



SPEC[®] CFP2006 Result

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Huawei

SPECfp[®]2006 = **123**

Huawei 1288H V5 (Intel Xeon Platinum 8156)

SPECfp_base2006 = **121**

CPU2006 license: 3175

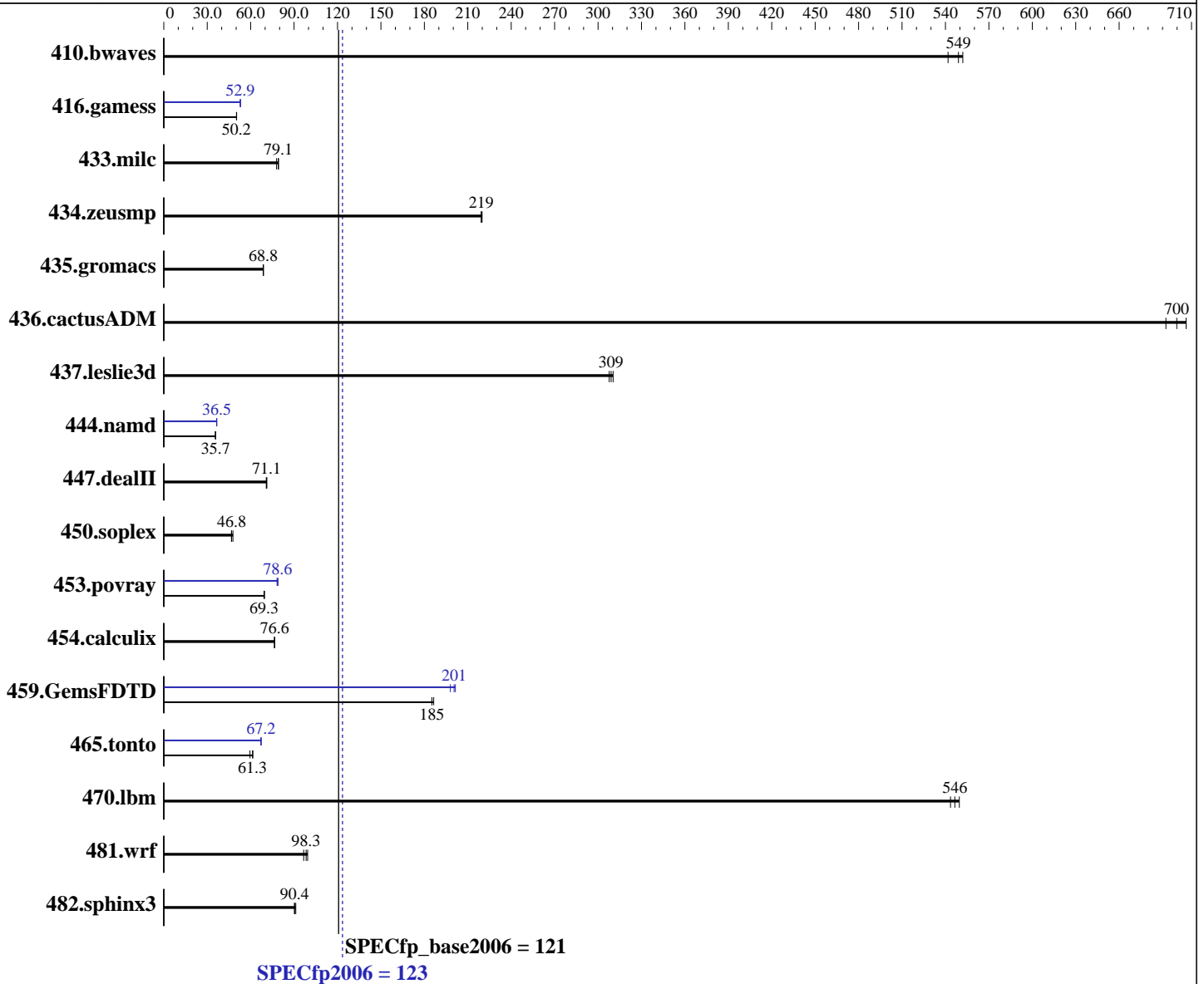
Test date: Jul-2017

Test sponsor: Huawei

Hardware Availability: Sep-2017

Tested by: Huawei

Software Availability: Nov-2016



Hardware

CPU Name: Intel Xeon Platinum 8156
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3600
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 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: Red Hat Enterprise Linux Server release 7.3 (Maipo)
 3.10.0-514.el7.x86_64
 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

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L3 Cache: 16.5 MB I+D on chip per chip
 Other Cache: None
 Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
 Disk Subsystem: 1 x 1200 GB SAS, 10000 RPM
 Other Hardware: None

System State: Run level 3 (multi-user)
 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 | 542 | 24.6 | 552 | <u>24.8</u> | <u>549</u> | 25.1 | 542 | 24.6 | 552 | <u>24.8</u> | <u>549</u> |
| 416.gamess | 390 | 50.2 | 389 | 50.3 | <u>390</u> | <u>50.2</u> | 370 | 52.9 | 370 | 52.9 | <u>370</u> | <u>52.9</u> |
| 433.milc | 118 | 77.9 | <u>116</u> | <u>79.1</u> | 116 | 79.3 | 118 | 77.9 | <u>116</u> | <u>79.1</u> | 116 | 79.3 |
| 434.zeusmp | 41.5 | 219 | 41.4 | 220 | <u>41.5</u> | <u>219</u> | 41.5 | 219 | 41.4 | 220 | <u>41.5</u> | <u>219</u> |
| 435.gromacs | 104 | 68.8 | <u>104</u> | <u>68.8</u> | 104 | 68.7 | 104 | 68.8 | <u>104</u> | <u>68.8</u> | 104 | 68.7 |
| 436.cactusADM | <u>17.1</u> | <u>700</u> | 17.3 | 692 | 16.9 | 706 | <u>17.1</u> | <u>700</u> | 17.3 | 692 | 16.9 | 706 |
| 437.leslie3d | 30.5 | 308 | <u>30.4</u> | <u>309</u> | 30.3 | 310 | 30.5 | 308 | <u>30.4</u> | <u>309</u> | 30.3 | 310 |
| 444.namd | 224 | 35.7 | 225 | 35.7 | <u>225</u> | <u>35.7</u> | 220 | 36.5 | <u>219</u> | <u>36.5</u> | 219 | 36.6 |
| 447.dealII | <u>161</u> | <u>71.1</u> | 161 | 71.1 | 162 | 70.8 | <u>161</u> | <u>71.1</u> | 161 | 71.1 | 162 | 70.8 |
| 450.soplex | 178 | 46.7 | 175 | 47.8 | <u>178</u> | <u>46.8</u> | 178 | 46.7 | 175 | 47.8 | <u>178</u> | <u>46.8</u> |
| 453.povray | 76.5 | 69.6 | <u>76.8</u> | <u>69.3</u> | 76.8 | 69.3 | 67.4 | 78.9 | 68.0 | 78.2 | <u>67.6</u> | <u>78.6</u> |
| 454.calculix | 108 | 76.7 | <u>108</u> | <u>76.6</u> | 108 | 76.4 | 108 | 76.7 | <u>108</u> | <u>76.6</u> | 108 | 76.4 |
| 459.GemsFDTD | 56.9 | 186 | 57.3 | 185 | <u>57.3</u> | <u>185</u> | <u>52.9</u> | <u>201</u> | 53.6 | 198 | 52.7 | 201 |
| 465.tonto | <u>161</u> | <u>61.3</u> | 160 | 61.5 | 165 | 59.5 | 146 | 67.2 | 147 | 67.2 | <u>146</u> | <u>67.2</u> |
| 470.lbm | 25.0 | 550 | 25.3 | 543 | <u>25.1</u> | <u>546</u> | 25.0 | 550 | 25.3 | 543 | <u>25.1</u> | <u>546</u> |
| 481.wrf | 112 | 99.4 | <u>114</u> | <u>98.3</u> | 116 | 96.6 | 112 | 99.4 | <u>114</u> | <u>98.3</u> | 116 | 96.6 |
| 482.sphinx3 | 216 | 90.2 | 214 | 91.2 | <u>216</u> | <u>90.4</u> | 216 | 90.2 | 214 | 91.2 | <u>216</u> | <u>90.4</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 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 localhost.localdomain Sat Jul 22 11:56:37 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 8156 CPU @ 3.60GHz
 2 "physical id"s (chips)
 8 "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 5 8 10 11
  physical 1: cores 0 3 10 13
cache size : 16896 KB

```

```

From /proc/meminfo
MemTotal:      790482140 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13
EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Jul 21 18:22

```

SPEC is set to: /spec17
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   898G  19G  880G   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 hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS INSYDE Corp. 0.20 07/14/2017

Memory:

24x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz
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Platform Notes (Continued)

(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 = "8"

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

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 -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

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

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.dealIII: 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

454.calculix: basepeak = yes

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Peak Optimization Flags (Continued)

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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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Aug 8 15:41:48 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 August 2017.