SPEC® CFP2006 Result
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NEC Corporation

Express5800/140Rf-4
(Intel Xeon processor E7210)

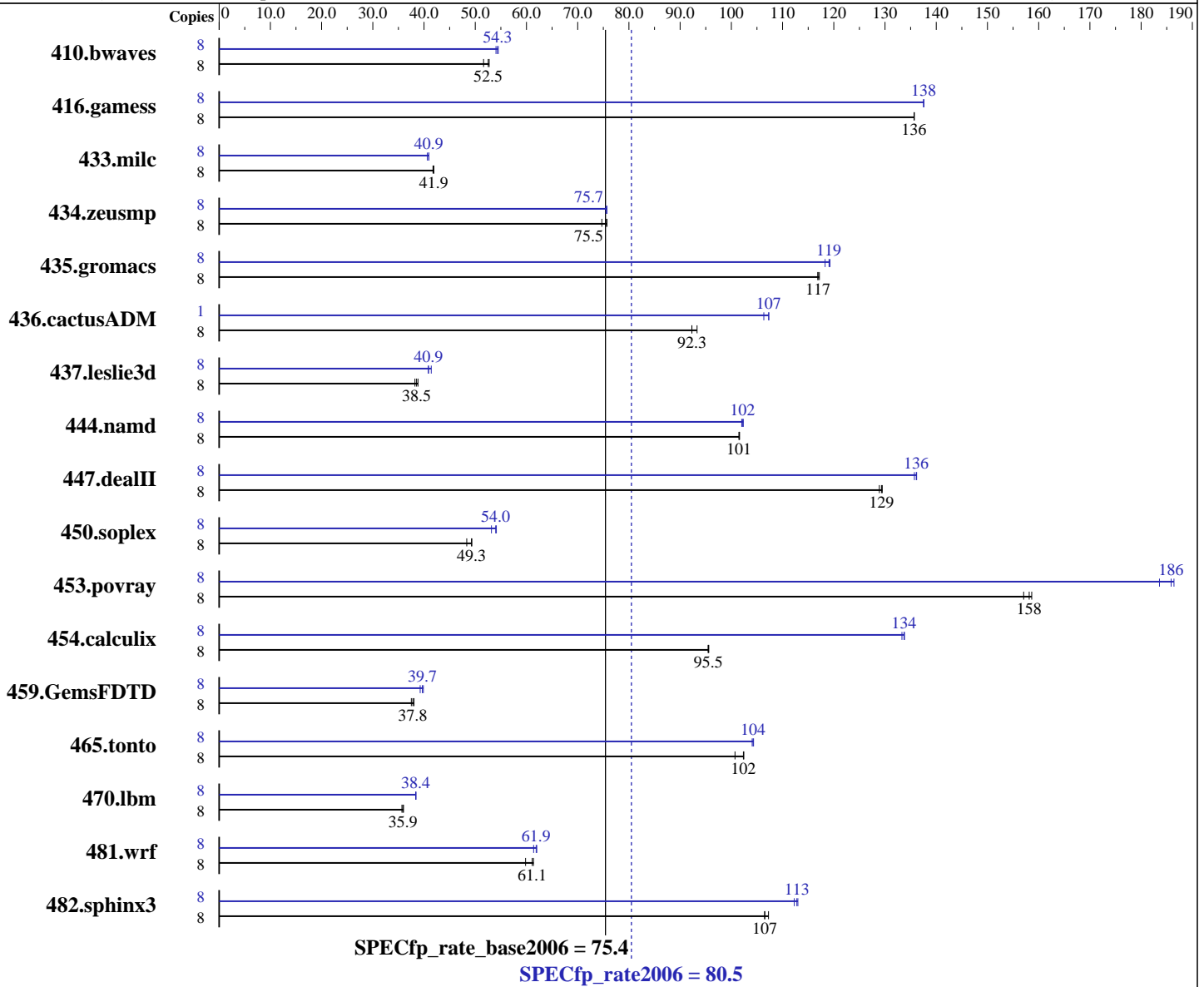$SPECfp®\_rate2006 =$ 80.5

$SPECfp\_rate\_base2006 =$ 75.4

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

Benchmark	Copies	Result
410.bwaves	8	54.3
410.bwaves	8	52.5
416.gamess	8	138
416.gamess	8	136
433.milc	8	40.9
433.milc	8	41.9
434.zeusmp	8	75.7
434.zeusmp	8	75.5
435.gromacs	8	119
435.gromacs	8	117
436.cactusADM	1	107
436.cactusADM	8	92.3
437.leslie3d	8	40.9
437.leslie3d	8	38.5
444.namd	8	102
444.namd	8	101
447.dealII	8	136
447.dealII	8	129
450.soplex	8	54.0
450.soplex	8	49.3
453.povray	8	186
453.povray	8	158
454.calculix	8	134
454.calculix	8	95.5
459.GemsFDTD	8	39.7
459.GemsFDTD	8	37.8
465.tonto	8	104
465.tonto	8	102
470.lbm	8	38.4
470.lbm	8	35.9
481.wrf	8	61.9
481.wrf	8	61.1
482.sphinx3	8	113
482.sphinx3	8	107

SPECfp_rate_base2006 = 75.4

SPECfp_rate2006 = 80.5

Hardware

CPU Name:	Intel Xeon E7210
CPU Characteristics:	2.40 GHz, 2x4 MB L2 shared, 1066 MHz bus
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip
CPU(s) orderable:	1,2,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per core

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:	ext2

Continued on next page

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L3 Cache:	None	System State:	Multiuser, Runlevel 3
Other Cache:	None	Base Pointers:	64-bit
Memory:	12 GB (12x1 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	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	2106	51.6	2062	52.7	**2070**	**52.5**	8	1995	54.5	2012	54.0	**2001**	**54.3**
416.gamess	8	1154	136	1155	136	**1155**	**136**	8	1139	138	1139	138	**1139**	**138**
433.milc	8	1752	41.9	**1753**	**41.9**	1759	41.7	8	1807	40.6	**1795**	**40.9**	1793	41.0
434.zeusmp	8	974	74.7	**964**	**75.5**	961	75.7	8	964	75.5	**962**	**75.7**	962	75.7
435.gromacs	8	487	117	**489**	**117**	489	117	8	483	118	479	119	**480**	**119**
436.cactusADM	8	**1036**	**92.3**	1036	92.3	1025	93.3	1	**111**	**107**	111	107	112	106
437.leslie3d	8	1967	38.2	**1951**	**38.5**	1937	38.8	8	1841	40.9	1816	41.4	**1840**	**40.9**
444.namd	8	632	101	**632**	**101**	631	102	8	**628**	**102**	629	102	627	102
447.dealII	8	**708**	**129**	710	129	707	129	8	674	136	672	136	**672**	**136**
450.soplex	8	1380	48.3	1352	49.3	**1355**	**49.3**	8	1255	53.2	**1236**	**54.0**	1233	54.1
453.povray	8	268	159	271	157	**269**	**158**	8	**229**	**186**	232	184	228	186
454.calculix	8	690	95.6	691	95.5	**691**	**95.5**	8	**494**	**134**	493	134	495	133
459.GemsFDTD	8	2262	37.5	**2245**	**37.8**	2231	38.0	8	2129	39.9	**2140**	**39.7**	2163	39.2
465.tonto	8	768	102	782	101	**769**	**102**	8	756	104	**755**	**104**	754	104
470.lbm	8	3081	35.7	3054	36.0	**3065**	**35.9**	8	**2863**	**38.4**	2865	38.4	2860	38.4
481.wrf	8	1494	59.8	**1462**	**61.1**	1456	61.4	8	1456	61.4	**1444**	**61.9**	1441	62.0
482.sphinx3	8	1464	106	**1464**	**107**	1454	107	8	1389	112	**1382**	**113**	1380	113

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
OMP_NUM_THREADS set to number of cores (default).
```

Platform Notes

```
Bios settings:
Hardware Prefetcher:       Disabled
Intel SpeedStep Technology: Disabled
```

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Hardware Availability: Dec-2007
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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
```

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

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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
```

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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`

> 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

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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.20090714.01.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.20090714.01.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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