SPEC® CFP2006 Result
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NEC Corporation

Express5800/B140a-T
(Intel Xeon E7450)

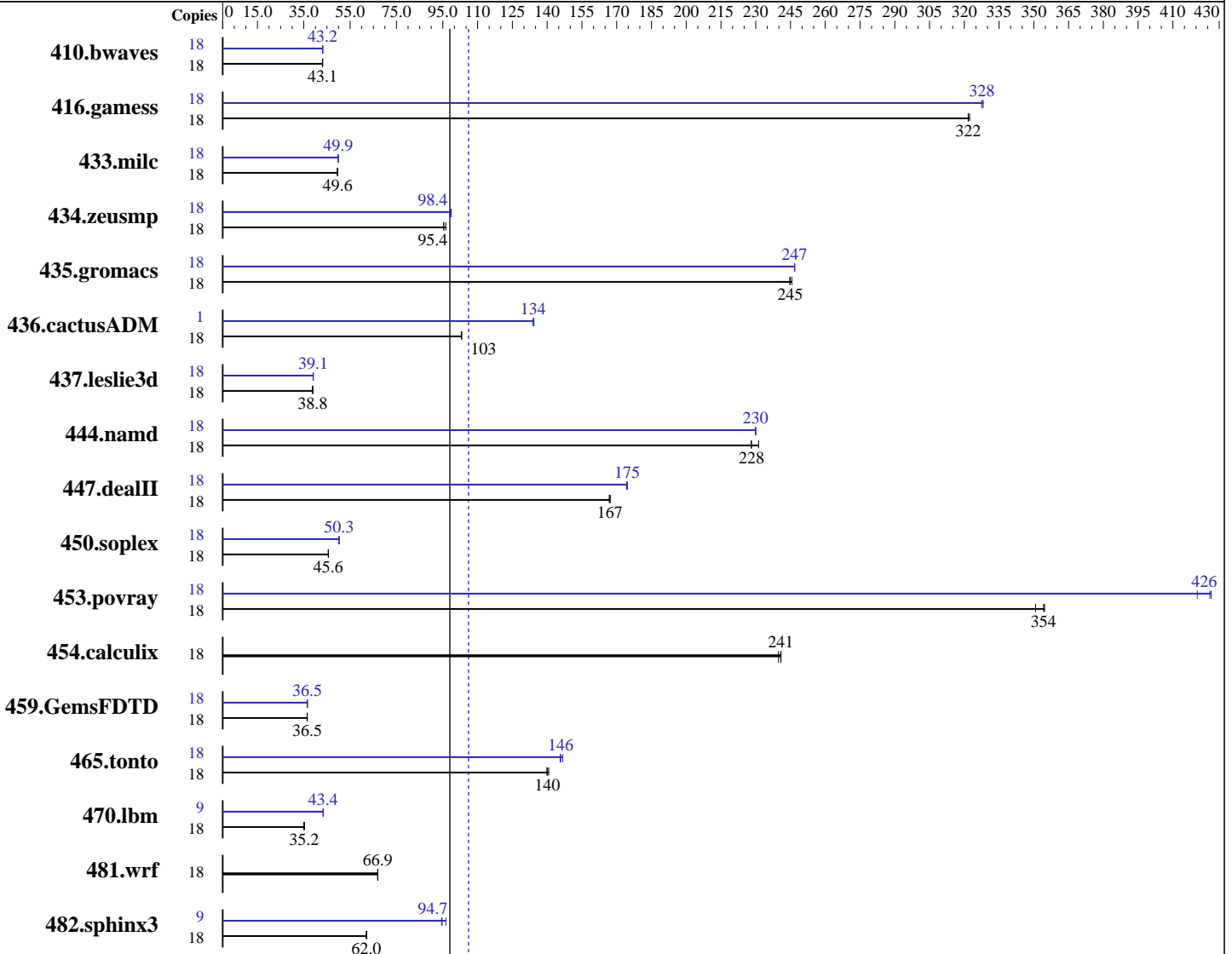$SPECfp^®\_rate2006 =$ 106

SPECfp_rate_base2006 = 98.0

CPU2006 license: 9006	**Test date:** Apr-2009
Test sponsor: NEC Corporation	**Hardware Availability:** Feb-2009
Tested by: NEC Corporation	**Software Availability:** Nov-2008

SPECfp_rate2006 = 106

SPECfp_rate_base2006 = 98.0

Hardware

CPU Name:	Intel Xeon E7450
CPU Characteristics:	1066 MHz system bus
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	18 cores, 3 chips, 6 cores/chip
CPU(s) orderable:	1,2,3,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	9 MB I+D on chip per chip, 3 MB shared / 2 cores

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20081105 Package ID: l_cproc_p_11.0.074, l_cprof_p_11.0.074
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	64 GB (16x4 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem:	1x146.5 GB SAS, 10000 RPM
Other Hardware:	None
Peak Pointers:	32/64-bit
Other Software:	Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	18	5682	43.1	**5672**	**43.1**	5672	43.1	18	5672	43.1	5667	43.2	**5667**	**43.2**
416.gamess	18	1096	322	**1095**	**322**	1093	322	18	**1076**	**328**	1074	328	1076	328
433.milc	18	3341	49.5	3333	49.6	**3334**	**49.6**	18	3318	49.8	3312	49.9	**3313**	**49.9**
434.zeusmp	18	1718	95.3	**1717**	**95.4**	1701	96.3	18	1668	98.2	1661	98.6	**1664**	**98.4**
435.gromacs	18	**525**	**245**	523	246	525	245	18	**521**	**247**	521	247	521	247
436.cactusADM	18	2089	103	2086	103	**2087**	**103**	1	**89.2**	**134**	89.0	134	89.2	134
437.leslie3d	18	4362	38.8	**4357**	**38.8**	4354	38.9	18	4337	39.0	**4330**	**39.1**	4328	39.1
444.namd	18	**633**	**228**	624	231	633	228	18	**628**	**230**	628	230	628	230
447.dealII	18	**1232**	**167**	1235	167	1231	167	18	**1180**	**175**	1181	174	1179	175
450.soplex	18	3296	45.5	**3293**	**45.6**	3290	45.6	18	2985	50.3	**2987**	**50.3**	2993	50.2
453.povray	18	270	355	273	351	**270**	**354**	18	224	427	228	421	**225**	**426**
454.calculix	18	616	241	619	240	**617**	**241**	18	616	241	619	240	**617**	**241**
459.GemsFDTD	18	5237	36.5	**5234**	**36.5**	5233	36.5	18	5229	36.5	5226	36.5	**5228**	**36.5**
465.tonto	18	1266	140	**1264**	**140**	1259	141	18	1207	147	**1214**	**146**	1216	146
470.lbm	18	7064	35.0	**7030**	**35.2**	7015	35.3	9	2858	43.3	**2849**	**43.4**	2845	43.5
481.wrf	18	**3004**	**66.9**	3007	66.9	3003	67.0	18	**3004**	**66.9**	3007	66.9	3003	67.0
482.sphinx3	18	5661	62.0	**5660**	**62.0**	5641	62.2	9	1821	96.3	1857	94.4	**1853**	**94.7**

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

Submit Notes

```
    The config file option 'submit' was used.
     taskset was used to bind processes to cores except
     for 436.cactusADM peak
     For peak modules using 1/2 the number of available cores, copies
     were each assigned to a single L2 cache using mysubmit.pl script.
     See the flags description file for mysubmit.pl details.
```

Operating System Notes

```
     'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
     OMP_NUM_THREADS set to number of cores
     KMP_AFFINITY set to "physical,0"
     KMP_STACKSIZE set to 64M
```

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Test date: Apr-2009
Hardware Availability: Feb-2009
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Platform Notes

```
    Bios settings:
    Hardware Prefetcher:            Disabled
    Adjacent Cache Line Prefetch:   Disabled
    FSB High Bandwidth Optimization:  Enabled
```

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:
    -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
    -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

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SPECfp_rate2006 =   106

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CPU2006 license: 9006

Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Apr-2009

Hardware Availability: Feb-2009

Software Availability: Nov-2008

Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: /opt/intel/Compiler/11.0/074/bin/ia32/icc
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/ipp/ia32/include
```

C++ benchmarks (except as noted below):
```
icpc
```

```
450.soplex: /opt/intel/Compiler/11.0/074/bin/ia32/icpc
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/ipp/ia32/include
```

Fortran benchmarks (except as noted below):
```
ifort
```

```
437.leslie3d: /opt/intel/Compiler/11.0/074/bin/ia32/ifort
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/ipp/ia32/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
470.lbm: -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) -xSSSE3 -ipo -O3
          -no-prec-div -static -fno-alias

470.lbm: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
         -auto-ilp32

482.sphinx3: -xSSSE3 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
          -no-prec-div -static -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
            -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
            -no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
            -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
410.bwaves: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
            -no-prec-div -static -unroll2 -Ob0 -ansi-alias
            -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
            -no-prec-div -static

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -unroll2 -Ob0 -opt-prefetch
```

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Peak Optimization Flags (Continued)

```
465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static -unroll4 -auto
```

Benchmarks using both Fortran and C:

```
435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
             -no-prec-div -static -opt-prefetch -auto-ilp32
```

```
436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
               -no-prec-div -static -unroll2 -opt-prefetch -parallel
               -auto-ilp32
```

```
454.calculix: basepeak = yes
```

```
481.wrf: basepeak = yes
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revD.xml

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

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