



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

Express5800/120Rj-2  
(Intel Xeon processor E5405)

SPECfp<sup>®</sup>\_rate2006 = 62.2

SPECfp\_rate\_base2006 = 56.4

CPU2006 license: 9006

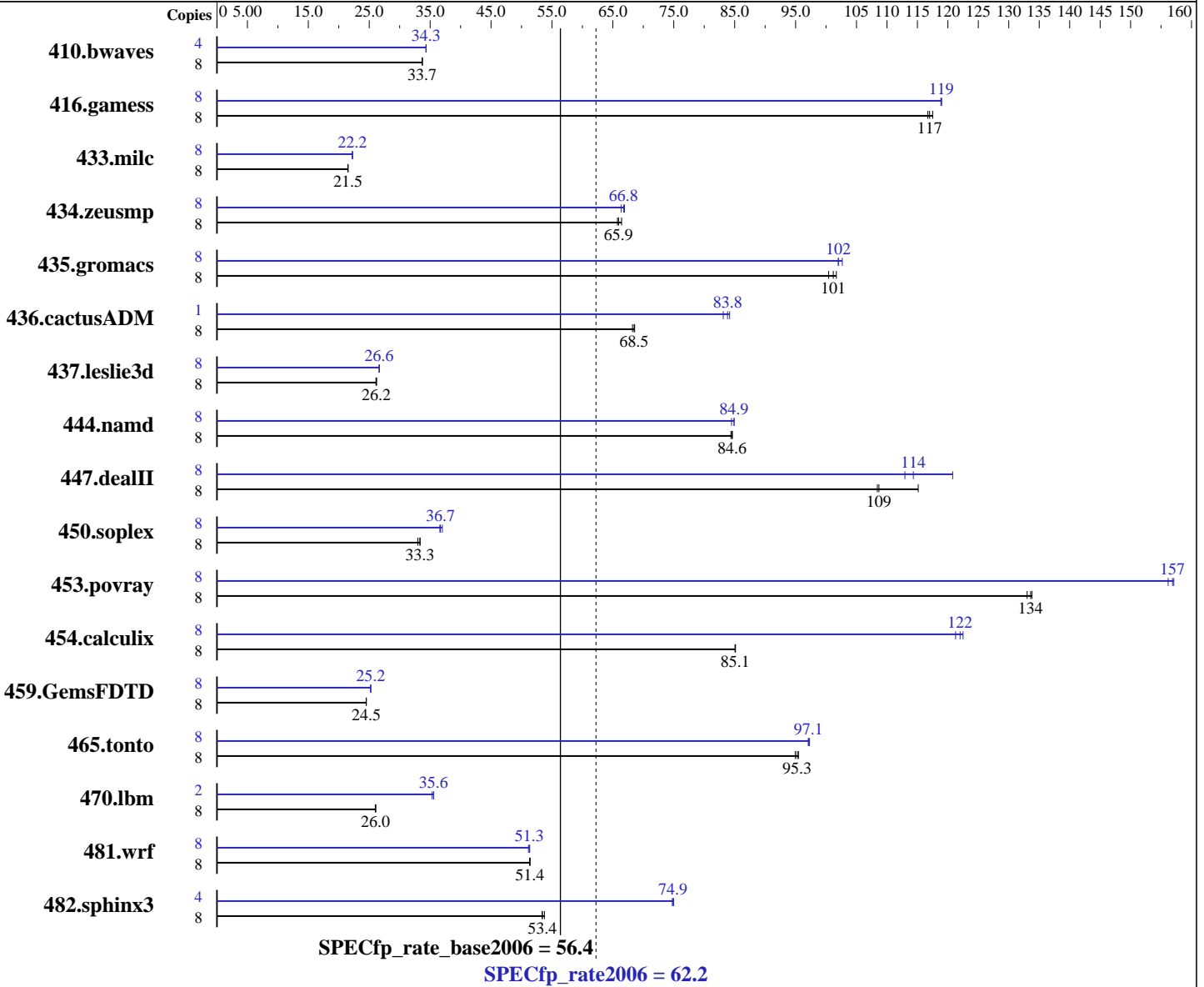
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Jan-2008

Hardware Availability: Dec-2007

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5405  
 CPU Characteristics: 2.00 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 2000  
 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 for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2

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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, 15000RPM  
Other Hardware: None

System State: Multiuser, Runlevel 3  
Base Pointers: 64-bit  
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	3224	33.7	3226	33.7	<b><u>3225</u></b>	<b><u>33.7</u></b>	4	1583	34.3	1583	34.3	<b><u>1583</u></b>	<b><u>34.3</u></b>
416.gamess	8	1342	117	1333	118	<b><u>1339</u></b>	<b><u>117</u></b>	8	1317	119	1318	119	<b><u>1317</u></b>	<b><u>119</u></b>
433.milc	8	3415	21.5	<b><u>3413</u></b>	<b><u>21.5</u></b>	3412	21.5	8	3301	22.2	<b><u>3302</u></b>	<b><u>22.2</u></b>	3302	22.2
434.zeusmp	8	1107	65.8	<b><u>1104</u></b>	<b><u>65.9</u></b>	1096	66.4	8	1088	66.9	1097	66.4	<b><u>1090</u></b>	<b><u>66.8</u></b>
435.gromacs	8	562	102	569	100	<b><u>564</u></b>	<b><u>101</u></b>	8	<b><u>560</u></b>	<b><u>102</u></b>	560	102	556	103
436.cactusADM	8	<b><u>1396</u></b>	<b><u>68.5</u></b>	1401	68.2	1394	68.6	1	144	83.1	142	84.2	<b><u>143</u></b>	<b><u>83.8</u></b>
437.leslie3d	8	2881	26.1	2869	26.2	<b><u>2874</u></b>	<b><u>26.2</u></b>	8	<b><u>2824</u></b>	<b><u>26.6</u></b>	2824	26.6	2820	26.7
444.namd	8	760	84.4	<b><u>759</u></b>	<b><u>84.6</u></b>	758	84.6	8	<b><u>756</u></b>	<b><u>84.9</u></b>	756	84.9	759	84.5
447.dealII	8	<b><u>842</u></b>	<b><u>109</u></b>	795	115	844	108	8	810	113	758	121	<b><u>801</u></b>	<b><u>114</u></b>
450.soplex	8	2022	33.0	<b><u>2003</u></b>	<b><u>33.3</u></b>	2000	33.4	8	1823	36.6	<b><u>1819</u></b>	<b><u>36.7</u></b>	1803	37.0
453.povray	8	<b><u>319</u></b>	<b><u>134</u></b>	320	133	318	134	8	273	156	271	157	<b><u>271</u></b>	<b><u>157</u></b>
454.calculix	8	775	85.1	776	85.1	<b><u>776</u></b>	<b><u>85.1</u></b>	8	<b><u>541</u></b>	<b><u>122</u></b>	539	122	544	121
459.GemsFDTD	8	3460	24.5	3465	24.5	<b><u>3463</u></b>	<b><u>24.5</u></b>	8	3367	25.2	3359	25.3	<b><u>3364</u></b>	<b><u>25.2</u></b>
465.tonto	8	824	95.5	<b><u>826</u></b>	<b><u>95.3</u></b>	829	94.9	8	<b><u>810</u></b>	<b><u>97.1</u></b>	809	97.3	811	97.1
470.lbm	8	4229	26.0	<b><u>4222</u></b>	<b><u>26.0</u></b>	4214	26.1	2	<b><u>773</u></b>	<b><u>35.6</u></b>	778	35.3	772	35.6
481.wrf	8	1740	51.4	<b><u>1740</u></b>	<b><u>51.4</u></b>	1739	51.4	8	1747	51.1	<b><u>1742</u></b>	<b><u>51.3</u></b>	1740	51.4
482.sphinx3	8	<b><u>2919</u></b>	<b><u>53.4</u></b>	2919	53.4	2900	53.8	4	1043	74.8	<b><u>1041</u></b>	<b><u>74.9</u></b>	1040	75.0

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).

## Platform Notes

Bios settings:  
Intel SpeedStep Technology: Disabled



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**SPECfp\_rate\_base2006 = 56.4**

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**Test date:** Jan-2008

**Hardware Availability:** Dec-2007

**Software Availability:** Nov-2007

## 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

The NEC Express5800/120Rh-1(Intel Xeon Processor E5405), the NEC Express5800/120Rj-2(Intel Xeon Processor E5405), the Bull NovaScale R440 E1 (Intel Xeon E5405,2.00GHz) and the Bull NovaScale R460 E1 (Intel Xeon E5405,2.00GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Processor E5405) 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.leslie3d: -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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## Base Optimization Flags

C benchmarks:

-fast

C++ benchmarks:

-fast

Fortran benchmarks:

-fast

Benchmarks using both Fortran and C:

-fast

## 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.dealII: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

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

482.sphinx3: -fast -unroll2

C++ benchmarks:

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

447.dealII: -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

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## Peak Optimization Flags (Continued)

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.20090714.01.html>

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.20090714.01.xml>

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