



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/120Lj  
(Intel Xeon E5440)

SPECfp®\_rate2006 = 71.2

SPECfp\_rate\_base2006 = 64.6

CPU2006 license: 9006

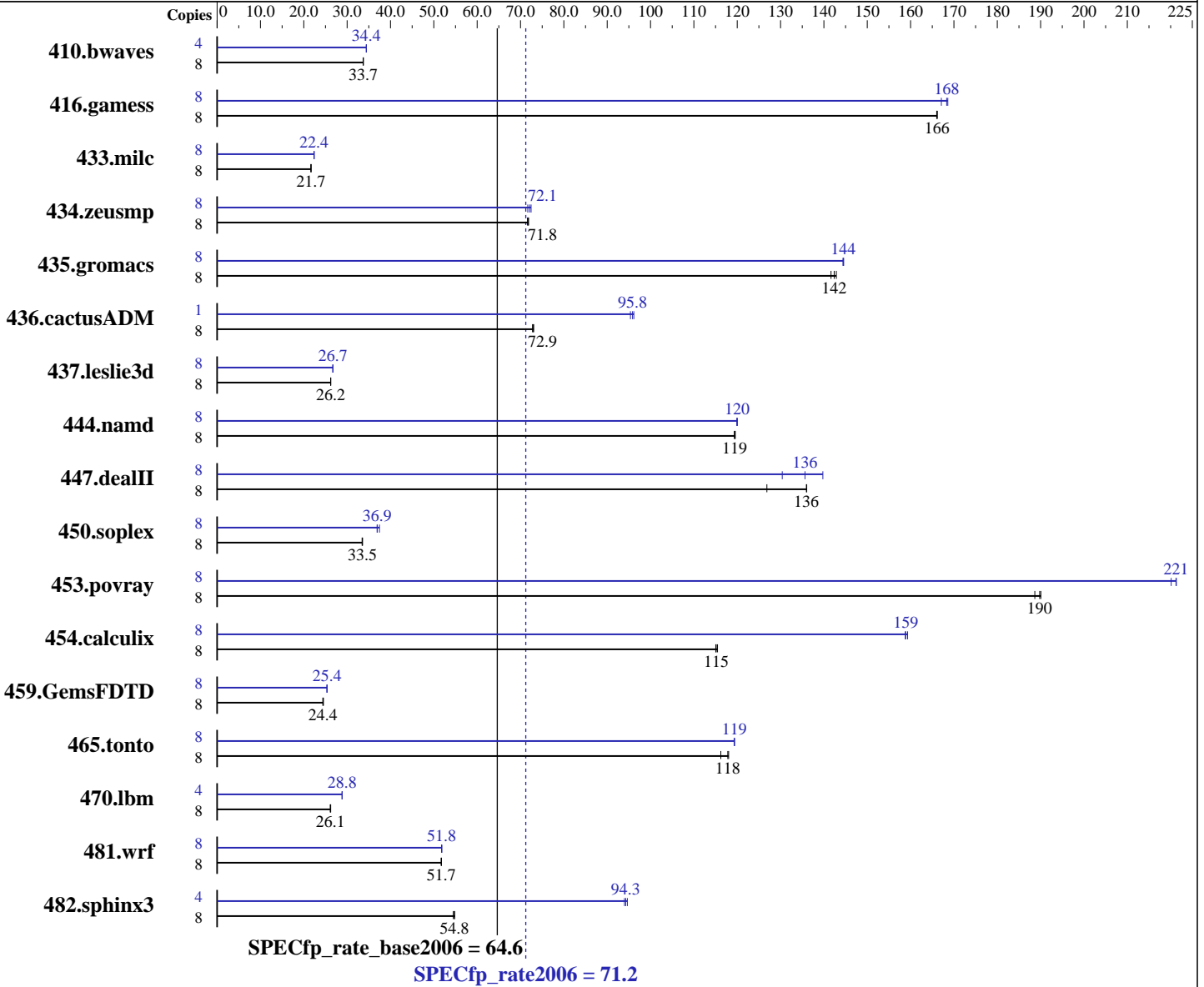
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Apr-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5440  
 CPU Characteristics: 2.83 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 2833  
 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: 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	8	3224	33.7	<b><u>3224</u></b>	<b><u>33.7</u></b>	3225	33.7	4	1579	34.4	1579	34.4	<b><u>1579</u></b>	<b><u>34.4</u></b>
416.gamess	8	943	166	943	166	<b><u>943</u></b>	<b><u>166</u></b>	8	937	167	<b><u>931</u></b>	<b><u>168</u></b>	929	169
433.milc	8	3390	21.7	3391	21.7	<b><u>3390</u></b>	<b><u>21.7</u></b>	8	<b><u>3283</u></b>	<b><u>22.4</u></b>	3283	22.4	3281	22.4
434.zeusmp	8	1017	71.6	<b><u>1015</u></b>	<b><u>71.8</u></b>	1013	71.9	8	<b><u>1010</u></b>	<b><u>72.1</u></b>	1005	72.4	1016	71.7
435.gromacs	8	<b><u>401</u></b>	<b><u>142</u></b>	403	142	400	143	8	396	144	<b><u>395</u></b>	<b><u>144</u></b>	395	145
436.cactusADM	8	<b><u>1311</u></b>	<b><u>72.9</u></b>	1314	72.8	1309	73.0	1	124	96.2	125	95.4	<b><u>125</u></b>	<b><u>95.8</u></b>
437.leslie3d	8	<b><u>2869</u></b>	<b><u>26.2</u></b>	2871	26.2	2869	26.2	8	2815	26.7	<b><u>2815</u></b>	<b><u>26.7</u></b>	2814	26.7
444.namd	8	537	120	538	119	<b><u>537</u></b>	<b><u>119</u></b>	8	<b><u>535</u></b>	<b><u>120</u></b>	535	120	535	120
447.dealII	8	673	136	721	127	<b><u>673</u></b>	<b><u>136</u></b>	8	655	140	702	130	<b><u>675</u></b>	<b><u>136</u></b>
450.soplex	8	1995	33.4	<b><u>1990</u></b>	<b><u>33.5</u></b>	1989	33.5	8	1807	36.9	<b><u>1806</u></b>	<b><u>36.9</u></b>	1781	37.5
453.povray	8	224	190	226	189	<b><u>224</u></b>	<b><u>190</u></b>	8	<b><u>192</u></b>	<b><u>221</u></b>	192	221	193	220
454.calculix	8	<b><u>573</u></b>	<b><u>115</u></b>	572	115	574	115	8	414	159	416	159	<b><u>415</u></b>	<b><u>159</u></b>
459.GemsFDTD	8	3460	24.5	<b><u>3475</u></b>	<b><u>24.4</u></b>	3477	24.4	8	3345	25.4	3351	25.3	<b><u>3345</u></b>	<b><u>25.4</u></b>
465.tonto	8	<b><u>668</u></b>	<b><u>118</u></b>	677	116	667	118	8	<b><u>660</u></b>	<b><u>119</u></b>	659	119	660	119
470.lbm	8	4194	26.2	<b><u>4205</u></b>	<b><u>26.1</u></b>	4208	26.1	4	1906	28.8	1905	28.9	<b><u>1905</u></b>	<b><u>28.8</u></b>
481.wrf	8	<b><u>1727</u></b>	<b><u>51.7</u></b>	1727	51.8	1728	51.7	8	1724	51.8	1725	51.8	<b><u>1724</u></b>	<b><u>51.8</u></b>
482.sphinx3	8	<b><u>2847</u></b>	<b><u>54.8</u></b>	2862	54.5	2845	54.8	4	<b><u>827</u></b>	<b><u>94.3</u></b>	824	94.7	830	94.0

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

## Compiler Invocation Notes

OMP\_NUM\_THREADS set to number of cores

## 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

## Platform Notes

Bios settings:  
Intel SpeedStep Technology: Disabled



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**Hardware Availability:** Jan-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 Express5800/120Lj(Intel Xeon E5440) and the Bull NovaScale T860 E1(Intel Xeon E5440,2.83GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Lj(Intel Xeon E5440) 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

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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:

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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.20090714.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.xml>

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