SPEC® CFP2006 Result
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NEC Corporation

Express5800/120Lj
(Intel Xeon E5405)

$SPECfp^{®}_rate2006 = $ 35.0

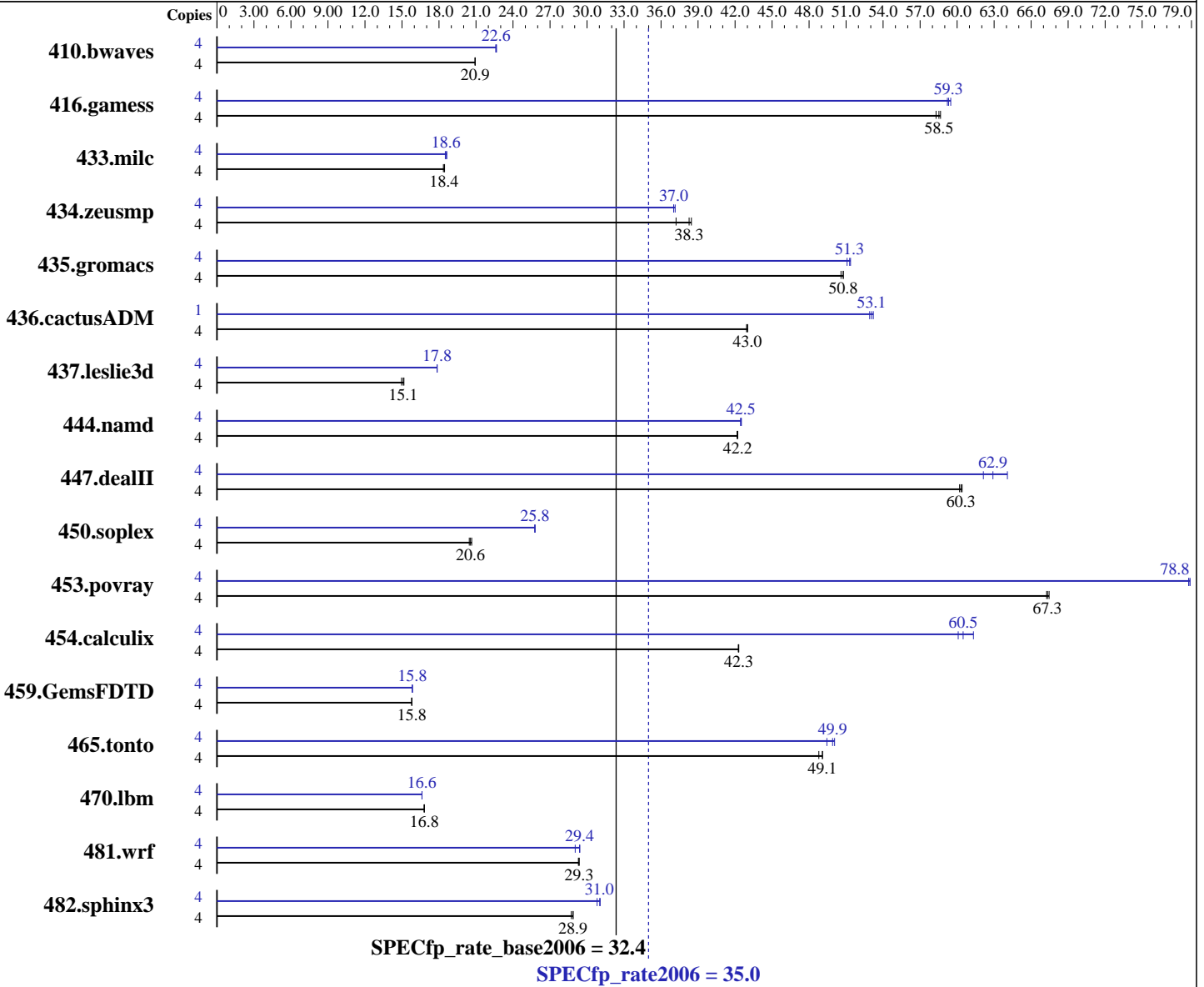$SPECfp_rate_base2006 = $ 32.4

CPU2006 license: 9006

Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2008

Hardware Availability: Apr-2008

Software Availability: Nov-2007

	Copies	
410.bwaves	4	22.6
	4	20.9
416.gamess	4	59.3
	4	58.5
433.milc	4	18.6
	4	18.4
434.zeusmp	4	37.0
	4	38.3
435.gromacs	4	51.3
	4	50.8
436.cactusADM	1	53.1
	4	43.0
437.leslie3d	4	17.8
	4	15.1
444.namd	4	42.5
	4	42.2
447.dealII	4	62.9
	4	60.3
450.soplex	4	25.8
	4	20.6
453.povray	4	78.8
	4	67.3
454.calculix	4	60.5
	4	42.3
459.GemsFDTD	4	15.8
	4	15.8
465.tonto	4	49.9
	4	49.1
470.lbm	4	16.6
	4	16.8
481.wrf	4	29.4
	4	29.3
482.sphinx3	4	31.0
	4	28.9

SPECfp_rate_base2006 = 32.4

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

Continued on next page

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	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	16 GB (8x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1x73.2 GB SAS, 15000RPM	Other Software:	binutils-2.17.tar.gz, Version 2.17
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	**2598**	**20.9**	2596	20.9	2598	20.9	4	**2402**	**22.6**	2405	22.6	2398	22.7
416.gamess	4	1335	58.7	1344	58.3	**1338**	**58.5**	4	**1321**	**59.3**	1323	59.2	1317	59.5
433.milc	4	1990	18.5	2000	18.4	**1993**	**18.4**	4	1970	18.6	1984	18.5	**1978**	**18.6**
434.zeusmp	4	946	38.5	978	37.2	**951**	**38.3**	4	980	37.1	983	37.0	**983**	**37.0**
435.gromacs	4	565	50.6	562	50.8	**563**	**50.8**	4	**557**	**51.3**	559	51.1	556	51.4
436.cactusADM	4	1113	42.9	1111	43.0	**1112**	**43.0**	1	225	53.2	**225**	**53.1**	226	52.9
437.leslie3d	4	2481	15.2	**2491**	**15.1**	2513	15.0	4	**2107**	**17.8**	2106	17.9	2108	17.8
444.namd	4	760	42.2	**760**	**42.2**	761	42.2	4	756	42.4	**755**	**42.5**	755	42.5
447.dealII	4	760	60.2	758	60.4	**759**	**60.3**	4	737	62.1	**727**	**62.9**	714	64.1
450.soplex	4	1631	20.5	**1623**	**20.6**	1615	20.7	4	**1294**	**25.8**	1294	25.8	1294	25.8
453.povray	4	316	67.3	315	67.5	**316**	**67.3**	4	270	78.9	**270**	**78.8**	270	78.8
454.calculix	4	**780**	**42.3**	781	42.3	780	42.3	4	538	61.3	549	60.1	**546**	**60.5**
459.GemsFDTD	4	2686	15.8	**2686**	**15.8**	2689	15.8	4	2679	15.8	2681	15.8	**2679**	**15.8**
465.tonto	4	**802**	**49.1**	802	49.1	807	48.8	4	**789**	**49.9**	786	50.1	796	49.4
470.lbm	4	3271	16.8	**3270**	**16.8**	3270	16.8	4	3307	16.6	**3306**	**16.6**	3306	16.6
481.wrf	4	1525	29.3	1522	29.4	**1522**	**29.3**	4	1539	29.0	**1520**	**29.4**	1519	29.4
482.sphinx3	4	**2701**	**28.9**	2714	28.7	2700	28.9	4	**2513**	**31.0**	2510	31.1	2530	30.8

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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$SPECfp\_rate\_base2006 =$ 32.4

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

Test date: May-2008
Hardware Availability: Apr-2008
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 Express5800/120Lj(Intel Xeon E5405) and
 the Bull NovaScale T860 E1(Intel Xeon E5405,2.00GHz) models are electronically equivalent.
 The results have been measured on a NEC Express5800/120Lj(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
```

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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.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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