# SPEC® CFP2006 Result

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## NEC Corporation

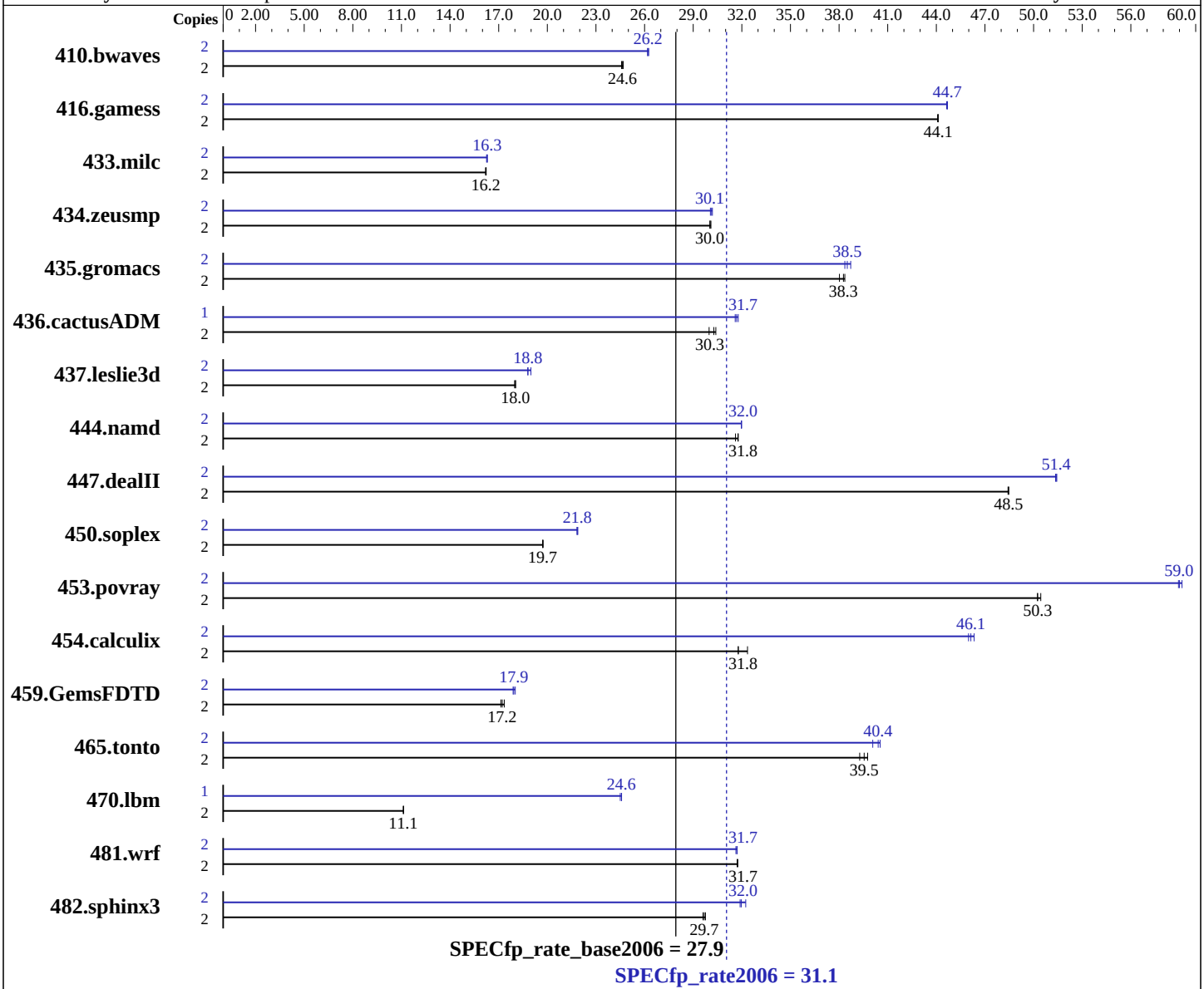
Express5800/i120Ra-e1
(Intel Xeon L5240)

**SPECfp®_rate2006 = 31.1**

**SPECfp_rate_base2006 = 27.9**

**CPU2006 license:** 9006
**Test sponsor:** NEC Corporation
**Tested by:** NEC Corporation

**Test date:** Jul-2008
**Hardware Availability:** May-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon L5240 |
| CPU Characteristics: | 3.00 GHz, 6 MB L2, 1333 MHz bus |
| CPU MHz: | 3000 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 6 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| 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 |

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L3 Cache: None
Other Cache: None
Memory: 16 GB (4x4 GB PC2-5300P, 2 rank, CL5-5-5, ECC)
Disk Subsystem: 1x80.0 GB SATAII, 7200RPM
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 | 2 | 1106 | 24.6 | **1103** | **24.6** | 1101 | 24.7 | 2 | **1037** | **26.2** | 1038 | 26.2 | 1035 | 26.3 |
| 416.gamess | 2 | 888 | 44.1 | **888** | **44.1** | 888 | 44.1 | 2 | **876** | **44.7** | 877 | 44.6 | 876 | 44.7 |
| 433.milc | 2 | 1131 | 16.2 | 1134 | 16.2 | **1132** | **16.2** | 2 | **1127** | **16.3** | 1126 | 16.3 | 1130 | 16.3 |
| 434.zeusmp | 2 | 606 | 30.0 | **606** | **30.0** | 605 | 30.1 | 2 | 603 | 30.2 | 605 | 30.1 | **604** | **30.1** |
| 435.gromacs | 2 | 372 | 38.4 | **373** | **38.3** | 376 | 38.0 | 2 | 372 | 38.4 | 369 | 38.7 | **371** | **38.5** |
| 436.cactusADM | 2 | **789** | **30.3** | 786 | 30.4 | 797 | 30.0 | 1 | 378 | 31.6 | 376 | 31.8 | **377** | **31.7** |
| 437.leslie3d | 2 | 1046 | 18.0 | **1043** | **18.0** | 1042 | 18.0 | 2 | **1000** | **18.8** | 990 | 19.0 | 1000 | 18.8 |
| 444.namd | 2 | 507 | 31.6 | **505** | **31.8** | 505 | 31.8 | 2 | 502 | 32.0 | 502 | 32.0 | **502** | **32.0** |
| 447.dealII | 2 | 473 | 48.4 | 472 | 48.5 | **472** | **48.5** | 2 | 445 | 51.4 | **445** | **51.4** | 446 | 51.4 |
| 450.soplex | 2 | 845 | 19.7 | **846** | **19.7** | 846 | 19.7 | 2 | 764 | 21.8 | 762 | 21.9 | **763** | **21.8** |
| 453.povray | 2 | 211 | 50.4 | **212** | **50.3** | 212 | 50.2 | 2 | **180** | **59.0** | 181 | 58.9 | 180 | 59.2 |
| 454.calculix | 2 | 519 | 31.8 | **519** | **31.8** | 510 | 32.3 | 2 | 356 | 46.3 | 359 | 46.0 | **358** | **46.1** |
| 459.GemsFDTD | 2 | 1238 | 17.1 | 1224 | 17.3 | **1232** | **17.2** | 2 | 1186 | 17.9 | **1183** | **17.9** | 1177 | 18.0 |
| 465.tonto | 2 | 495 | 39.8 | 501 | 39.3 | **498** | **39.5** | 2 | **487** | **40.4** | 491 | 40.1 | 486 | 40.5 |
| 470.lbm | 2 | 2469 | 11.1 | 2471 | 11.1 | **2471** | **11.1** | 1 | 561 | 24.5 | **559** | **24.6** | 559 | 24.6 |
| 481.wrf | 2 | **704** | **31.7** | 705 | 31.7 | 704 | 31.7 | 2 | 706 | 31.6 | 704 | 31.7 | **705** | **31.7** |
| 482.sphinx3 | 2 | **1313** | **29.7** | 1310 | 29.8 | 1317 | 29.6 | 2 | **1219** | **32.0** | 1209 | 32.2 | 1222 | 31.9 |

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:          Enabled
Adjacent Cache Line Prefetch: Enabled
Intel SpeedStep Technology:   Disabled
```

## 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
```

## 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

C++ benchmarks:
-fast

Continued on next page

## Base Optimization Flags (Continued)

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
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:

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`

Continued on next page

# Peak Optimization Flags (Continued)

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.

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