# SPEC® CFP2006 Result
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## NEC Corporation

Express5800/120Ei
(Intel Xeon X5450)

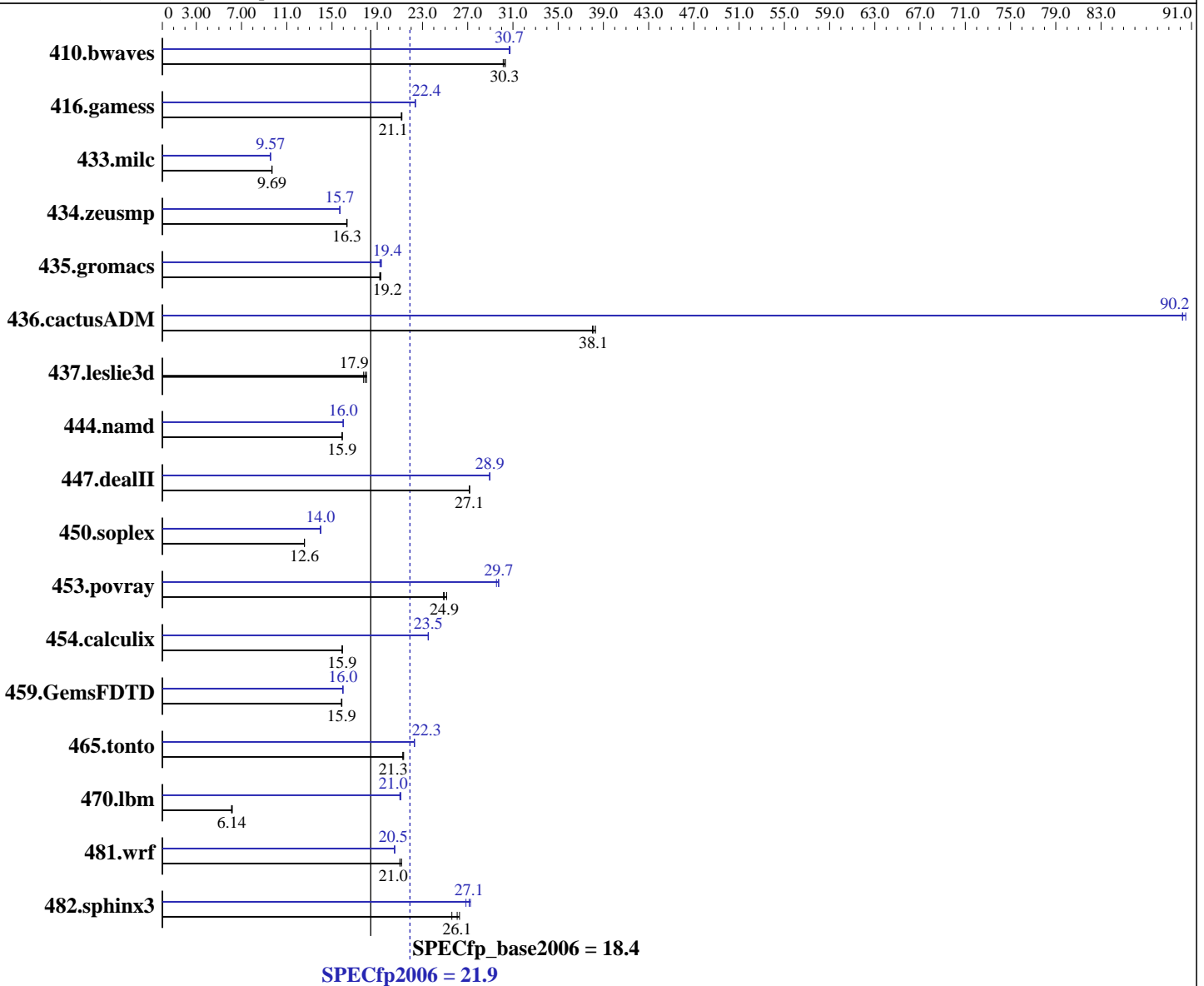$SPECfp^{®}2006 =$ 21.9

$SPECfp\_base2006 =$ 18.4

| | | | |
|---|---|---|---|
| **CPU2006 license:** 9006 | | **Test date:** | Apr-2008 |
| **Test sponsor:** | NEC Corporation | **Hardware Availability:** | Apr-2008 |
| **Tested by:** | NEC Corporation | **Software Availability:** | Nov-2007 |



SPECfp_base2006 = 18.4

SPECfp2006 = 21.9

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5450 |
| CPU Characteristics: | 3.00 GHz, 2x6 MB L2 shared, 1333 MHz bus |
| CPU MHz: | 3000 |
| 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-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: | ext2 |

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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: | 1x250 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 Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Peak Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 410.bwaves | 451 | 30.1 | 448 | 30.3 | **449** | **30.3** | 442 | 30.8 | 443 | 30.7 | **443** | **30.7** |
| 416.gamess | 926 | 21.1 | 924 | 21.2 | **926** | **21.1** | 876 | 22.4 | **875** | **22.4** | 875 | 22.4 |
| 433.milc | 947 | 9.69 | 947 | 9.70 | **947** | **9.69** | **960** | **9.57** | 960 | 9.57 | 961 | 9.55 |
| 434.zeusmp | **558** | **16.3** | 558 | 16.3 | 557 | 16.3 | 579 | 15.7 | **580** | **15.7** | 580 | 15.7 |
| 435.gromacs | 370 | 19.3 | **371** | **19.2** | 371 | 19.2 | 371 | 19.2 | **369** | **19.4** | 369 | 19.4 |
| 436.cactusADM | 312 | 38.3 | **313** | **38.1** | 314 | 38.0 | **132** | **90.2** | 132 | 90.5 | 132 | 90.2 |
| 437.leslie3d | **524** | **17.9** | 528 | 17.8 | 520 | 18.1 | **524** | **17.9** | 528 | 17.8 | 520 | 18.1 |
| 444.namd | 504 | 15.9 | **504** | **15.9** | 504 | 15.9 | 502 | 16.0 | **501** | **16.0** | 501 | 16.0 |
| 447.dealII | 421 | 27.1 | **421** | **27.1** | 421 | 27.2 | 395 | 29.0 | **395** | **28.9** | 395 | 28.9 |
| 450.soplex | 664 | 12.6 | 664 | 12.6 | **664** | **12.6** | **596** | **14.0** | 595 | 14.0 | 597 | 14.0 |
| 453.povray | 212 | 25.1 | 214 | 24.9 | **213** | **24.9** | 180 | 29.5 | **179** | **29.7** | 179 | 29.7 |
| 454.calculix | 519 | 15.9 | 518 | 15.9 | **519** | **15.9** | 351 | 23.5 | 351 | 23.5 | **351** | **23.5** |
| 459.GemsFDTD | 670 | 15.8 | **669** | **15.9** | 668 | 15.9 | 665 | 16.0 | 664 | 16.0 | **664** | **16.0** |
| 465.tonto | 461 | 21.3 | **462** | **21.3** | 463 | 21.3 | 441 | 22.3 | 442 | 22.3 | **442** | **22.3** |
| 470.lbm | 2247 | 6.12 | **2236** | **6.14** | 2221 | 6.19 | **653** | **21.0** | 654 | 21.0 | 652 | 21.1 |
| 481.wrf | 532 | 21.0 | 528 | 21.2 | **531** | **21.0** | 544 | 20.5 | 544 | 20.6 | **544** | **20.5** |
| 482.sphinx3 | 742 | 26.3 | 761 | 25.6 | **748** | **26.1** | 715 | 27.2 | 726 | 26.8 | **718** | **27.1** |

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
```

## Platform Notes

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

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## General Notes

```
All benchmarks compiled in 64-bit mode except 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 -parallel

C++ benchmarks:
    -fast -parallel

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# Base Optimization Flags (Continued)

Fortran benchmarks:
```
-fast -parallel
```

Benchmarks using both Fortran and C:
```
-fast -parallel
```

# 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:
```
ifort
```

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
   437.leslie3d: -DSPEC_CPU_LP64
      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
```

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## 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 -parallel`
>
> 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: `basepeak = yes`
>
> 459.GemsFDTD: `-prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch -parallel`
>
> 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`

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# Peak Optimization Flags (Continued)

481.wrf: `-fast -parallel -prefetch -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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