SPEC® CFP2006 Result
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ASUSTeK Computer Inc.

ASUS Z8PE-D18 server motherboard (Intel Xeon X5570)

$SPECfp^{®}2006 = $ 40.8

$SPECfp_base2006 = $ 38.5
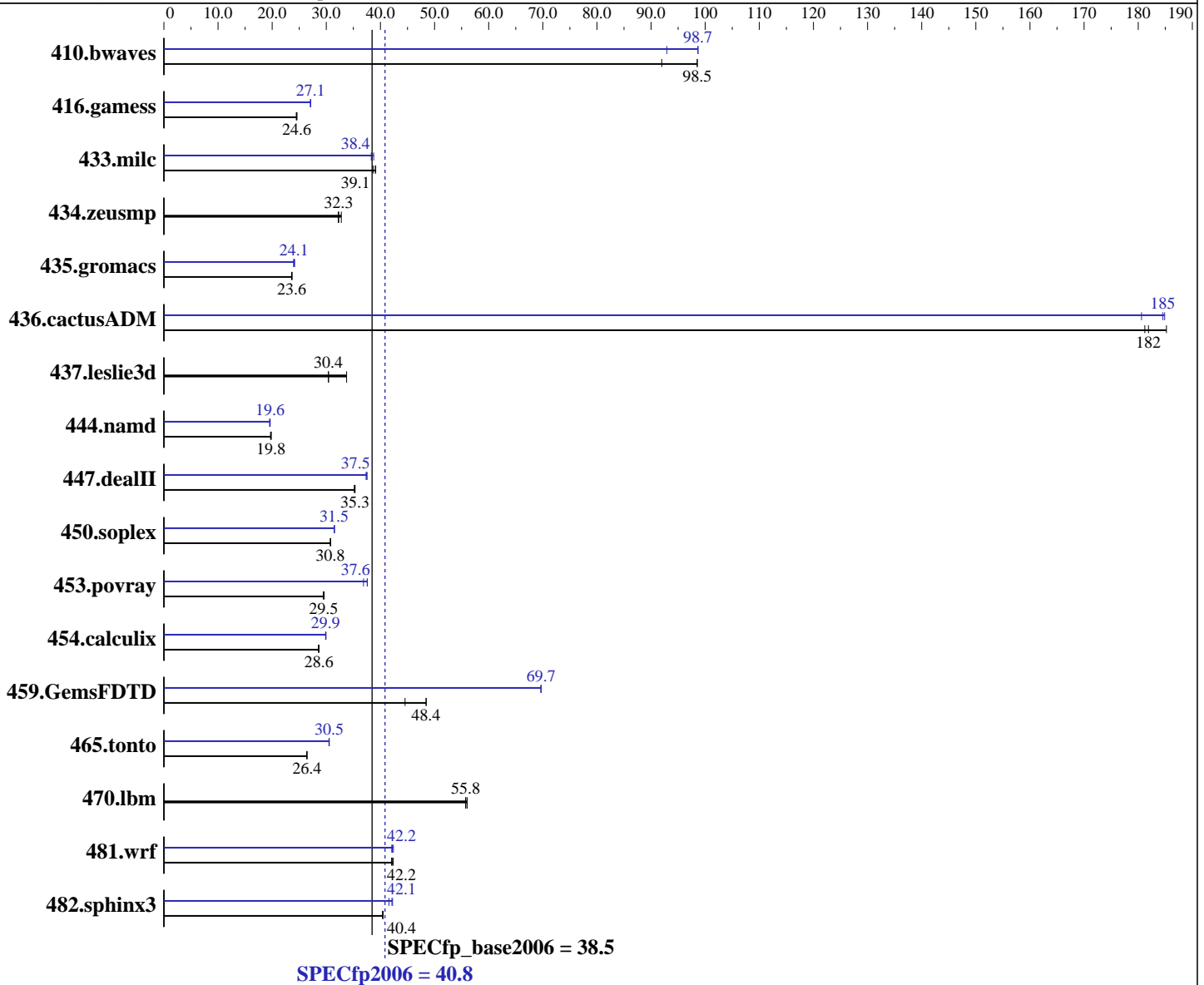
CPU2006 license: 9016
Test sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test date: Apr-2009
Hardware Availability: Mar-2009
Software Availability: Feb-2009

Benchmark	Result
410.bwaves	98.7 / 98.5
416.gamess	27.1 / 24.6
433.milc	38.4 / 39.1
434.zeusmp	32.3
435.gromacs	24.1 / 23.6
436.cactusADM	185 / 182
437.leslie3d	30.4
444.namd	19.6 / 19.8
447.dealII	37.5 / 35.3
450.soplex	31.5 / 30.8
453.povray	37.6 / 29.5
454.calculix	29.9 / 28.6
459.GemsFDTD	69.7 / 48.4
465.tonto	30.5 / 26.4
470.lbm	55.8
481.wrf	42.2 / 42.2
482.sphinx3	42.1 / 40.4

SPECfp_base2006 = 38.5

SPECfp2006 = 40.8

Hardware

CPU Name: Intel Xeon X5570
CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz: 2933
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2 with patch Kernel linux 20090119, Kernel 2.6.16.60-0.34-smp
Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080
Auto Parallel: Yes
File System: ReiserFS
System State: Run level 3 (multi-user)

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L3 Cache:	8 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	72 GB (18 X 4 GB PC3-10600R, CL=9)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	HITACHI HDT725050VLA360 500GB SATAII, 7200RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	148	92.0	**138**	**98.5**	138	98.5	146	92.9	**138**	**98.7**	138	98.7
416.gamess	801	24.5	797	24.6	**797**	**24.6**	724	27.1	722	27.1	**722**	**27.1**
433.milc	237	38.7	235	39.1	**235**	**39.1**	240	38.3	237	38.8	**239**	**38.4**
434.zeusmp	**282**	**32.3**	283	32.2	278	32.8	**282**	**32.3**	283	32.2	278	32.8
435.gromacs	301	23.7	**302**	**23.6**	303	23.6	296	24.2	298	24.0	**297**	**24.1**
436.cactusADM	64.5	185	**65.7**	**182**	65.9	181	66.2	181	64.6	185	**64.7**	**185**
437.leslie3d	**309**	**30.4**	309	30.4	278	33.8	**309**	**30.4**	309	30.4	278	33.8
444.namd	407	19.7	**405**	**19.8**	405	19.8	**409**	**19.6**	409	19.6	411	19.5
447.dealII	**324**	**35.3**	324	35.3	325	35.2	305	37.5	**305**	**37.5**	306	37.3
450.soplex	271	30.8	**271**	**30.8**	271	30.8	265	31.5	265	31.5	**265**	**31.5**
453.povray	180	29.6	181	29.4	**180**	**29.5**	**142**	**37.6**	142	37.6	144	36.9
454.calculix	289	28.5	288	28.6	**288**	**28.6**	275	30.0	**276**	**29.9**	276	29.9
459.GemsFDTD	238	44.6	219	48.5	**219**	**48.4**	152	69.7	152	69.6	**152**	**69.7**
465.tonto	**372**	**26.4**	372	26.4	373	26.4	323	30.5	**322**	**30.5**	322	30.5
470.lbm	245	56.0	**246**	**55.8**	246	55.8	245	56.0	**246**	**55.8**	246	55.8
481.wrf	**265**	**42.2**	266	42.1	264	42.4	265	42.1	**265**	**42.2**	263	42.4
482.sphinx3	482	40.4	**482**	**40.4**	481	40.5	461	42.2	**463**	**42.1**	469	41.6

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
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
```

Component Notes

```
Tested system case compliance with Intel EEB 3.61 spec
SSI Server Power Supply 650W or higher
System was configured with ASPEED AST2050 VGA (on board VGA)
```

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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:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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Peak Compiler Invocation

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

```
482.sphinx3: icc -m32
```

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

```
450.soplex: icpc -m32
```

Fortran benchmarks:
```
ifort
```

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
  437.leslie3d: -DSPEC_CPU_LP64
     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
      470.lbm: -DSPEC_CPU_LP64
      481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
     433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
               -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
               -fno-alias

      470.lbm: basepeak = yes

   482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

    444.namd: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-fno-alias -auto-ilp32`

    447.dealII: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll2 -ansi-alias -scalar-rep- -opt-prefetch`

    450.soplex: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-opt-malloc-options=3`

    453.povray: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll4 -ansi-alias`

Fortran benchmarks:

    410.bwaves: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
        `-parallel`

    416.gamess: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll2 -Ob0 -ansi-alias -scalar-rep-`

    434.zeusmp: `basepeak = yes`

    437.leslie3d: `basepeak = yes`

  459.GemsFDTD: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll2 -Ob0 -opt-prefetch -parallel`

    465.tonto: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll4 -auto`

Benchmarks using both Fortran and C:

    435.gromacs: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-opt-prefetch -auto-ilp32`

    436.cactusADM: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
        `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
        `-unroll2 -opt-prefetch -parallel -auto-ilp32`

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Peak Optimization Flags (Continued)

454.calculix: `-xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel -auto-ilp32`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090710.xml

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 00:17:35 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 May 2009.