



SPEC[®] CFP2006 Result

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Huawei

SPECfp[®]2006 = 164

Huawei 2288H V5 (Intel Xeon Platinum 8180)

SPECfp_base2006 = 157

CPU2006 license: 3175

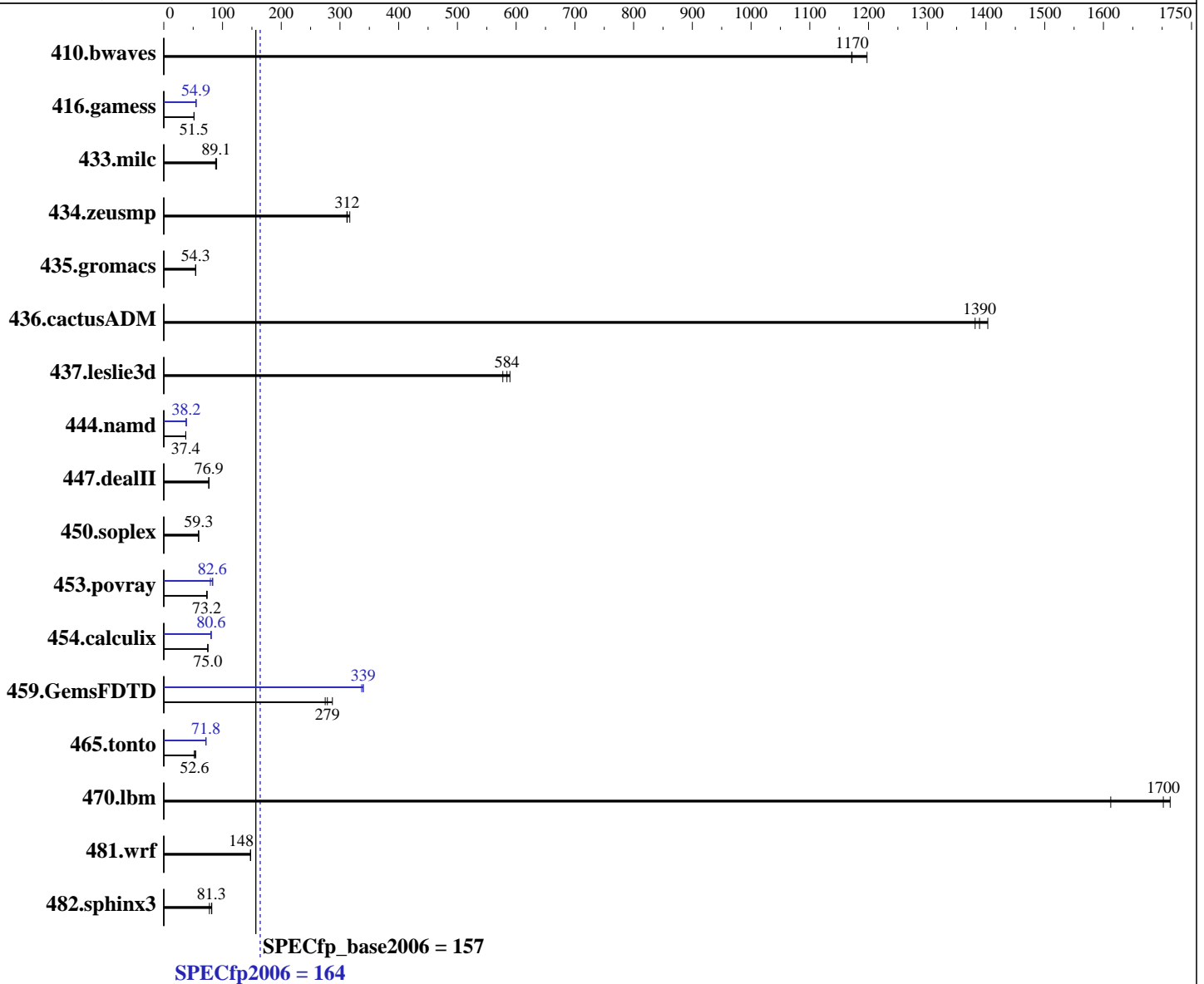
Test sponsor: Huawei

Tested by: Huawei

Test date: May-2017

Hardware Availability: Jul-2017

Software Availability: Nov-2016



Hardware

CPU Name: Intel Xeon Platinum 8180
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
 CPU MHz: 2500
 FPU: Integrated
 CPU(s) enabled: 56 cores, 2 chips, 28 cores/chip
 CPU(s) orderable: 1,2 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-69-default
 Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;
 Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
 Auto Parallel: Yes
 File System: xfs
 System State: Run level 3 (multi-user)

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L3 Cache: 38.5 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 1200 GB SAS, 10000 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	11.3	1200	<u>11.6</u>	<u>1170</u>	11.6	1170	11.3	1200	<u>11.6</u>	<u>1170</u>	11.6	1170
416.gamess	380	51.5	<u>380</u>	<u>51.5</u>	380	51.5	<u>357</u>	<u>54.9</u>	357	54.9	356	54.9
433.milc	102	90.0	104	88.2	<u>103</u>	<u>89.1</u>	102	90.0	104	88.2	<u>103</u>	<u>89.1</u>
434.zeusmp	28.7	317	<u>29.1</u>	<u>312</u>	29.2	312	28.7	317	<u>29.1</u>	<u>312</u>	29.2	312
435.gromacs	132	54.3	<u>131</u>	<u>54.3</u>	131	54.3	132	54.3	<u>131</u>	<u>54.3</u>	131	54.3
436.cactusADM	8.65	1380	<u>8.60</u>	<u>1390</u>	8.52	1400	8.65	1380	<u>8.60</u>	<u>1390</u>	8.52	1400
437.leslie3d	15.9	589	<u>16.1</u>	<u>584</u>	16.3	577	15.9	589	<u>16.1</u>	<u>584</u>	16.3	577
444.namd	214	37.5	<u>214</u>	<u>37.4</u>	214	37.4	210	38.3	<u>210</u>	<u>38.2</u>	210	38.2
447.dealII	148	77.2	150	76.4	<u>149</u>	<u>76.9</u>	148	77.2	150	76.4	<u>149</u>	<u>76.9</u>
450.soplex	<u>141</u>	<u>59.3</u>	141	59.3	141	59.1	<u>141</u>	<u>59.3</u>	141	59.3	141	59.1
453.povray	<u>72.7</u>	<u>73.2</u>	72.8	73.1	72.0	73.9	<u>64.4</u>	<u>82.6</u>	67.1	79.3	63.7	83.5
454.calculix	<u>110</u>	<u>75.0</u>	110	75.0	110	74.9	102	80.8	<u>102</u>	<u>80.6</u>	103	80.4
459.GemsFDTD	37.0	287	<u>38.1</u>	<u>279</u>	38.6	275	31.5	337	31.2	340	<u>31.3</u>	<u>339</u>
465.tonto	181	54.4	<u>187</u>	<u>52.6</u>	189	52.0	137	71.9	<u>137</u>	<u>71.8</u>	137	71.6
470.lbm	8.02	1710	8.52	1610	<u>8.07</u>	<u>1700</u>	8.02	1710	8.52	1610	<u>8.07</u>	<u>1700</u>
481.wrf	75.5	148	75.7	147	<u>75.6</u>	<u>148</u>	75.5	148	75.7	147	<u>75.6</u>	<u>148</u>
482.sphinx3	238	81.7	<u>240</u>	<u>81.3</u>	251	77.6	238	81.7	<u>240</u>	<u>81.3</u>	251	77.6

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 Custom
Set Hyper-Threading to Disable
Sysinfo program /spec17/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-jm4z Fri May 26 13:10:15 2017

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>

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Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
 2 "physical id"s (chips)
 56 "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 : 28
  siblings  : 28
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
cache size : 39424 KB

```

```

From /proc/meminfo
MemTotal:      394122080 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

```

uname -a:
Linux linux-jm4z 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 May 26 09:01

```

SPEC is set to: /spec17
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/sda2        xfs      828G      24G  805G   3% /

```

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

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Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS INSYDE Corp. 0.10 03/09/2017

Memory:

24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 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 = "/spec17/libs/32:/spec17/libs/64:/spec17/sh10.2"

OMP_NUM_THREADS = "56"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2

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>

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

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Base Portability Flags (Continued)

```

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 -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

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

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

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

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0
-qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -inline-calloc -qopt-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

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-ic17.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.xml>

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

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