



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

Express5800/B140a-T  
(Intel Xeon E7450)

SPECfp<sup>®</sup>\_rate2006 = 71.8

SPECfp\_rate\_base2006 = 66.2

CPU2006 license: 9006

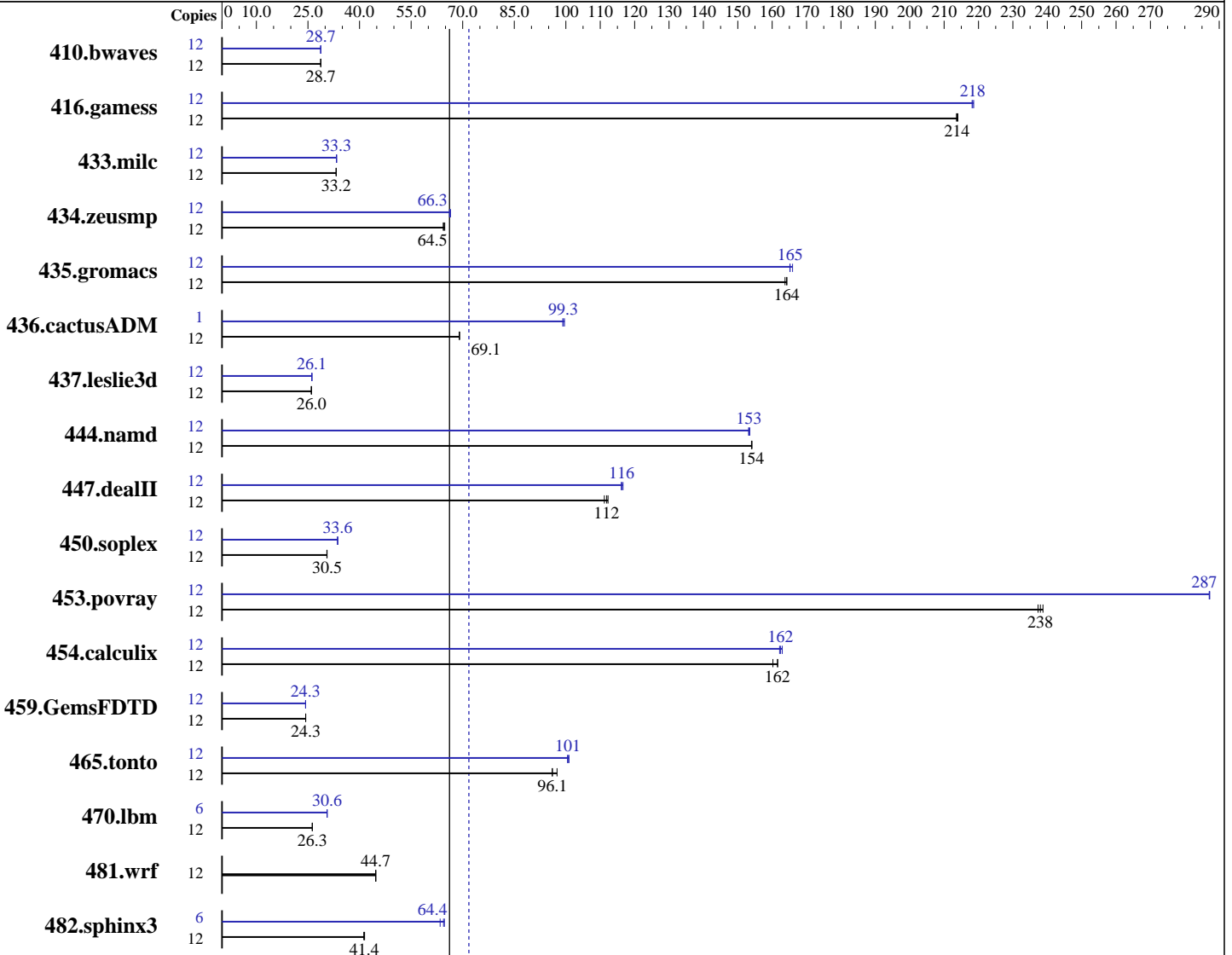
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Feb-2009

Hardware Availability: Feb-2009

Software Availability: Nov-2008



SPECfp\_rate2006 = 71.8

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### Hardware

CPU Name: Intel Xeon E7450  
 CPU Characteristics: 1066 MHz system bus  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip  
 CPU(s) orderable: 1,2,3,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 9 MB I+D on chip per chip, 3 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 20081105 Package ID: l\_cproc\_p\_11.0.074, l\_cprof\_p\_11.0.074  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip  
Other Cache: None  
Memory: 32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x146.5 GB SAS, 10000 RPM  
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	12	5668	28.8	5681	28.7	<b>5680</b>	<b>28.7</b>	12	5678	28.7	<b>5680</b>	<b>28.7</b>	5681	28.7
416.gamess	12	1098	214	1100	214	<b>1099</b>	<b>214</b>	12	<b>1076</b>	<b>218</b>	1077	218	1075	219
433.milc	12	3320	33.2	3316	33.2	<b>3317</b>	<b>33.2</b>	12	3307	33.3	3308	33.3	<b>3308</b>	<b>33.3</b>
434.zeusmp	12	1686	64.8	1698	64.3	<b>1692</b>	<b>64.5</b>	12	1643	66.5	1650	66.2	<b>1647</b>	<b>66.3</b>
435.gromacs	12	522	164	523	164	<b>522</b>	<b>164</b>	12	519	165	516	166	<b>519</b>	<b>165</b>
436.cactusADM	12	2078	69.0	2076	69.1	<b>2077</b>	<b>69.1</b>	1	121	99.1	<b>120</b>	<b>99.3</b>	120	99.6
437.leslie3d	12	4332	26.0	4342	26.0	<b>4340</b>	<b>26.0</b>	12	4315	26.1	4316	26.1	<b>4315</b>	<b>26.1</b>
444.namd	12	625	154	624	154	<b>625</b>	<b>154</b>	12	628	153	<b>628</b>	<b>153</b>	627	153
447.dealII	12	1223	112	<b>1227</b>	<b>112</b>	1235	111	12	1177	117	1182	116	<b>1181</b>	<b>116</b>
450.soplex	12	<b>3277</b>	<b>30.5</b>	3282	30.5	3276	30.6	12	<b>2974</b>	<b>33.6</b>	2980	33.6	2974	33.7
453.povray	12	<b>268</b>	<b>238</b>	269	237	267	239	12	222	287	222	287	<b>222</b>	<b>287</b>
454.calculix	12	613	162	618	160	<b>613</b>	<b>162</b>	12	608	163	<b>609</b>	<b>162</b>	611	162
459.GemsFDTD	12	5232	24.3	5229	24.3	<b>5232</b>	<b>24.3</b>	12	5239	24.3	<b>5235</b>	<b>24.3</b>	5235	24.3
465.tonto	12	1230	96.0	1212	97.4	<b>1229</b>	<b>96.1</b>	12	1175	100	1170	101	<b>1173</b>	<b>101</b>
470.lbm	12	6276	26.3	<b>6276</b>	<b>26.3</b>	6276	26.3	6	2697	30.6	<b>2697</b>	<b>30.6</b>	2698	30.6
481.wrf	12	<b>2998</b>	<b>44.7</b>	2999	44.7	2997	44.7	12	<b>2998</b>	<b>44.7</b>	2999	44.7	2997	44.7
482.sphinx3	12	5672	41.2	<b>5654</b>	<b>41.4</b>	5640	41.5	6	<b>1815</b>	<b>64.4</b>	1808	64.7	1843	63.4

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  
For peak modules using 1/2 the number of available cores, copies were each assigned to a single L2 cache using mysubmit.pl script.  
See the flags description file for mysubmit.pl details.

## 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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**Test date:** Feb-2009  
**Hardware Availability:** Feb-2009  
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## Platform Notes

Bios settings:  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetch: Disabled  
FSB High Bandwidth Optimization: Enabled

## 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:  
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
  
C++ benchmarks:  
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

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/11.0/074/bin/ia32/icc  
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/074/ipp/ia32/include

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/Compiler/11.0/074/bin/ia32/icpc  
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/074/ipp/ia32/include

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: /opt/intel/Compiler/11.0/074/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/074/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  
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

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## 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

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

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

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

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## Peak Optimization Flags (Continued)

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-revG.html>

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

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revD.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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