# SPEC® CFP2006 Result

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## Supermicro

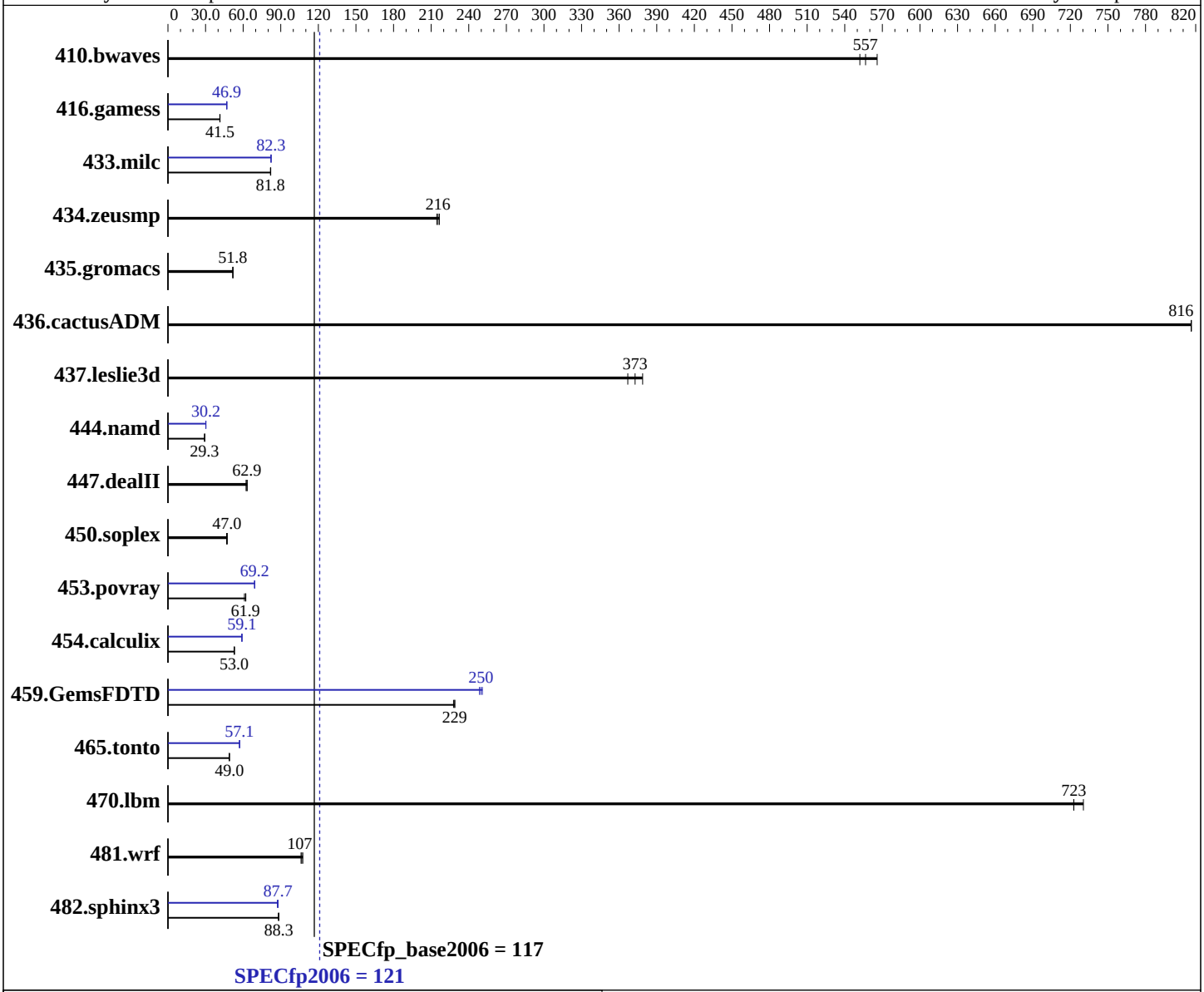
SuperServer 6028UX-TR4
(X10DRU-X , Intel Xeon E5-2667 v3)

SPECfp®2006 = 121

SPECfp_base2006 = 117

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

**Test date:** Oct-2014
**Hardware Availability:** Oct-2014
**Software Availability:** Sep-2013




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2667 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 3200 |
| 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 |

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## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.5, Kernel 2.6.32-431.el6.x86_64 |
| Compiler: | C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;<br>Fortran: Version 14.0.0.080 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
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 1000 GB SATA III, 7200 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 24.0 | 566 | 24.6 | 552 | **24.4** | **557** | 24.0 | 566 | 24.6 | 552 | **24.4** | **557** |
| 416.gamess | 471 | 41.5 | 473 | 41.4 | **472** | **41.5** | 417 | 47.0 | **417** | **46.9** | 418 | 46.9 |
| 433.milc | 112 | 81.8 | **112** | **81.8** | 112 | 82.0 | 112 | 82.2 | **112** | **82.3** | 112 | 82.3 |
| 434.zeusmp | 42.4 | 215 | 42.0 | 217 | **42.2** | **216** | 42.4 | 215 | 42.0 | 217 | **42.2** | **216** |
| 435.gromacs | 138 | 51.8 | 138 | 51.9 | **138** | **51.8** | 138 | 51.8 | 138 | 51.9 | **138** | **51.8** |
| 436.cactusADM | **14.6** | **816** | 14.6 | 816 | 14.6 | 816 | **14.6** | **816** | 14.6 | 816 | 14.6 | 816 |
| 437.leslie3d | 24.8 | 379 | **25.2** | **373** | 25.6 | 367 | 24.8 | 379 | **25.2** | **373** | 25.6 | 367 |
| 444.namd | **274** | **29.3** | 274 | 29.3 | 274 | 29.3 | 265 | 30.3 | 265 | 30.2 | **265** | **30.2** |
| 447.dealII | **182** | **62.9** | 184 | 62.3 | 181 | 63.2 | **182** | **62.9** | 184 | 62.3 | 181 | 63.2 |
| 450.soplex | **177** | **47.0** | 176 | 47.3 | 178 | 46.8 | **177** | **47.0** | 176 | 47.3 | 178 | 46.8 |
| 453.povray | 85.6 | 62.1 | 87.2 | 61.0 | **85.9** | **61.9** | **76.9** | **69.2** | 77.0 | 69.1 | 76.9 | 69.2 |
| 454.calculix | **156** | **53.0** | 156 | 52.9 | 156 | 53.0 | 140 | 58.9 | 140 | 59.1 | **140** | **59.1** |
| 459.GemsFDTD | 46.4 | 229 | **46.4** | **229** | 46.6 | 228 | 42.7 | 249 | 42.3 | 251 | **42.5** | **250** |
| 465.tonto | 201 | 48.9 | **201** | **49.0** | 201 | 49.0 | 172 | 57.2 | 172 | 57.1 | **172** | **57.1** |
| 470.lbm | 19.0 | 723 | **19.0** | **723** | 18.8 | 730 | 19.0 | 723 | **19.0** | **723** | 18.8 | 730 |
| 481.wrf | **105** | **107** | 105 | 106 | 104 | 108 | **105** | **107** | 105 | 106 | 104 | 108 |
| 482.sphinx3 | 221 | 88.1 | **221** | **88.3** | 220 | 88.5 | 223 | 87.3 | 222 | 87.9 | **222** | **87.7** |

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:
Enforce POR - Disable
Memory Frequency - 2133
Enable COD - Disable
Early Snoop - Disable
SMC Performance Tuning - Profile #2
Hyper Threading - Disable

There are 16x 16GB Samsung memory modules installed in the system
```

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## Platform Notes (Continued)

```
Sysinfo program /root/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on 192-248.hnet Fri Oct 31 17:17:30 2014

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2667 v3 @ 3.20GHz
      2 "physical id"s (chips)
      16 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 8
      siblings  : 8
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       264425460 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux 192-248.hnet 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 31 17:16

SPEC is set to: /root/cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext4  673G  290G  349G  46% /

Additional information from dmidecode:
  BIOS American Megatrends Inc. 1.00 10/14/2014
  Memory:
   16x   16 GB
   10x Samsung (date:13/5p) M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank
   1x Samsung (date:13/5q) M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank
   5x Samsung (date:14/16) M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank
```

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## Platform Notes (Continued)

```
(End of data from sysinfo program)
```

## General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/root/cpu2006/libs/32:/root/cpu2006/libs/64:/root/cpu2006/sh"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

## 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
```

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## Base Portability Flags (Continued)

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

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:

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## Peak Optimization Flags (Continued)

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:

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

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## Peak Optimization Flags (Continued)

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/Supermicro-Platform-Settings-V1.2-revF.20141203.html`
`http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revF.20141203.xml`
`http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml`


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