

SPEC[®] CFP2006 Result

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Supermicro

SuperServer 6028TP-HTFR
(X10DRT-PIBF, Intel Xeon E5-2667 v4)

SPECfp[®]2006 = **129**

SPECfp_base2006 = **125**

CPU2006 license: 001176

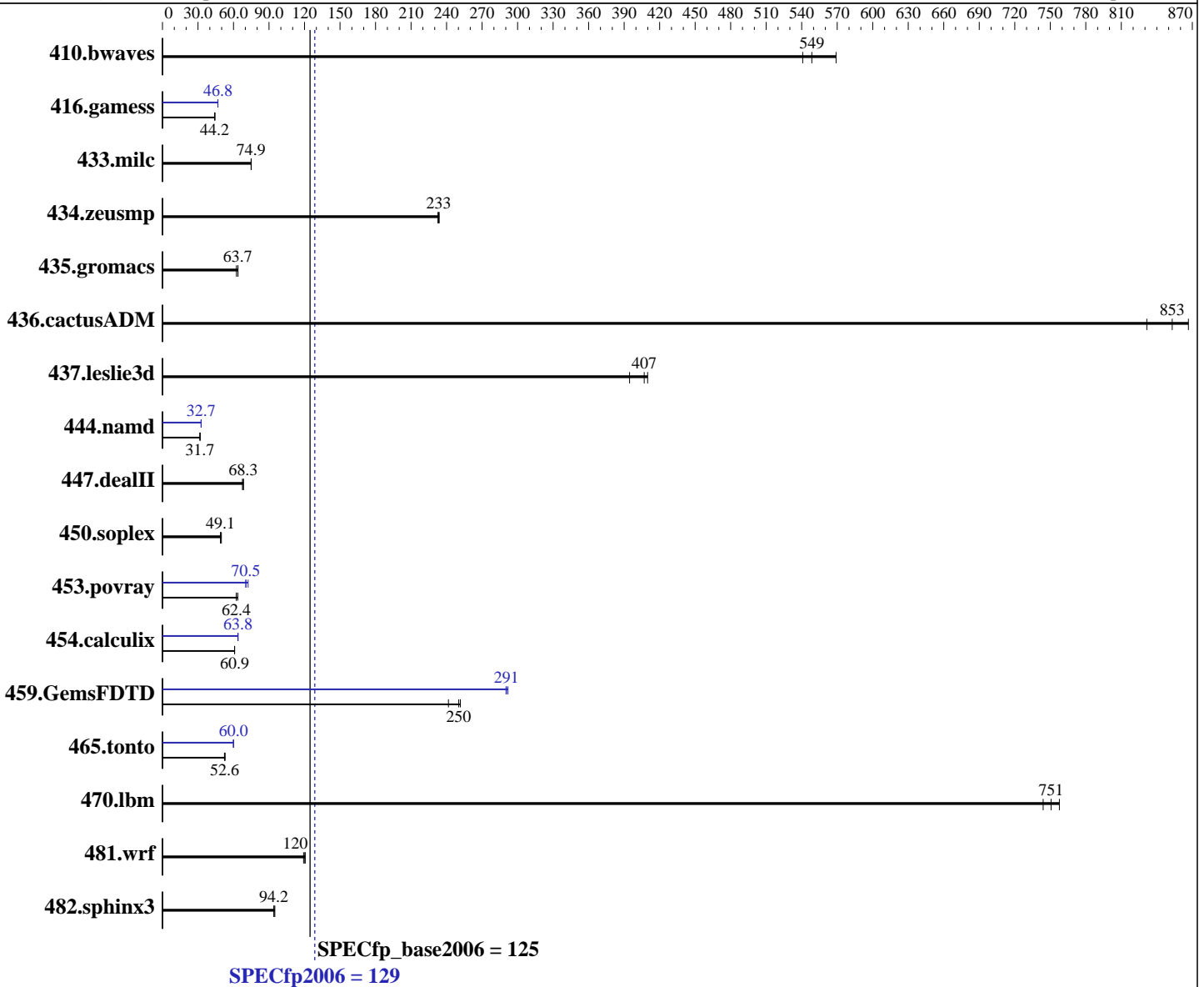
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Mar-2016

Hardware Availability: Mar-2016

Software Availability: Sep-2015



Hardware

CPU Name: Intel Xeon E5-2667 v4
 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: SUSE Linux Enterprise Server 12, Kernel 3.12.28-4-default
 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: Yes
 File System: ext4
 System State: Run level 3 (multi-user)

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L3 Cache: 25 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400P-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 | 25.1 | 541 | <u>24.8</u> | <u>549</u> | 23.9 | 569 | 25.1 | 541 | <u>24.8</u> | <u>549</u> | 23.9 | 569 |
| 416.gamess | 443 | 44.2 | <u>443</u> | <u>44.2</u> | 443 | 44.2 | <u>418</u> | <u>46.8</u> | 418 | 46.9 | 418 | 46.8 |
| 433.milc | <u>122</u> | <u>74.9</u> | 122 | 75.0 | 123 | 74.9 | <u>122</u> | <u>74.9</u> | 122 | 75.0 | 123 | 74.9 |
| 434.zeusmp | 38.9 | 234 | <u>39.0</u> | <u>233</u> | 39.1 | 233 | 38.9 | 234 | <u>39.0</u> | <u>233</u> | 39.1 | 233 |
| 435.gromacs | <u>112</u> | <u>63.7</u> | 114 | 62.4 | 112 | 63.8 | <u>112</u> | <u>63.7</u> | 114 | 62.4 | 112 | 63.8 |
| 436.cactusADM | <u>14.0</u> | <u>853</u> | 14.4 | 832 | 13.8 | 867 | <u>14.0</u> | <u>853</u> | 14.4 | 832 | 13.8 | 867 |
| 437.leslie3d | 22.9 | 410 | 23.8 | 395 | <u>23.1</u> | <u>407</u> | 22.9 | 410 | 23.8 | 395 | <u>23.1</u> | <u>407</u> |
| 444.namd | 253 | 31.7 | <u>253</u> | <u>31.7</u> | 253 | 31.7 | 245 | 32.7 | 246 | 32.6 | <u>245</u> | <u>32.7</u> |
| 447.dealII | 169 | 67.6 | 167 | 68.4 | <u>167</u> | <u>68.3</u> | 169 | 67.6 | 167 | 68.4 | <u>167</u> | <u>68.3</u> |
| 450.soplex | 170 | 49.0 | <u>170</u> | <u>49.1</u> | 168 | 49.8 | 170 | 49.0 | <u>170</u> | <u>49.1</u> | 168 | 49.8 |
| 453.povray | 85.4 | 62.3 | <u>85.2</u> | <u>62.4</u> | 83.6 | 63.6 | 73.5 | 72.4 | <u>75.5</u> | <u>70.5</u> | 75.6 | 70.4 |
| 454.calculix | 135 | 60.9 | <u>135</u> | <u>60.9</u> | 135 | 61.0 | 130 | 63.7 | 129 | 63.9 | <u>129</u> | <u>63.8</u> |
| 459.GemsFDTD | 43.9 | 242 | <u>42.4</u> | <u>250</u> | 42.2 | 252 | 36.4 | 292 | <u>36.5</u> | <u>291</u> | 36.6 | 290 |
| 465.tonto | 186 | 52.9 | <u>187</u> | <u>52.6</u> | 188 | 52.4 | 164 | 59.9 | 164 | 60.1 | <u>164</u> | <u>60.0</u> |
| 470.lbm | 18.5 | 744 | <u>18.3</u> | <u>751</u> | 18.1 | 758 | 18.5 | 744 | <u>18.3</u> | <u>751</u> | 18.1 | 758 |
| 481.wrf | 93.7 | 119 | <u>92.9</u> | <u>120</u> | 92.6 | 121 | 93.7 | 119 | <u>92.9</u> | <u>120</u> | 92.6 | 121 |
| 482.sphinx3 | 205 | 94.9 | 207 | 94.1 | <u>207</u> | <u>94.2</u> | 205 | 94.9 | 207 | 94.1 | <u>207</u> | <u>94.2</u> |

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:

Early Snoop = Disable

Hyper-Threading (ALL) = Disable

Enforce POR = Disabled

Sysinfo program /home/SPEC2K6/SPEC2006-V12/config/sysinfo.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 # \$ e3fbb8667b5a285932ceab81e28219e1

running on 30-113 Tue Mar 8 06:57:53 2016

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2667 v4 @ 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 2 3 4 8 10 11 12

physical 1: cores 0 2 3 4 8 10 11 12

cache size : 25600 KB

From /proc/meminfo

MemTotal: 264566868 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12

From /etc/*release* /etc/*version*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86_64)

VERSION = 12

PATCHLEVEL = 0

This file is deprecated and will be removed in a future service pack or release.

Please check /etc/os-release for details about this release.

os-release:

NAME="SLES"

VERSION="12"

VERSION_ID="12"

PRETTY_NAME="SUSE Linux Enterprise Server 12"

ID="sles"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:12"

uname -a:

Linux 30-113 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014 (9879bd4)

x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 8 01:50

SPEC is set to: /home/SPEC2K6/SPEC2006-V12

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|------|-------|------|------------|
|------------|------|------|------|-------|------|------------|

| | | | | | | |
|-----------|------|------|-----|------|----|-------|
| /dev/sda5 | ext4 | 497G | 11G | 486G | 3% | /home |
|-----------|------|------|-----|------|----|-------|

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program
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Platform Notes (Continued)

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.

BIOS American Megatrends Inc. 2.0 12/18/2015

Memory:

16x Samsung M393A2G40DB1-CRC 16 GB 2 rank 2400 MHz

(End of data from sysinfo program)

General Notes

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

KMP_AFFINITY = "granularity=fine,compact"

LD_LIBRARY_PATH = "/home/SPEC2K6/SPEC2006-V12/libs/32:/home/SPEC2K6/SPEC2006-V12/libs/64:/home/SPEC2K6/SPEC2006-V12/sh"

OMP_NUM_THREADS = "16"

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.lelie3d: -DSPEC_CPU_LP64

444.namd: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

```
447.deallI: -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
```

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

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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) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

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: -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 -opt-prefetch -parallel

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) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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Peak Optimization Flags (Continued)

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

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For other inquiries, please contact webmaster@spec.org.

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