**Huawei**

Huawei 1288H V5 (Intel Xeon Platinum 8180)

**SPECfp®2006 = 163**

**SPECfp_base2006 = 156**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>54.9</td>
</tr>
<tr>
<td>416.gamess</td>
<td>51.5</td>
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<tr>
<td>433.milc</td>
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<tr>
<td>434.zeusmp</td>
<td>316</td>
</tr>
<tr>
<td>435.gromacs</td>
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<tr>
<td>436.cactusADM</td>
<td>583</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>38.2</td>
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<tr>
<td>444.namd</td>
<td>37.5</td>
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<tr>
<td>447.dealII</td>
<td>77.3</td>
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<tr>
<td>450.soplex</td>
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<td>453.povray</td>
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<td>454.calculix</td>
<td>80.6</td>
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<td>459.GemsFDTD</td>
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<td>465.tonto</td>
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<tr>
<td>470.lbm</td>
<td>53.2</td>
</tr>
<tr>
<td>481.wrf</td>
<td>142</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>79.7</td>
</tr>
</tbody>
</table>

**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

**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)

Test date: May-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016
Huawei
Huawei 1288H V5 (Intel Xeon Platinum 8180)

SPECfp2006 = 163
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>240</td>
<td>81.1</td>
<td>245</td>
<td>79.7</td>
</tr>
</tbody>
</table>

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 21:56:27 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
Continued on next page
Huawei 1288H V5 (Intel Xeon Platinum 8180) SPECfp2006 = 163
SPECfp_base2006 = 156

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   785G   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
Continued on next page
Huawei 1288H V5 (Intel Xeon Platinum 8180)

SPECfp2006 = 163
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Platform Notes (Continued)

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

BIOS INSIDE 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.:
umactl --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
## Huawei

1288H V5 (Intel Xeon Platinum 8180)

**SPECfp2006 =** 163

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<tr>
<td>Test sponsor: Huawei</td>
<td>Hardware Availability: Jul-2017</td>
</tr>
<tr>
<td>Tested by: Huawei</td>
<td>Software Availability: Nov-2016</td>
</tr>
</tbody>
</table>

### 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
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
Huawei

Huawei 1288H V5 (Intel Xeon Platinum 8180) SPECfp2006 = 163
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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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