



SPEC[®] CFP2006 Result

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Supermicro

SuperServer 2048U-RTR4
(X10QRH+, Intel Xeon E5-4627 v3)

SPECfp[®]2006 = 115

SPECfp_base2006 = 110

CPU2006 license: 001176

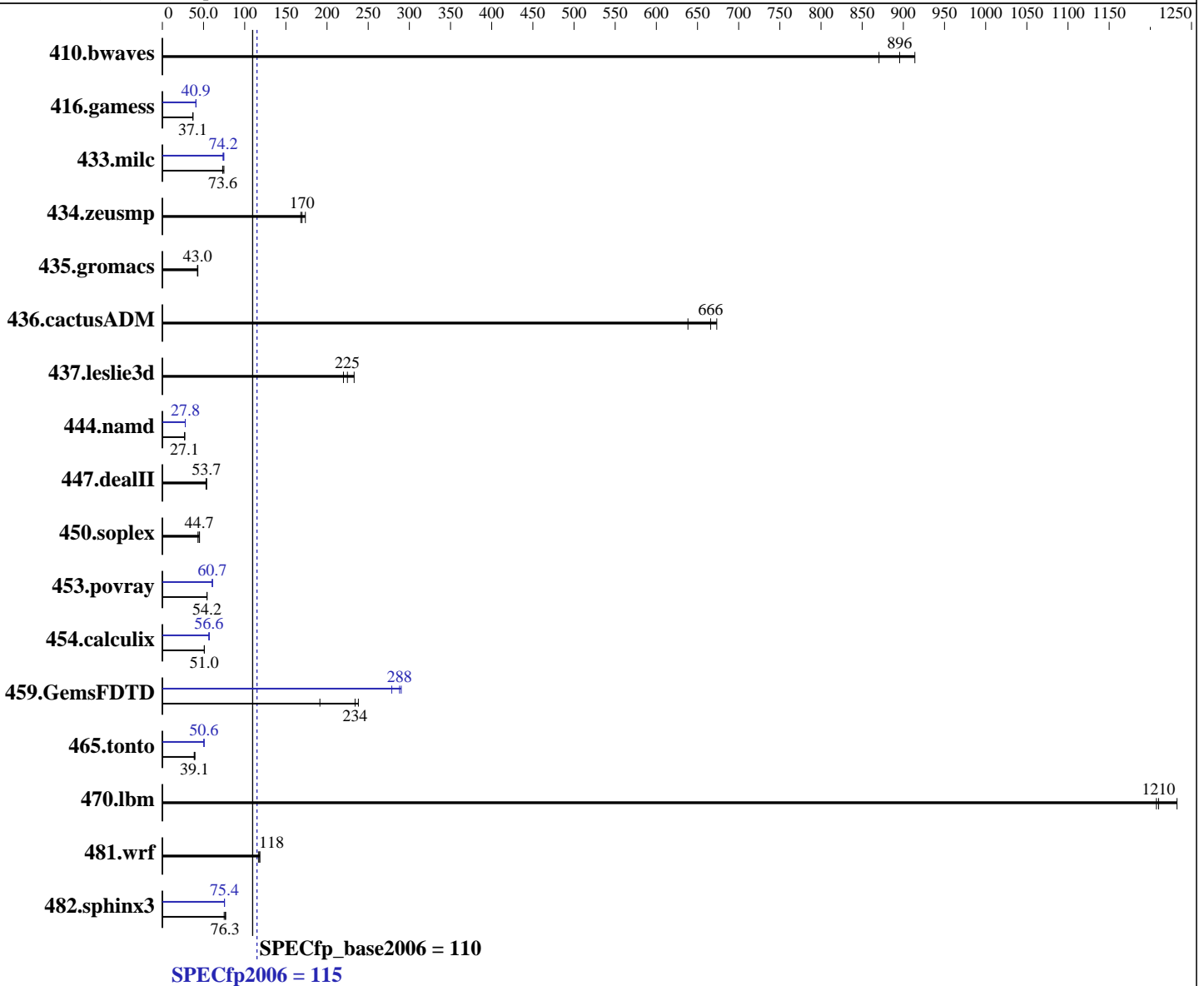
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jun-2015

Hardware Availability: Jun-2015

Software Availability: Oct-2014



Hardware

CPU Name: Intel Xeon E5-4627 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip
 CPU(s) orderable: 1,2,4 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 12, Kernel 3.12.28-4-default
 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: 25 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 512 GB SATA III, SSD
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 | <u>15.2</u> | 896 | 14.9 | 914 | 15.6 | 870 | <u>15.2</u> | 896 | 14.9 | 914 | 15.6 | 870 |
| 416.gamess | 530 | 36.9 | 527 | 37.2 | <u>527</u> | 37.1 | 482 | 40.6 | 478 | 41.0 | <u>479</u> | 40.9 |
| 433.milc | 125 | 73.2 | <u>125</u> | 73.6 | 123 | 74.8 | 123 | 74.8 | <u>124</u> | 74.2 | 125 | 73.7 |
| 434.zeusmp | <u>53.6</u> | 170 | 52.4 | 174 | 54.1 | 168 | <u>53.6</u> | 170 | 52.4 | 174 | 54.1 | 168 |
| 435.gromacs | <u>166</u> | 43.0 | 168 | 42.6 | 165 | 43.1 | <u>166</u> | 43.0 | 168 | 42.6 | 165 | 43.1 |
| 436.cactusADM | 18.7 | 638 | 17.7 | 673 | <u>17.9</u> | 666 | 18.7 | 638 | 17.7 | 673 | <u>17.9</u> | 666 |
| 437.leslie3d | 42.7 | 220 | 40.4 | 233 | <u>41.8</u> | 225 | 42.7 | 220 | 40.4 | 233 | <u>41.8</u> | 225 |
| 444.namd | <u>296</u> | 27.1 | 297 | 27.0 | 296 | 27.1 | 288 | 27.8 | <u>288</u> | 27.8 | 288 | 27.8 |
| 447.dealII | <u>213</u> | 53.7 | 213 | 53.7 | 216 | 53.0 | <u>213</u> | 53.7 | 213 | 53.7 | 216 | 53.0 |
| 450.soplex | 193 | 43.2 | 185 | 45.2 | <u>187</u> | 44.7 | 193 | 43.2 | 185 | 45.2 | <u>187</u> | 44.7 |
| 453.povray | 98.2 | 54.2 | <u>98.1</u> | 54.2 | 98.0 | 54.3 | 87.8 | 60.6 | <u>87.7</u> | 60.7 | 87.3 | 61.0 |
| 454.calculix | 161 | 51.1 | <u>162</u> | 51.0 | 162 | 50.9 | <u>146</u> | 56.6 | 145 | 57.1 | 146 | 56.6 |
| 459.GemsFDTD | 44.6 | 238 | 55.5 | 191 | <u>45.3</u> | 234 | <u>36.8</u> | 288 | 36.6 | 290 | 38.1 | 279 |
| 465.tonto | 255 | 38.6 | 248 | 39.6 | <u>251</u> | 39.1 | 195 | 50.4 | <u>194</u> | 50.6 | 194 | 50.7 |
| 470.lbm | 11.4 | 1210 | <u>11.4</u> | 1210 | 11.1 | 1230 | 11.4 | 1210 | <u>11.4</u> | 1210 | 11.1 | 1230 |
| 481.wrf | 94.4 | 118 | <u>94.5</u> | 118 | 95.8 | 117 | 94.4 | 118 | <u>94.5</u> | 118 | 95.8 | 117 |
| 482.sphinx3 | 253 | 77.0 | 260 | 75.0 | <u>255</u> | 76.3 | <u>259</u> | 75.4 | 258 | 75.6 | 259 | 75.3 |

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:
COD Enable = Disable
Early Snoop = Disable
Enforce POR = Disabled
Sysinfo program /home/SPEC2K6/SPEC2006-V12/config/sysinfo.rev6914
\$Rev: 6914 \$ \$Date:: 2014-06-25 # \$ e3fbb8667b5a285932ceab81e28219e1
running on 21-234 Thu Jun 18 08:38:15 2015

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 E5-4627 v3 @ 2.60GHz

4 "physical id"s (chips)

40 "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 : 10

siblings : 10

physical 0: cores 0 1 2 3 4 8 9 10 11 12

physical 1: cores 0 1 2 3 4 8 9 10 11 12

physical 2: cores 0 1 2 3 4 8 9 10 11 12

physical 3: cores 0 1 2 3 4 8 9 10 11 12

cache size : 25600 KB

From /proc/meminfo

MemTotal: 529336776 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 21-234 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 5 Jun 18 03:07

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

Filesystem Type Size Used Avail Use% Mounted on

/dev/sda3 ext4 458G 8.8G 448G 2% /home

Additional information from dmidecode:

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Platform Notes (Continued)

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.

BIOS American Megatrends Inc. 1.00 06/01/2015

Memory:

16x NO DIMM NO DIMM

1x Samsung(data:13/44) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

1x Samsung(data:13/48) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

3x Samsung(data:13/51) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

2x Samsung(data:14/13) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

1x Samsung(data:14/16) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

5x Samsung(data:14/17) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

1x Samsung(data:14/25) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

14x Samsung(data:14/26) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

4x Samsung(data:14/47) M393A2G40DB0-CPB 16 GB 2 rank 2133 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,0,1"

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

OMP_NUM_THREADS = "40"

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



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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

```

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

```

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Peak Compiler Invocation (Continued)

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:

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.dealIII: 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

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Peak Optimization Flags (Continued)

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-revG.20141230.00.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-revG.20141230.00.xml>

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