<b>30.4</b>	2474	30.4	4	1157	32.5	<b>1156</b>	<b>32.5</b>	1152	32.6
444.namd	8	448	143	447	143	<b>447</b>	<b>143</b>	8	<b>450</b>	<b>143</b>	449	143	451	142
447.dealII	8	<b>650</b>	<b>141</b>	651	141	646	142	8	<b>650</b>	<b>141</b>	651	141	646	142
450.soplex	8	1794	37.2	<b>1795</b>	<b>37.2</b>	1800	37.1	8	1631	40.9	1613	41.4	<b>1614</b>	<b>41.3</b>
453.povray	8	192	221	<b>193</b>	<b>221</b>	194	219	8	160	266	<b>160</b>	<b>266</b>	160	266
454.calculix	8	<b>385</b>	<b>172</b>	384	172	385	171	8	382	173	<b>385</b>	<b>172</b>	385	172
459.GemsFDTD	8	3044	27.9	<b>3041</b>	<b>27.9</b>	3041	27.9	8	3067	27.7	<b>3063</b>	<b>27.7</b>	3060	27.7
465.tonto	8	<b>662</b>	<b>119</b>	660	119	662	119	8	624	126	625	126	<b>625</b>	<b>126</b>
470.lbm	8	4062	27.1	<b>4060</b>	<b>27.1</b>	4058	27.1	4	<b>1442</b>	<b>38.1</b>	1442	38.1	1439	38.2
481.wrf	8	1749	51.1	<b>1750</b>	<b>51.1</b>	1754	50.9	8	1749	51.1	<b>1750</b>	<b>51.1</b>	1754	50.9
482.sphinx3	8	<b>2257</b>	<b>69.1</b>	2252	69.2	2262	68.9	4	743	105	715	109	<b>729</b>	<b>107</b>

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

## Submit Notes

The config file option 'submit' was used.  
taskset was used to bind processes to cores except  
for 436.cactusADM peak

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to "physical,0"  
KMP\_STACKSIZE set to 64M



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## Platform Notes

Bios settings:  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetch: Disabled

## General Notes

The NEC Express5800/120Rh-1(Intel Xeon X5470),  
the NEC Express5800/120Rj-2(Intel Xeon X5470),  
the Bull NovaScale R440 E1(Intel Xeon X5470, 3.33 GHz) and  
the Bull NovaScale R460 E1(Intel Xeon X5470, 3.33 GHz) models are electronically equivalent.  
The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon X5470) model.

## 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.lelie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.deallI: -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



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**CPU2006 license:** 9006

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## Base Optimization Flags

C benchmarks:

`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

C++ benchmarks:

`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

Fortran benchmarks:

`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

Benchmarks using both Fortran and C:

`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

## Peak Compiler Invocation

C benchmarks (except as noted below):

`icc`

482.sphinx3: `/opt/intel/Compiler/11.0/044/bin/ia32/icc  
-L/opt/intel/Compiler/11.0/044/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/044/ipp/ia32/include`

C++ benchmarks (except as noted below):

`icpc`

450.soplex: `/opt/intel/Compiler/11.0/044/bin/ia32/icpc  
-L/opt/intel/Compiler/11.0/044/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/044/ipp/ia32/include`

Fortran benchmarks (except as noted below):

`ifort`

437.leslie3d: `/opt/intel/Compiler/11.0/044/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/044/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/044/ipp/ia32/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`

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**Software Availability:** Nov-2008

## Peak Portability Flags (Continued)

```

436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
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: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias

```

```

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
         -auto-ilp32

```

```

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

```

### C++ benchmarks:

```

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias -auto-ilp32

```

```

447.dealII: basepeak = yes

```

```

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -opt-malloc-options=3

```

```

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -unroll4 -ansi-alias

```

### Fortran benchmarks:

```

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

```

```

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -unroll2 -Ob0 -ansi-alias
         -scalar-rep-

```

```

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static

```

```

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

```

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## Peak Optimization Flags (Continued)

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

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-ic11.0-fp-linux64-revD.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revD.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml>

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

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