Huawei

Huawei 1288H V5 (Intel Xeon Gold 6128)

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<th>SPECspeed2017_fp_base = 72.4</th>
<th>SPECspeed2017_fp_peak = 74.1</th>
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CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: Jan-2018
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Sep-2017

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<tr>
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<tr>
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<tr>
<td>607.cactuBSSN_s 12</td>
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<tr>
<td>619.lbm_s 12</td>
<td></td>
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<tr>
<td>621.wrf_s 12</td>
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<tr>
<td>627.cam4_s 12</td>
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<tr>
<td>628.pop2_s 12</td>
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<tr>
<td>638.imagick_s 12</td>
<td></td>
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<tr>
<td>644.nab_s 12</td>
<td></td>
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<tr>
<td>649.fotonik3d_s 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>654.roms_s 12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

CPU Name: Intel Xeon Gold 6128
Max MHz.: 3700
Nominal: 3400
Enabled: 12 cores, 2 chips
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 19.25 MB I+D on chip per core
Other: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 1200 GB SAS, 10000 RPM
Other: None

**Software**

OS: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-69-default
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
Parallel: Yes
Firmware: Version 0.37 Released Nov-2017
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
SPEC CPU2017 Floating Point Speed Result

Huawei
Huawei 1288H V5 (Intel Xeon Gold 6128)

SPECspeed2017_fp_base = 72.4
SPECspeed2017_fp_peak = 74.1

Results Table

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<tr>
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<td>197</td>
<td>79.9</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 72.4
SPECspeed2017_fp_peak = 74.1

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.
SPEC CPU2017 Floating Point Speed Result

#### General Notes (Continued)

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

## Platform Notes

**BIOS configuration:**
- Power Efficiency Mode Set to Custom
- Hyper-Threading Set to Disable
- Sysinfo program /spec2017/bin/sysinfo
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
- running on linux-jujq Thu Jan 25 23:55:34 2018

**SUT (System Under Test) info as seen by some common utilities.**
For more information on this section, see https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From `/proc/cpuinfo`
- model name: Intel(R) Xeon(R) Gold 6128 CPU @ 3.40GHz
  - 2 "physical id"s (chips)
  - 12 "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: 6
  - siblings: 6
  - physical 0: cores 0 6 9 10 11 13
  - physical 1: cores 0 6 9 10 11 13

From `/lscpu`
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 12
- On-line CPU(s) list: 0-11
- Thread(s) per core: 1
- Core(s) per socket: 6
- Socket(s): 2
- NUMA node(s): 2
- Vendor ID: GenuineIntel
- CPU family: 6

(Continued on next page)
## SPEC CPU2017 Floating Point Speed Result

### Huawei

**Huawei 1288H V5 (Intel Xeon Gold 6128)**

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**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Hardware Availability:** Jul-2017  
**Test Date:** Jan-2018  
**Tested by:** Huawei  
**Software Availability:** Sep-2017

### Platform Notes (Continued)

- **Model:** 85  
- **Model name:** Intel(R) Xeon(R) Gold 6128 CPU @ 3.40GHz  
- **Stepping:** 4  
- **CPU MHz:** 1400.000  
- **CPU max MHz:** 3401.0000  
- **CPU min MHz:** 1200.0000  
- **BogoMIPS:** 6799.96

Virtualization: VT-x

- **L1d cache:** 32K  
- **L1i cache:** 32K  
- **L2 cache:** 1024K  
- **L3 cache:** 19712K

**NUMA node0 CPU(s):** 0-5  
**NUMA node1 CPU(s):** 6-11

**Flags:** fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pln pts dtherm intel_pt tpr_shadow vt msr dtes64_64bitmode smap tsc_k后者 inhibit_newsdt_clflushopt xsaveopt xsavec x exclusive xвалтов и xgetbv1 cqm l1c cqm_occup_llc

/proc/cpuinfo cache data

- **cache size:** 19712 KB

From numactl --hardware  
WARNING: a numactl 'node' might or might not correspond to a physical chip.

- **available:** 2 nodes (0-1)  
- **node 0 cpus:** 0 1 2 3 4 5  
- **node 0 size:** 191497 MB  
- **node 0 free:** 190860 MB  
- **node 1 cpus:** 6 7 8 9 10 11  
- **node 1 size:** 193382 MB  
- **node 1 free:** 192698 MB

From /proc/meminfo

- **MemTotal:** 394117236 kB  
- **HugePages_Total:** 0  
- **Hugepagesize:** 2048 kB

From /etc/*release* /etc/*version*

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

Huawei
Huawei 1288H V5 (Intel Xeon Gold 6128)

SPECspeed2017_fp_base = 72.4
SPECspeed2017_fp_peak = 74.1

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: Jan-2018
Tested by: Huawei
Hardware Availability: Jul-2017
Software Availability: Sep-2017

Platform Notes (Continued)

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-jujq 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 Jan 25 23:43
SPEC is set to: /spec2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda2      xfs   500G   27G  474G   6% /

Additional information from dmidecode follows. 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. 0.37 11/13/2017
Memory:
  24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
  CC  619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
==============================================================================

iccc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================

CC  619.lbm_s(peak)

(Continued on next page)
Huawei

Huawei 1288H V5 (Intel Xeon Gold 6128)

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**Hardware Availability:** Jul-2017

**Tested by:** Huawei

**Software Availability:** Sep-2017

---

**Compiler Version Notes (Continued)**

---

```plaintext
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
FC 607.cactuBSSN_s(base)
```

```plaintext
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

```plaintext
FC 607.cactuBSSN_s(peak)
```

---

```plaintext
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

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icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

```plaintext
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
```

---

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

```plaintext
FC 603.bwaves_s(peak) 649.fotonik3d_s(peak) 654.roms_s(peak)
```

---

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

```plaintext
CC 621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
```

---

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
icc (ICC) 18.0.0 20170811
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(Continued on next page)
## SPEC CPU2017 Floating Point Speed Result

**Huawei**

**Huawei 1288H V5 (Intel Xeon Gold 6128)**

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### Compiler Version Notes (Continued)

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

icc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

### Base Compiler Invocation

**C benchmarks:**

- icc

**Fortran benchmarks:**

- ifort

**Benchmarks using both Fortran and C:**

- ifort icc

**Benchmarks using Fortran, C, and C++:**

- icpc icc ifort

### Base Portability Flags

- 603.bwaves_s: -DSPEC_LP64
- 607.cactusBSSN_s: -DSPEC_LP64
- 619.lbm_s: -DSPEC_LP64
- 621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- -assume byterecl
- 638.imagick_s: -DSPEC_LP64
- 644.nab_s: -DSPEC_LP64
- 649.fotonik3d_s: -DSPEC_LP64
- 654.roms_s: -DSPEC_LP64
Huawei

Huawei 1288H V5 (Intel Xeon Gold 6128)

| SPECspeed2017_fp_base | 72.4 |
| SPECspeed2017_fp_peak | 74.1 |

| CPU2017 License: | 3175 |
| Test Sponsor: | Huawei |
| Tested by: | Huawei |
| Test Date: | Jan-2018 |
| Hardware Availability: | Jul-2017 |
| Software Availability: | Sep-2017 |

### Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

### Base Other Flags

C benchmarks:
-m64 -std=c11

Fortran benchmarks:
-m64

Benchmarks using both Fortran and C:
-m64 -std=c11

Benchmarks using Fortran, C, and C++:
-m64 -std=c11

### Peak Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

(Continued on next page)
Huawei
Huawei 1288H V5 (Intel Xeon Gold 6128)

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Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP

644.nab_s: Same as 638.imagick_s

Fortran benchmarks:

603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX2 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs -align array32byte

649.fotonik3d_s: basepeak = yes

654.roms_s: Same as 603.bwaves_s

Benchmarks using both Fortran and C:

621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

627.cam4_s: basepeak = yes

(Continued on next page)
# SPEC CPU2017 Floating Point Speed Result

## Huawei

### Huawei 1288H V5 (Intel Xeon Gold 6128)

**SPECspeed2017_fp_peak** = 74.1

**SPECspeed2017_fp_base** = 72.4

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<td>Sep-2017</td>
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</table>

---

## Peak Optimization Flags (Continued)

- 628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:
- `-prof-gen(pass 1)` `-prof-use(pass 2)` `-O2` `-xCORE-AVX2` `-qopt-prefetch`
- `-ipo` `-O3` `-ffinite-math-only` `-no-prec-div` `-qopt-mem-layout-trans=3`
- `-DSPEC_SUPPRESS_OPENMP` `-qopenmp` `-DSPEC_OPENMP` `-nostandard-realloc-lhs`
- `-align array32byte`

## Peak Other Flags

### C benchmarks:
- `-m64` `-std=c11`

### Fortran benchmarks:
- `-m64`

### Benchmarks using both Fortran and C:
- `-m64` `-std=c11`

### Benchmarks using Fortran, C, and C++:
- `-m64` `-std=c11`

---

The flags files that were used to format this result can be browsed at:

- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html)

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

- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml)

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Originally published on 2018-02-27.