SPEC® CFP2006 Result
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NEC Corporation

Express5800/140Rf-4
(Intel Xeon processor X7350)

$SPECfp®\_rate2006 =$ 116
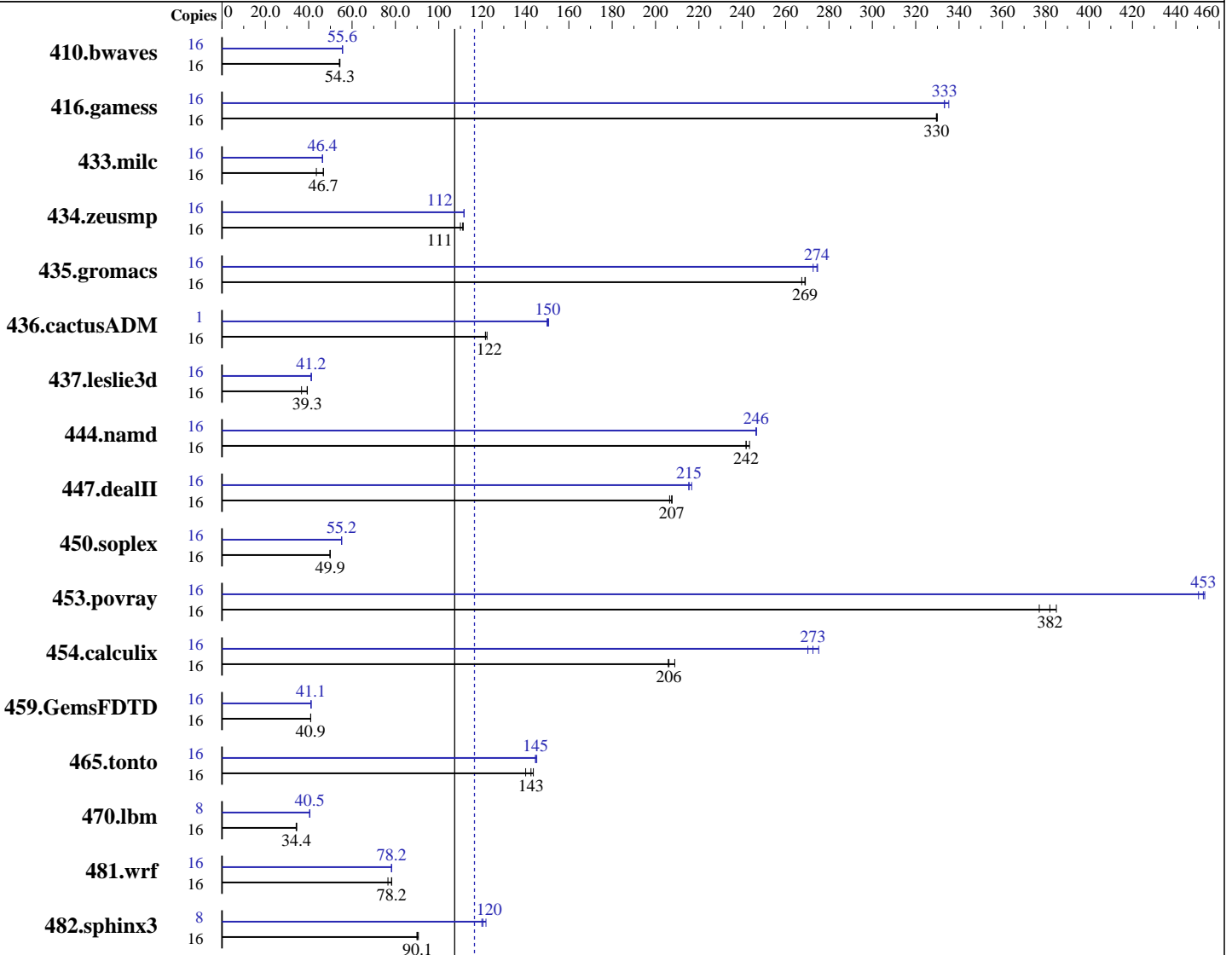
$SPECfp\_rate\_base2006 =$ 107

CPU2006 license: 9006

Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2007

Hardware Availability: Dec-2007

Software Availability: Nov-2007

Copies

Benchmark	Copies	Value
410.bwaves	16	55.6
	16	54.3
416.gamess	16	333
	16	330
433.milc	16	46.4
	16	46.7
434.zeusmp	16	112
	16	111
435.gromacs	16	274
	16	269
436.cactusADM	1	150
	16	122
437.leslie3d	16	41.2
	16	39.3
444.namd	16	246
	16	242
447.dealII	16	215
	16	207
450.soplex	16	55.2
	16	49.9
453.povray	16	453
	16	382
454.calculix	16	273
	16	206
459.GemsFDTD	16	41.1
	16	40.9
465.tonto	16	145
	16	143
470.lbm	8	40.5
	16	34.4
481.wrf	16	78.2
	16	78.2
482.sphinx3	8	120
	16	90.1

SPECfp_rate_base2006 = 107

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Hardware

CPU Name:	Intel Xeon X7350
CPU Characteristics:	2.93 GHz, 2x4 MB L2 shared, 1066 MHz bus
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	1,2,4 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 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008, l_fc_p_10.1.008
Auto Parallel:	Yes
File System:	ext2
System State:	Multiuser, Runlevel 3
Base Pointers:	64-bit

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L3 Cache:	None	Peak Pointers:	32/64-bit
Other Cache:	None	Other Software:	binutils-2.17.tar.gz, Version 2.17
Memory:	16 GB (16x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)		
Disk Subsystem:	1x73.2 GB SAS, 10000RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	4018	54.1	**4001**	**54.3**	3997	54.4	16	3915	55.5	3910	55.6	**3911**	**55.6**
416.gamess	16	951	330	**950**	**330**	949	330	16	**940**	**333**	934	335	940	333
433.milc	16	3374	43.5	**3143**	**46.7**	3140	46.8	16	3168	46.4	3167	46.4	**3167**	**46.4**
434.zeusmp	16	1324	110	**1311**	**111**	1308	111	16	**1304**	**112**	1305	112	1303	112
435.gromacs	16	425	269	**425**	**269**	427	267	16	416	275	419	273	**416**	**274**
436.cactusADM	16	1574	122	1564	122	**1572**	**122**	1	79.7	150	**79.5**	**150**	79.3	151
437.leslie3d	16	4099	36.7	**3831**	**39.3**	3819	39.4	16	**3652**	**41.2**	3656	41.1	3646	41.3
444.namd	16	527	243	**531**	**242**	531	242	16	521	246	**521**	**246**	520	247
447.dealII	16	886	206	**883**	**207**	882	208	16	850	215	845	217	**849**	**215**
450.soplex	16	2679	49.8	**2673**	**49.9**	2673	49.9	16	2420	55.1	**2418**	**55.2**	2417	55.2
453.povray	16	**223**	**382**	226	377	221	385	16	188	453	**188**	**453**	189	450
454.calculix	16	632	209	641	206	**640**	**206**	16	**484**	**273**	480	275	488	270
459.GemsFDTD	16	4147	40.9	**4147**	**40.9**	4150	40.9	16	4131	41.1	4134	41.1	**4134**	**41.1**
465.tonto	16	**1105**	**143**	1124	140	1096	144	16	1088	145	**1088**	**145**	1084	145
470.lbm	16	6426	34.2	**6394**	**34.4**	6384	34.4	8	2718	40.4	**2716**	**40.5**	2714	40.5
481.wrf	16	2284	78.2	2334	76.6	**2285**	**78.2**	16	2285	78.2	2284	78.2	**2285**	**78.2**
482.sphinx3	16	3468	89.9	**3460**	**90.1**	3442	90.6	8	**1296**	**120**	1280	122	1301	120

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 Tecnology:  Disabled
```

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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`

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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.20090714.00.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.20090714.00.xml`

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