SPEC® CFP2006 Result

Supermicro

SuperServer 6028TP-HTR
(X10DRT-P , Intel Xeon E5-2640 v3)

$SPECfp^{®}2006 =$ 111

$SPECfp\_base2006 =$ 105

CPU2006 license: 001176
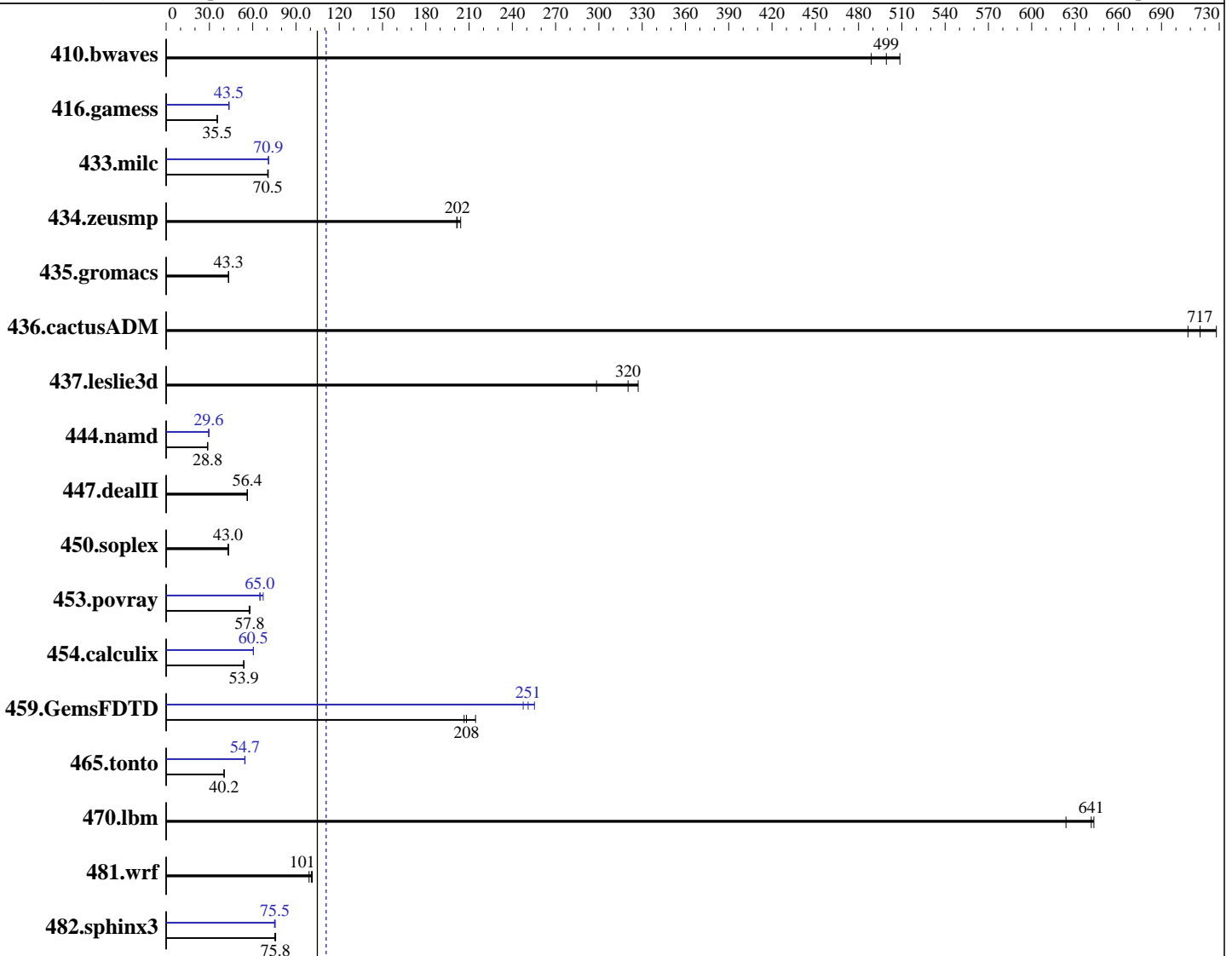**Test sponsor:** Supermicro
Tested by: Supermicro

Test date: Oct-2014
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Benchmark	Value (base)	Value (peak)
410.bwaves	499	
416.gamess	35.5	43.5
433.milc	70.5	70.9
434.zeusmp	202	
435.gromacs	43.3	
436.cactusADM	717	
437.leslie3d	320	
444.namd	28.8	29.6
447.dealII	56.4	
450.soplex	43.0	
453.povray	57.8	65.0
454.calculix	53.9	60.5
459.GemsFDTD	208	251
465.tonto	40.2	54.7
470.lbm	641	
481.wrf	101	
482.sphinx3	75.8	75.5

SPECfp_base2006 = 105
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Hardware

CPU Name: Intel Xeon E5-2640 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
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: Red Hat Enterprise Linux Server release 7.0, Kernel 3.10.0-123.el7.x86_64
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 3 (multi-user)

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L3 Cache:	20 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)	Other Software:	None
Disk Subsystem:	1 x 1000 GB SATA III, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**27.2**	**499**	27.8	489	26.7	509	**27.2**	**499**	27.8	489	26.7	509
416.gamess	552	35.5	553	35.4	**552**	**35.5**	**450**	**43.5**	450	43.5	449	43.6
433.milc	**130**	**70.5**	130	70.5	130	70.8	**129**	**70.9**	129	70.9	129	71.2
434.zeusmp	**45.1**	**202**	45.2	201	44.6	204	**45.1**	**202**	45.2	201	44.6	204
435.gromacs	165	43.2	165	43.3	**165**	**43.3**	165	43.2	165	43.3	**165**	**43.3**
436.cactusADM	16.9	708	**16.7**	**717**	16.4	728	16.9	708	**16.7**	**717**	16.4	728
437.leslie3d	28.7	327	31.5	298	**29.4**	**320**	28.7	327	31.5	298	**29.4**	**320**
444.namd	**279**	**28.8**	279	28.8	279	28.8	271	29.6	**271**	**29.6**	271	29.6
447.dealII	204	56.1	203	56.4	**203**	**56.4**	204	56.1	203	56.4	**203**	**56.4**
450.soplex	193	43.3	194	42.9	**194**	**43.0**	193	43.3	194	42.9	**194**	**43.0**
453.povray	91.5	58.2	**92.0**	**57.8**	92.5	57.5	81.8	65.0	**81.8**	**65.0**	79.1	67.3
454.calculix	154	53.7	153	53.9	**153**	**53.9**	136	60.5	**136**	**60.5**	136	60.4
459.GemsFDTD	49.5	215	51.4	207	**51.0**	**208**	41.6	255	42.9	248	**42.3**	**251**
465.tonto	245	40.2	**245**	**40.2**	245	40.2	**180**	**54.7**	180	54.7	181	54.5
470.lbm	**21.4**	**641**	22.0	624	21.4	643	**21.4**	**641**	22.0	624	21.4	643
481.wrf	113	99.1	**111**	**101**	110	101	113	99.1	**111**	**101**	110	101
482.sphinx3	259	75.3	**257**	**75.8**	257	75.9	**258**	**75.5**	258	75.5	259	75.1

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
BIOS Settings:
Hyper-Threading (All) = Disable
Early Snoop = Disable
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/home/spec2k6/SPEC2006-V12/libs/32:/home/spec2k6/SPEC2006-V12/libs/64:/home/spec2k6/SPEC2006-V12/sh"
```

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General Notes (Continued)

```
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

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:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias
```

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Base Optimization Flags (Continued)

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias
```

Peak Compiler Invocation

C benchmarks:
```
icc    -m64
```

C++ benchmarks:
```
icpc   -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
          -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
          -auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
             -parallel
```

C++ benchmarks:

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Peak Optimization Flags (Continued)

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.xml

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

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