SPEC® CFP2006 Result
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NEC Corporation

Express5800/140Ba-10
(Intel Xeon E7340)

$SPECfp®_rate2006 = $ 108

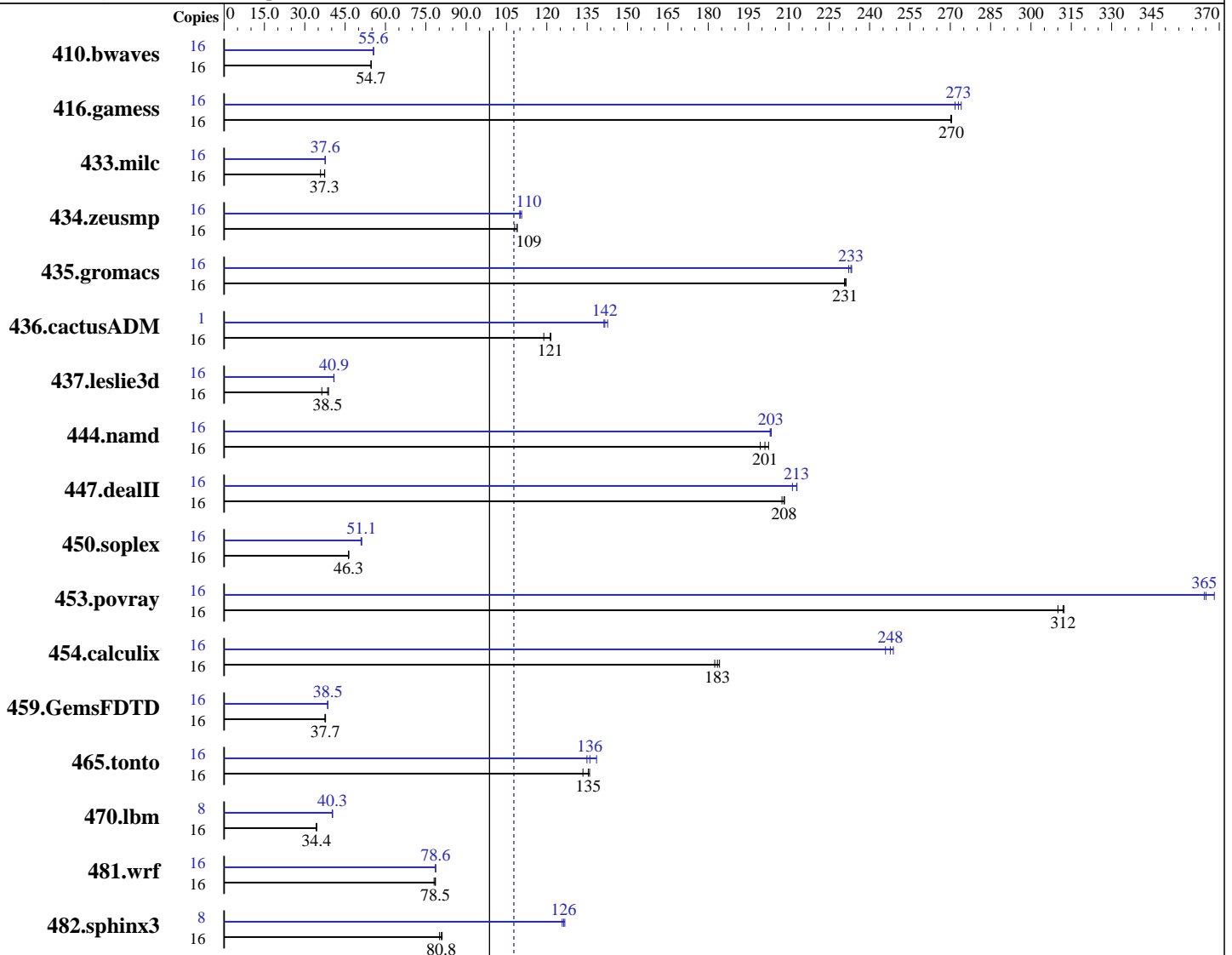$SPECfp_rate_base2006 = $ 98.7

CPU2006 license: 9006

Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Mar-2008

Hardware Availability: Sep-2007

Software Availability: Nov-2007

SPECfp_rate2006 = 108

SPECfp_rate_base2006 = 98.7

Copies	
410.bwaves	16 — 55.6 / 16 — 54.7
416.gamess	16 — 273 / 16 — 270
433.milc	16 — 37.6 / 16 — 37.3
434.zeusmp	16 — 110 / 16 — 109
435.gromacs	16 — 233 / 16 — 231
436.cactusADM	1 — 142 / 16 — 121
437.leslie3d	16 — 40.9 / 16 — 38.5
444.namd	16 — 203 / 16 — 201
447.dealII	16 — 213 / 16 — 208
450.soplex	16 — 51.1 / 16 — 46.3
453.povray	16 — 365 / 16 — 312
454.calculix	16 — 248 / 16 — 183
459.GemsFDTD	16 — 38.5 / 16 — 37.7
465.tonto	16 — 136 / 16 — 135
470.lbm	8 — 40.3 / 16 — 34.4
481.wrf	16 — 78.6 / 16 — 78.5
482.sphinx3	8 — 126 / 16 — 80.8

Hardware

CPU Name: Intel Xeon E7340

CPU Characteristics: 2.40 GHz, 2x4 MB L2 shared, 1066 MHz bus

CPU MHz: 2400

FPU: Integrated

CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip

CPU(s) orderable: 1,2,3,4 chips

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 8 MB I+D on chip per chip, 4 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: ext2

Continued on next page

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (16x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem:	1x73.2 GB SAS, 10000RPM
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	16	3981	54.6	**3978**	**54.7**	3974	54.7	16	3917	55.5	3912	55.6	**3913**	**55.6**
416.gamess	16	1160	270	**1158**	**270**	1158	270	16	**1147**	**273**	1143	274	1153	272
433.milc	16	4097	35.8	**3933**	**37.3**	3924	37.4	16	3905	37.6	3908	37.6	**3906**	**37.6**
434.zeusmp	16	1348	108	**1337**	**109**	1336	109	16	1325	110	**1322**	**110**	1316	111
435.gromacs	16	495	231	494	231	**495**	**231**	16	**490**	**233**	490	233	492	232
436.cactusADM	16	1609	119	1573	122	**1577**	**121**	1	84.6	141	**84.4**	**142**	83.8	143
437.leslie3d	16	4140	36.3	**3906**	**38.5**	3872	38.8	16	3688	40.8	**3681**	**40.9**	3679	40.9
444.namd	16	**638**	**201**	644	199	634	202	16	631	203	**631**	**203**	632	203
447.dealII	16	882	207	**879**	**208**	878	208	16	**860**	**213**	859	213	866	211
450.soplex	16	2886	46.2	2879	46.3	**2881**	**46.3**	16	2620	50.9	2609	51.1	**2611**	**51.1**
453.povray	16	273	312	**273**	**312**	275	310	16	**233**	**365**	234	364	231	368
454.calculix	16	717	184	**720**	**183**	724	182	16	530	249	537	246	**533**	**248**
459.GemsFDTD	16	4500	37.7	4529	37.5	**4507**	**37.7**	16	4406	38.5	4403	38.6	**4405**	**38.5**
465.tonto	16	1180	133	1159	136	**1163**	**135**	16	1137	138	1167	135	**1158**	**136**
470.lbm	16	6389	34.4	6404	34.3	**6398**	**34.4**	8	2733	40.2	**2729**	**40.3**	2725	40.3
481.wrf	16	2289	78.1	**2275**	**78.5**	2275	78.6	16	2274	78.6	2271	78.7	**2273**	**78.6**
482.sphinx3	16	3893	80.1	**3861**	**80.8**	3846	81.1	8	1240	126	**1235**	**126**	1231	127

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
```

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
```

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

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

Fortran benchmarks:
    -fast

Benchmarks using both Fortran and C:
    -fast

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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`

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Peak Optimization Flags (Continued)

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`

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.20090713.html

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Test date: Mar-2008
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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.20090713.xml

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