



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

Express5800/120Rh-1  
(Intel Xeon E5405)

SPECfp<sup>®</sup>\_rate2006 = 35.0

SPECfp\_rate\_base2006 = 32.2

CPU2006 license: 9006

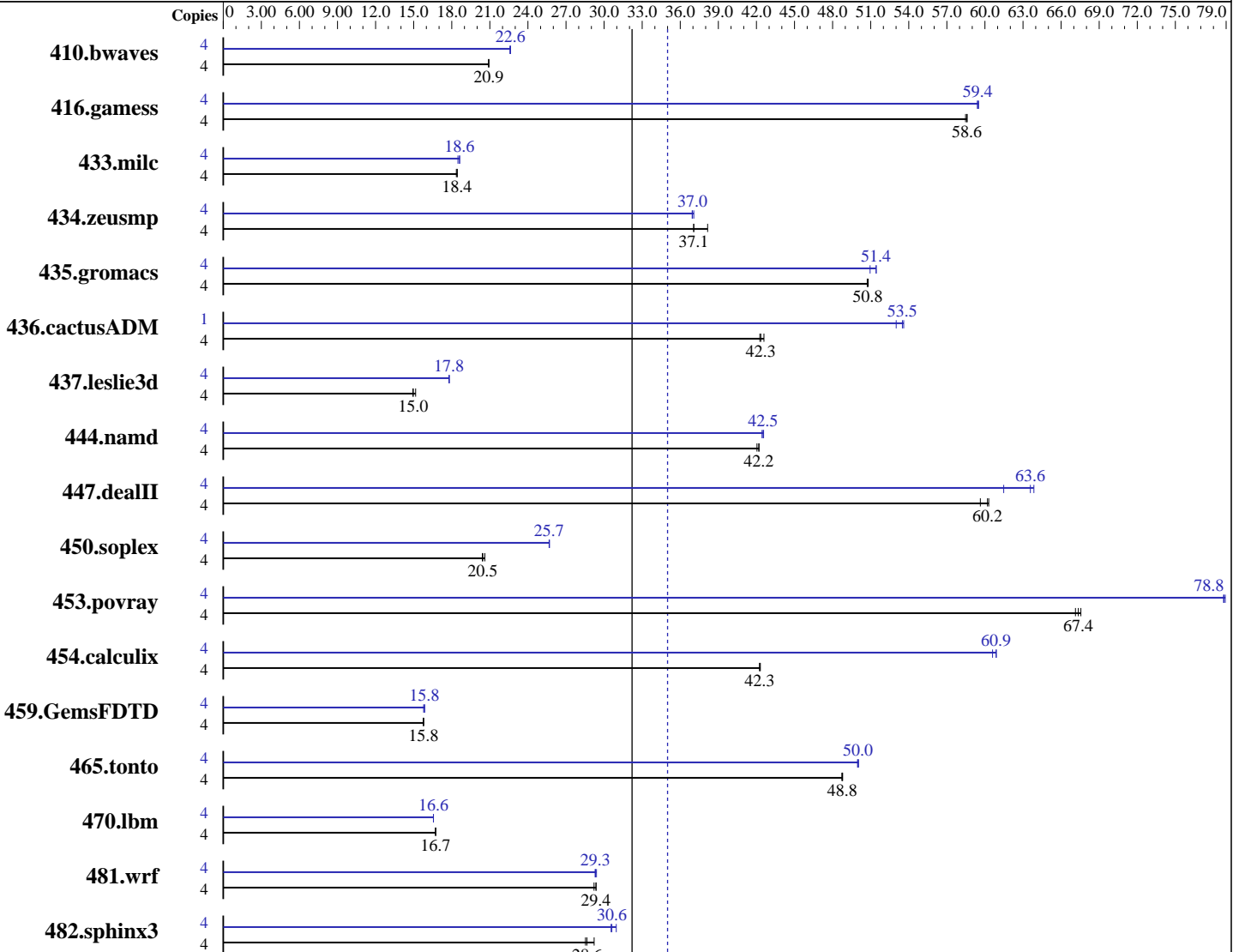
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2008

Hardware Availability: Apr-2008

Software Availability: Nov-2007



SPECfp\_rate\_base2006 = 32.2

SPECfp\_rate2006 = 35.0

### 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: 4 cores, 1 chip, 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: ReiserFS

Continued on next page



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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: 1x73.2 GB SAS, 15000RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
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	4	<u>2599</u>	<u>20.9</u>	2599	20.9	2600	20.9	4	2407	22.6	2402	22.6	<u>2404</u>	<u>22.6</u>
416.gamess	4	1339	58.5	1337	58.6	<u>1337</u>	<u>58.6</u>	4	1318	59.4	1316	59.5	<u>1318</u>	<u>59.4</u>
433.milc	4	<u>1993</u>	<u>18.4</u>	1992	18.4	2000	18.4	4	1986	18.5	1972	18.6	<u>1973</u>	<u>18.6</u>
434.zeusmp	4	954	38.2	982	37.1	<u>982</u>	<u>37.1</u>	4	<u>985</u>	<u>37.0</u>	982	37.1	985	36.9
435.gromacs	4	<u>563</u>	<u>50.8</u>	562	50.8	563	50.7	4	561	51.0	<u>555</u>	<u>51.4</u>	555	51.4
436.cactusADM	4	<u>1129</u>	<u>42.3</u>	1122	42.6	1131	42.3	1	<u>223</u>	<u>53.5</u>	223	53.6	225	53.0
437.leslie3d	4	<u>2512</u>	<u>15.0</u>	2481	15.2	2516	14.9	4	<u>2113</u>	<u>17.8</u>	2113	17.8	2113	17.8
444.namd	4	760	42.2	<u>760</u>	<u>42.2</u>	763	42.0	4	<u>754</u>	<u>42.5</u>	754	42.6	756	42.4
447.dealII	4	759	60.3	<u>760</u>	<u>60.2</u>	767	59.6	4	717	63.9	744	61.5	<u>720</u>	<u>63.6</u>
450.soplex	4	1619	20.6	<u>1631</u>	<u>20.5</u>	1635	20.4	4	1298	25.7	1300	25.7	<u>1299</u>	<u>25.7</u>
453.povray	4	<u>316</u>	<u>67.4</u>	315	67.6	317	67.1	4	270	78.8	270	78.9	<u>270</u>	<u>78.8</u>
454.calculix	4	781	42.2	780	42.3	<u>781</u>	<u>42.3</u>	4	<u>542</u>	<u>60.9</u>	542	60.9	545	60.6
459.GemsFDTD	4	2694	15.8	2687	15.8	<u>2691</u>	<u>15.8</u>	4	<u>2678</u>	<u>15.8</u>	2689	15.8	2675	15.9
465.tonto	4	808	48.7	<u>807</u>	<u>48.8</u>	807	48.8	4	<u>787</u>	<u>50.0</u>	788	50.0	787	50.0
470.lbm	4	3286	16.7	<u>3286</u>	<u>16.7</u>	3285	16.7	4	3319	16.6	3320	16.6	<u>3319</u>	<u>16.6</u>
481.wrf	4	<u>1522</u>	<u>29.4</u>	1530	29.2	1521	29.4	4	1520	29.4	1525	29.3	<u>1524</u>	<u>29.3</u>
482.sphinx3	4	2669	29.2	<u>2721</u>	<u>28.6</u>	2732	28.5	4	<u>2547</u>	<u>30.6</u>	2552	30.6	2518	31.0

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  
except for 436.cactusADM at peak.  
OMP\_NUM\_THREADS set to number of cores

## Platform Notes

Bios settings:  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetch: Disabled  
Intel SpeedStep Technology: Disabled



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**Test date:** May-2008

**Hardware Availability:** Apr-2008

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## 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 E5405) and the NEC Express5800/120Rj-2(Intel Xeon E5405) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon 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.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

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## Base Optimization Flags (Continued)

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  
453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
459.GemsFDTD: -DSPEC\_CPU\_LP64

Continued on next page



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## Peak Portability Flags (Continued)

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

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

Benchmarks using both Fortran and C:

Continued on next page



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## Peak Optimization Flags (Continued)

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.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.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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