



SPEC[®] CFP2006 Result

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Huawei

SPECfp[®]2006 = 107

Huawei CH226 V3 (Intel Xeon E5-2683 v4)

SPECfp_base2006 = 102

CPU2006 license: 3175

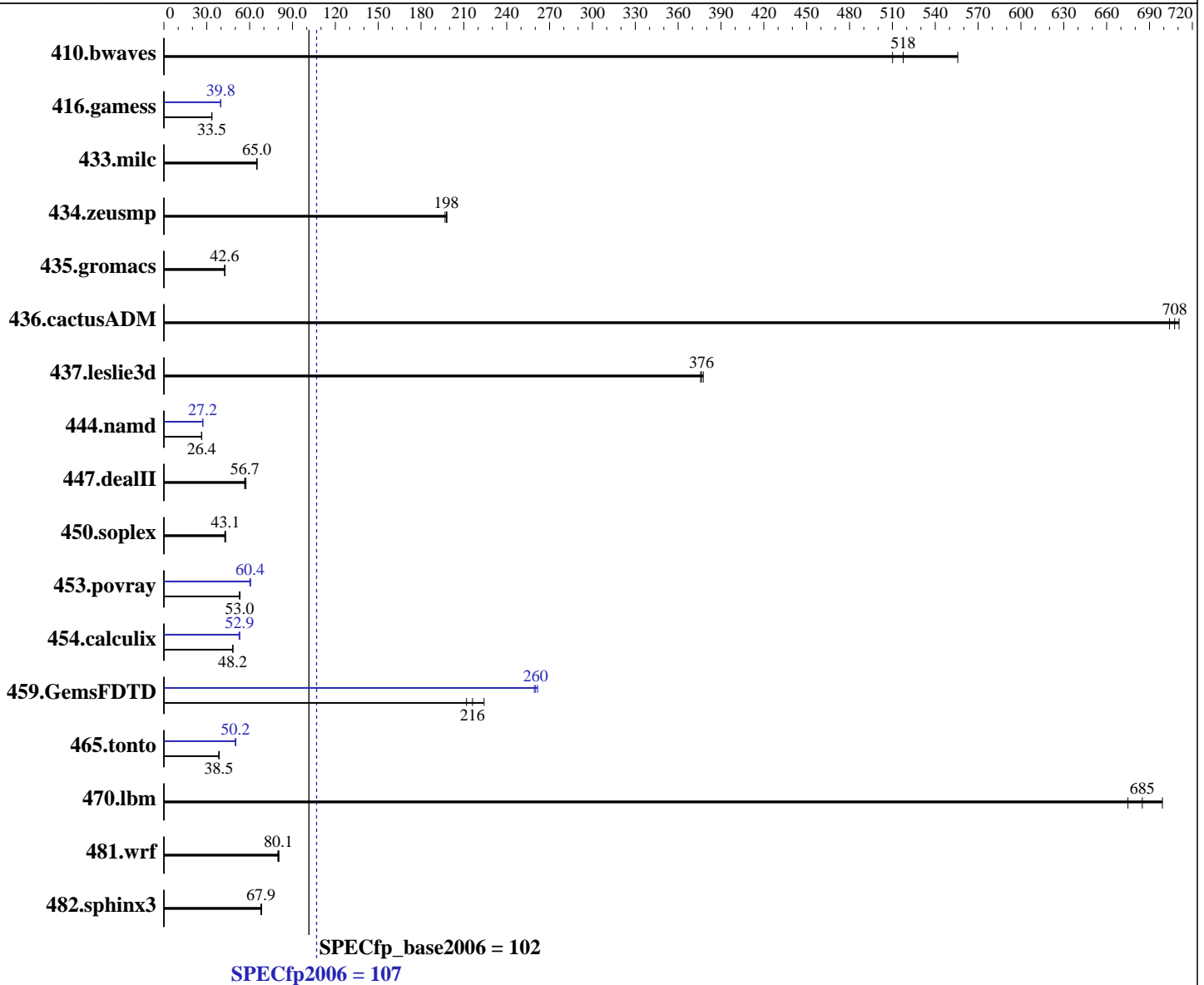
Test date: Nov-2016

Test sponsor: Huawei

Hardware Availability: Mar-2016

Tested by: Huawei

Software Availability: Dec-2015



Hardware

CPU Name: Intel Xeon E5-2683 v4
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
 CPU MHz: 2100
 FPU: Integrated
 CPU(s) enabled: 32 cores, 2 chips, 16 cores/chip
 CPU(s) orderable: 1,2 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: SUSE Linux Enterprise Server 12 SP1 3.12.49-11-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: xfs
 System State: Run level 3 (multi-user)

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L3 Cache: 40 MB I+D on chip per chip
 Other Cache: None
 Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
 Disk Subsystem: 1 x 1000 GB SATA, 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 | 24.5 | 556 | 26.6 | 510 | <u>26.3</u> | <u>518</u> | 24.5 | 556 | 26.6 | 510 | <u>26.3</u> | <u>518</u> |
| 416.gamess | 584 | 33.5 | 582 | 33.6 | <u>584</u> | <u>33.5</u> | <u>492</u> | <u>39.8</u> | 493 | 39.7 | 492 | 39.8 |
| 433.milc | <u>141</u> | <u>65.0</u> | 141 | 64.9 | 141 | 65.3 | <u>141</u> | <u>65.0</u> | 141 | 64.9 | 141 | 65.3 |
| 434.zeusmp | 46.2 | 197 | <u>46.0</u> | <u>198</u> | 45.9 | 198 | 46.2 | 197 | <u>46.0</u> | <u>198</u> | 45.9 | 198 |
| 435.gromacs | 167 | 42.7 | 168 | 42.5 | <u>168</u> | <u>42.6</u> | 167 | 42.7 | 168 | 42.5 | <u>168</u> | <u>42.6</u> |
| 436.cactusADM | 16.8 | 711 | <u>16.9</u> | <u>708</u> | 17.0 | 704 | 16.8 | 711 | <u>16.9</u> | <u>708</u> | 17.0 | 704 |
| 437.leslie3d | <u>25.0</u> | <u>376</u> | 24.9 | 378 | 25.0 | 376 | <u>25.0</u> | <u>376</u> | 24.9 | 378 | 25.0 | 376 |
| 444.namd | 304 | 26.4 | 303 | 26.5 | <u>303</u> | <u>26.4</u> | 295 | 27.2 | <u>295</u> | <u>27.2</u> | 294 | 27.2 |
| 447.dealII | <u>202</u> | <u>56.7</u> | 202 | 56.6 | 199 | 57.5 | <u>202</u> | <u>56.7</u> | 202 | 56.6 | 199 | 57.5 |
| 450.soplex | 193 | 43.1 | 196 | 42.6 | <u>194</u> | <u>43.1</u> | 193 | 43.1 | 196 | 42.6 | <u>194</u> | <u>43.1</u> |
| 453.povray | 101 | 52.8 | <u>100</u> | <u>53.0</u> | 99.8 | 53.3 | 87.6 | 60.7 | 88.4 | 60.2 | <u>88.1</u> | <u>60.4</u> |
| 454.calculix | <u>171</u> | <u>48.2</u> | 171 | 48.3 | 171 | 48.2 | <u>156</u> | <u>52.9</u> | 157 | 52.6 | 155 | 53.1 |
| 459.GemsFDTD | <u>49.1</u> | <u>216</u> | 47.3 | 224 | 50.1 | 212 | 40.6 | 262 | 40.9 | 259 | <u>40.8</u> | <u>260</u> |
| 465.tonto | <u>255</u> | <u>38.5</u> | 256 | 38.4 | 254 | 38.7 | <u>196</u> | <u>50.2</u> | 197 | 50.0 | 196 | 50.3 |
| 470.lbm | <u>20.1</u> | <u>685</u> | 19.7 | 699 | 20.4 | 675 | <u>20.1</u> | <u>685</u> | 19.7 | 699 | 20.4 | 675 |
| 481.wrf | 139 | 80.6 | 140 | 79.8 | <u>139</u> | <u>80.1</u> | 139 | 80.6 | 140 | 79.8 | <u>139</u> | <u>80.1</u> |
| 482.sphinx3 | <u>287</u> | <u>67.9</u> | 285 | 68.4 | 287 | 67.9 | <u>287</u> | <u>67.9</u> | 285 | 68.4 | 287 | 67.9 |

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 configuration:
 Set Power Efficiency Mode to Performance
 Set Snoop Mode to HS mode
 Set Patrol Scrub to Disable
 Set Hyper-Threading to Disable
 Baseboard Management Controller used to adjust the fan speed to 100%
 Sysinfo program /spec16/config/sysinfo.rev6914
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
 running on linux-4m6y Wed Nov 23 22:39:02 2016

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Hardware Availability: Mar-2016

Software Availability: Dec-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 E5-2683 v4 @ 2.10GHz
 2 "physical id"s (chips)
 32 "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    : 16
  siblings     : 16
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
cache size     : 40960 KB

```

```

From /proc/meminfo
MemTotal:      528827916 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

```

```

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# 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-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp1"

```

```

uname -a:
Linux linux-4m6y 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Nov 23 22:38 last=5

```

SPEC is set to: /spec16
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   456G  113G  343G  25% /

```

Additional information from dmidecode:

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| | | |
|--|--------------------------|------------|
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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 Insyde Corp. 3.32 09/14/2016

Memory:

8x NO DIMM NO DIMM

16x Samsung M393A4K40BB1-CRC 32 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,1,0"

LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"

OMP_NUM_THREADS = "32"

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

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

The Huawei CH226 V3 and Huawei CH225 V3

are electronically equivalent.

The results have been measured on a Huawei CH226 V3 model

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: 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

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Peak Optimization Flags (Continued)

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:

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.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/Huawei-Platform-Settings-BDW-V1.0.xml>

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