



# SPEC<sup>®</sup> CFP2006 Result

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## Supermicro

SuperServer 5019S-MT  
(X11SSH-TF , Intel Xeon E3-1220 v5)

SPECfp<sup>®</sup>\_rate2006 = 180

SPECfp\_rate\_base2006 = 176

CPU2006 license: 001176

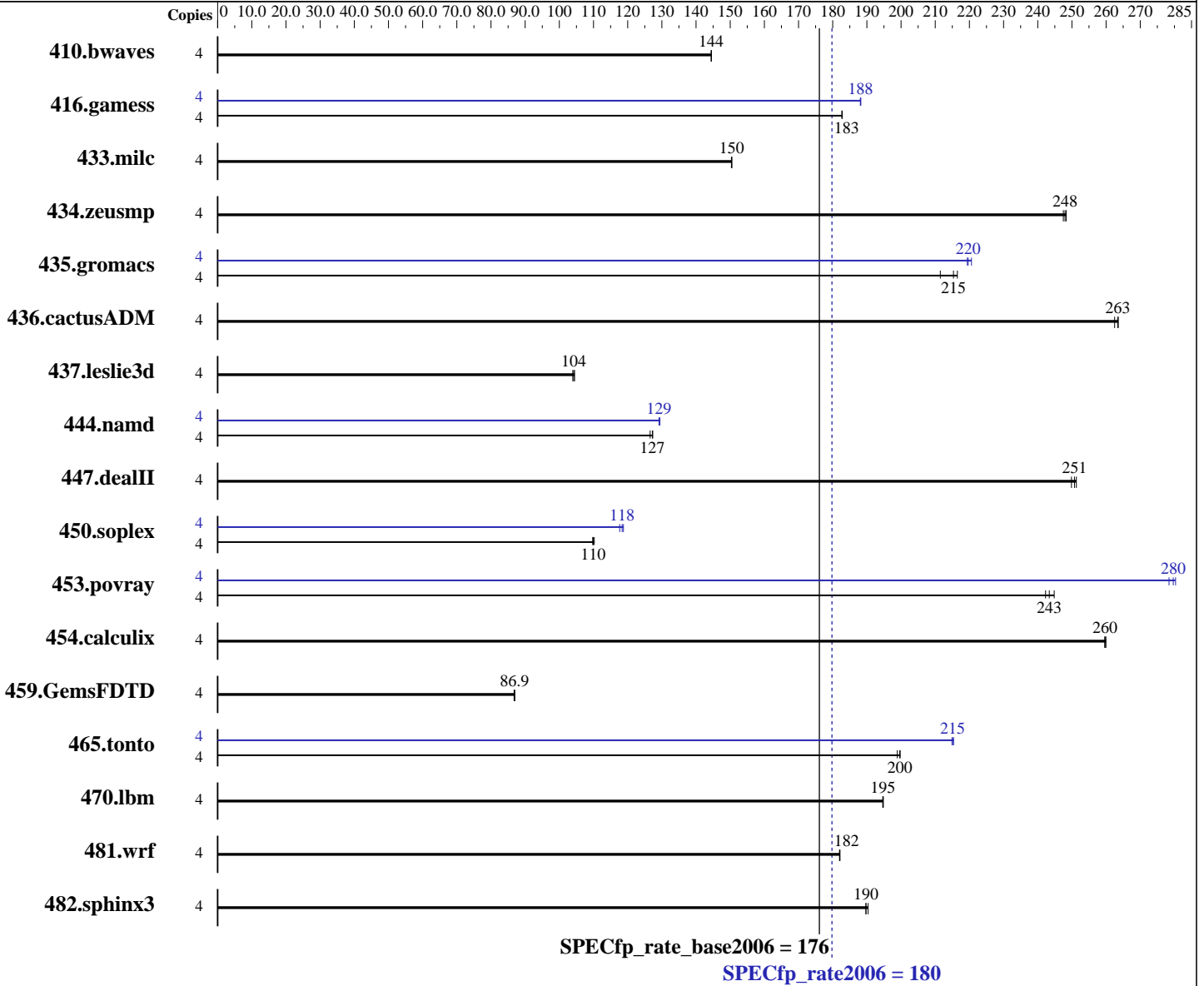
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jan-2016

Hardware Availability: Oct-2015

Software Availability: Sep-2015



### Hardware

CPU Name: Intel Xeon E3-1220 v5  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 CPU(s) orderable: 1 chip  
 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 7.2  
 Kernel 3.10.0-el7\_X86\_64  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: xfs  
 System State: Run level 3 (multi-user)

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 16 GB (2 x 8 GB 2Rx8 PC4-2133P-U)  
Disk Subsystem: 1 x 400 GB SATA III SSD  
Other Hardware: None

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

## Results Table

| Benchmark     | Base   |                    |                   |                   |                   |                   |                    | Peak   |                    |                   |                   |                   |                   |                    |
|---------------|--------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
|               | Copies | Seconds            | Ratio             | Seconds           | Ratio             | Seconds           | Ratio              | Copies | Seconds            | Ratio             | Seconds           | Ratio             | Seconds           | Ratio              |
| 410.bwaves    | 4      | 376                | 145               | <b><u>376</u></b> | <b><u>144</u></b> | 376               | 144                | 4      | 376                | 145               | <b><u>376</u></b> | <b><u>144</u></b> | 376               | 144                |
| 416.gamess    | 4      | <b><u>429</u></b>  | <b><u>183</u></b> | 428               | 183               | 429               | 183                | 4      | 416                | 188               | 416               | 188               | <b><u>416</u></b> | <b><u>188</u></b>  |
| 433.milc      | 4      | 244                | 150               | <b><u>244</u></b> | <b><u>150</u></b> | 244               | 150                | 4      | 244                | 150               | <b><u>244</u></b> | <b><u>150</u></b> | 244               | 150                |
| 434.zeusmp    | 4      | 147                | 248               | <b><u>147</u></b> | <b><u>248</u></b> | 147               | 247                | 4      | 147                | 248               | <b><u>147</u></b> | <b><u>248</u></b> | 147               | 247                |
| 435.gromacs   | 4      | 132                | 216               | 135               | 211               | <b><u>133</u></b> | <b><u>215</u></b>  | 4      | 129                | 221               | <b><u>130</u></b> | <b><u>220</u></b> | 130               | 219                |
| 436.cactusADM | 4      | 182                | 263               | 181               | 264               | <b><u>181</u></b> | <b><u>263</u></b>  | 4      | 182                | 263               | 181               | 264               | <b><u>181</u></b> | <b><u>263</u></b>  |
| 437.leslie3d  | 4      | <b><u>361</u></b>  | <b><u>104</u></b> | 360               | 104               | 362               | 104                | 4      | <b><u>361</u></b>  | <b><u>104</u></b> | 360               | 104               | 362               | 104                |
| 444.namd      | 4      | <b><u>252</u></b>  | <b><u>127</u></b> | 253               | 127               | 252               | 127                | 4      | <b><u>248</u></b>  | <b><u>129</u></b> | 248               | 129               | 248               | 129                |
| 447.dealII    | 4      | 183                | 250               | <b><u>182</u></b> | <b><u>251</u></b> | 182               | 251                | 4      | 183                | 250               | <b><u>182</u></b> | <b><u>251</u></b> | 182               | 251                |
| 450.soplex    | 4      | <b><u>304</u></b>  | <b><u>110</u></b> | 303               | 110               | 304               | 110                | 4      | 281                | 119               | <b><u>282</u></b> | <b><u>118</u></b> | 284               | 118                |
| 453.povray    | 4      | <b><u>87.4</u></b> | <b><u>243</u></b> | 86.9              | 245               | 87.8              | 242                | 4      | <b><u>76.1</u></b> | <b><u>280</u></b> | 76.4              | 278               | 75.9              | 280                |
| 454.calculix  | 4      | 127                | 260               | <b><u>127</u></b> | <b><u>260</u></b> | 127               | 260                | 4      | 127                | 260               | <b><u>127</u></b> | <b><u>260</u></b> | 127               | 260                |
| 459.GemsFDTD  | 4      | 489                | 86.8              | 488               | 87.0              | <b><u>488</u></b> | <b><u>86.9</u></b> | 4      | 489                | 86.8              | 488               | 87.0              | <b><u>488</u></b> | <b><u>86.9</u></b> |
| 465.tonto     | 4      | <b><u>197</u></b>  | <b><u>200</u></b> | 197               | 200               | 198               | 199                | 4      | 183                | 215               | 183               | 215               | <b><u>183</u></b> | <b><u>215</u></b>  |
| 470.lbm       | 4      | <b><u>282</u></b>  | <b><u>195</u></b> | 282               | 195               | 282               | 195                | 4      | <b><u>282</u></b>  | <b><u>195</u></b> | 282               | 195               | 282               | 195                |
| 481.wrf       | 4      | 245                | 182               | <b><u>245</u></b> | <b><u>182</u></b> | 245               | 182                | 4      | 245                | 182               | <b><u>245</u></b> | <b><u>182</u></b> | 245               | 182                |
| 482.sphinx3   | 4      | <b><u>411</u></b>  | <b><u>190</u></b> | 411               | 190               | 410               | 190                | 4      | <b><u>411</u></b>  | <b><u>190</u></b> | 411               | 190               | 410               | 190                |

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

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

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

## Platform Notes

Sysinfo program /home/cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on localhost.localdomain Mon Jan 11 22:02:45 2016

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Test date: Jan-2016  
Hardware Availability: Oct-2015  
Software Availability: Sep-2015

### Platform Notes (Continued)

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 E3-1220 v5 @ 3.00GHz
 1 "physical id"s (chips)
 4 "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 : 4
  siblings  : 4
  physical 0: cores 0 1 2 3
cache size : 8192 KB
```

```
From /proc/meminfo
MemTotal:      16088400 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.2 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.2"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server
```

```
uname -a:
Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29
EDT 2015 x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jan 11 16:56
```

```
SPEC is set to: /home/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs  280G  27G  253G  10% /
```

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

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### Platform Notes (Continued)

BIOS American Megatrends Inc. T20151229190512 12/29/2015

Memory:

2x Micron 16ATF1G64AZ-2G1A2 8 GB 2 rank 2133 MHz  
2x Not Specified Not Specified

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB  
memory using RedHat EL 7.1

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

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## Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

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

Benchmarks using both Fortran and C:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

## Peak Compiler Invocation

C benchmarks:  
icc -m64

C++ benchmarks (except as noted below):  
icpc -m64  
450.soplex: icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

Fortran benchmarks:  
ifort -m64

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

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
416.gamess: -DSPEC\_CPU\_LP64  
433.milc: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

```
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: -D_FILE_OFFSET_BITS=64
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
```

## Peak Optimization Flags

C benchmarks:

```
433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
         -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
         -par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -fno-alias -auto-ilp32
447.dealII: basepeak = yes
450.soplex: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
         -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
         -par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -opt-malloc-options=3
453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
         -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
         -par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -unroll4 -ansi-alias
```

Fortran benchmarks:

```
410.bwaves: basepeak = yes
```

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## Peak Optimization Flags (Continued)

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

434.zeusmp: `basepeak = yes`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `basepeak = yes`

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

Benchmarks using both Fortran and C:

435.gromacs: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-prefetch -auto-ilp32`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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