**SPEC® CINT2006 Result**

**Huawei**

Huawei 2488H V5 (Intel Xeon Platinum 8180)

<table>
<thead>
<tr>
<th>SPECint®2006 =</th>
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CPU2006 license: 3175  
Test sponsor: Huawei  
Tested by: Huawei

**SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the system was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.**

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**Hardware**

- **CPU Name:** Intel Xeon Platinum 8180  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.80 GHz  
- **CPU MHz:** 2500  
- **CPU(s) enabled:** 112 cores, 4 chips, 28 cores/chip  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 1 MB I+D on chip per core  
- **L3 Cache:** 38.5 MB I+D on chip per chip  
- **Other Cache:** None

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP2  
  4.4.21-69-default  
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux  
- **Auto Parallel:** Yes  
- **File System:** xfs  
- **System State:** Run level 5 (multi-user)  
- **Base Pointers:** 32/64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other Software:** Microquill SmartHeap V10.2

Continued on next page
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CPU2006 license: 3175
Test sponsor: Huawei
Test date: Jan-2017
Tested by: Huawei
Software Availability: Apr-2017
Hardware Availability: Sep-2017

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the system was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Disk Subsystem: 2 x 900 GB SAS, 10K RPM
Other Hardware: None

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The config file option 'submit' was used.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Turbo mode set with:
cputpower -c all frequency-set -g performance
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Platform Notes

BIOS configuration:
Set Intel Hyper Threading Technology to disabled
Set Memory Patrol Scrub to disabled
cooling Configuration set fan speed to 100%
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4be651ee8d798696cbe290c1)
running on linux-5bjr Sun Jun  4 19:23:40 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

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
  4 "physical id"s (chips)
  112 "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
physical 2: 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 3: 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:       790869156 kB
HugePages_Total:    8196
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
SuSE-release:
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Platform Notes (Continued)

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-5bjr 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 5 Jun 2 22:29

SPEC is set to: /home/cpu2006

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   1.6T   30G  1.6T   2% /home

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. 0.09 03/29/2017
Memory:
8x NO DIMM NO DIMM
24x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz

(End of data from sysinfo program)
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**Tested by:** Huawei

**Hardware Availability:** Sep-2017

**Software Availability:** Apr-2017

**Test date:** Jun-2017

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**General Notes**

Environment variables set by runspec before the start of the run:

- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
- OMP_NUM_THREADS = "112"

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 by default. Filesystem page cache cleared with:

```
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
```

**Base Compiler Invocation**

<table>
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<tr>
<th>C benchmarks:</th>
<th>icc -m64</th>
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<td>C++ benchmarks:</td>
<td>icpc -m64</td>
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**Base Portability Flags**

- perlbench - DSPEC_CPU_LP64 - DSPEC_CPU_LINUX_X64
- bzip2 - DSPEC_CPU_LP64
- gcc - DSPEC_CPU_LP64
- mcf - DSPEC_CPU_LP64
- sjeng - DSPEC_CPU_LP64
- hmmer - DSPEC_CPU_LP64
- sjeng - DSPEC_CPU_LP64
- h264ref - DSPEC_CPU_LP64
- perlbmk - DSPEC_CPU_LP64
- astar - DSPEC_CPU_LP64
- xalancbmk - DSPEC_CPU_LP64 - DSPEC_CPU_LINUX
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Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch -auto-p32

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gbmuk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
-icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64

Non-Compliant
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Peak Portability Flags (Continued)

- 429.mcf: -DSPEC_CPU_LP64
- 445.gobmk: -D_FILE_OFFSET_BITS=64
- 456.hmmer: -DSPEC_CPU_LP64
- 458.sjeng: -DSPEC_CPU_LP64
- 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 471.omnetpp: -D_FILE_OFFSET_BITS=64
- 473.astar: -DSPEC_CPU_LP64
- 483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

- 400.perlbench: -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-rec-div(pass 2) -qopt-prefetch

- 401.bzip2: -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-rec-div -auto-ilp32 -qopt-prefetch

- 403.gcc: -xCORE-AVX2 -ipo -O3 -no-rec-div -inline-calloc-malloc-options=3 -auto-ilp32

- 429.mcf: -xCORE-AVX2 -ipo -O3 -no-rec-div -parallel
  qopt-prefetch -auto-p32

- 445.gobmk: -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-rec-div(pass 2)

- 456.hmmer: basepeak = yes

- 458.sjeng: -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-rec-div(pass 2) -unroll4

Continued on next page
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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:
471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -c2o(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-ra-region-strategy=block
-Wl,-z,muldefs,-L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipa -O3 -no-prec-div -qopt-prefetch
-auto-p32 -Wl, -z,muldefs,-L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipa -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs,-L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:
403.gcc -Dalloca=_alloca

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