Huawei 2288 V5 (Intel Xeon Gold 6126)  

**SPECRate2017_fp_base = 144**  
**SPECRate2017_fp_peak = 148**

**Hardware**

- **CPU Name:** Intel Xeon Gold 6126  
- **Max MHz.:** 3700  
- **Nominal:** 2600  
- **Enabled:** 24 cores, 2 chips, 2 threads/core  
- **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 chip  
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)  
- **Storage:** 1 x 2000 GB SATA, 7200 RPM  
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux Server release 7.4 (Maipo)  
- **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:** No  
- **Firmware:** Version 0.50 Released Jun-2018  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** None
Huawei

Huawei 2288 V5 (Intel Xeon Gold 6126)

RESULTS TABLE

General Notes (Continued)

Yes: 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.
Yes: 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.

Platform Notes

BIOS configuration:
Power Policy Set to Performance
SNC Set to Enabled
IMC Interleaving Set to 1-way Interleave
XPT Prefetch Set to Enabled
ADDDC Sparing Set to Disabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Fri Jul 6 17:24:21 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 6126 CPU @ 2.60GHz
  2 "physical id"s (chips)
  48 "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 : 12
  siblings : 24
  physical 0: cores 0 1 3 4 5 6 8 9 10 11 12 13
  physical 1: cores 0 1 3 4 5 6 8 9 10 11 12 13

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 48
  On-line CPU(s) list: 0-47
  Thread(s) per core: 2
  Core(s) per socket: 12
  Socket(s): 2
  NUMA node(s): 4
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Gold 6126 CPU @ 2.60GHz

(Continued on next page)
Huawei

Huawei 2288 V5 (Intel Xeon Gold 6126)

**SPECrate2017_fp_base** = 144

**SPECrate2017_fp_peak** = 148

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

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**Platform Notes (Continued)**

Stepping:              4  
CPU MHz:               2600.000  
BogoMIPS:              5200.00  
Virtualization:        VT-x  
L1d cache:             32K  
L1i cache:             32K  
L2 cache:              1024K  
L3 cache:              19712K  
NUMA node0 CPU(s):     0-2,6,8-24,26-30,32  
NUMA node1 CPU(s):     3-5,9-11,27-29,33-35  
NUMA node2 CPU(s):     12-14,18-20,36-38,42-44  
NUMA node3 CPU(s):     15-17,21-23,39-41,45-47  
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc  
                       aperfmpref eagerfpu pni pclmulqdq dtes64 ms_cpl vmx smx est tm2 ssse3 fma cx16 xtpr  
                        pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx  
                        f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 invpcid_single intel_pt  
                        spec_ctrl ibpb_support tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust  
                        bmi1 hle avx2 smep bmi2 erms invpcid rtm cmp rdt_a avx512f avx512dq rdseed adx  
                        smap clflushopt clwb avx512ucm avx512bw avx512vl xsaveopt xsaves xceti etc  
                        cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts

/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: 4 nodes (0-3)
  node 0 cpus: 0 1 2 6 7 8 24 25 26 30 31 32
  node 0 size: 96437 MB
  node 0 free: 93459 MB
  node 1 cpus: 3 4 5 9 10 11 27 28 29 33 34 35
  node 1 size: 98304 MB
  node 1 free: 95687 MB
  node 2 cpus: 12 13 14 18 19 20 36 37 38 42 43 44
  node 2 size: 98304 MB
  node 2 free: 95676 MB
  node 3 cpus: 15 16 17 21 22 23 39 40 41 45 46 47
  node 3 size: 98304 MB
  node 3 free: 95180 MB
  node distances:
    node 0 1 2 3
      0: 10 11 21 21
      1: 11 10 21 21
      2: 21 21 10 11
      3: 21 21 11 10

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Huawei 2288 V5 (Intel Xeon Gold 6126)

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

Platform Notes (Continued)

From /proc/meminfo
- MemTotal: 394174376 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION=7.4 (Maipo)"
  - ID="rheil"
  - ID_LIKE="fedora"
  - VARIANT="Server"
  - VARIANT_ID="server"
  - VERSION_ID="7.4"
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
- redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
- system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)

uname -a:
- Linux localhost.localdomain 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Dec 28 14:23:39 EST 2017 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 6 08:25

SPEC is set to: /spec2017
- Filesystem Type Size Used Avail Use% Mounted on
  - /dev/sda3 xfs 734G 78G 656G 11% /

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. 0.50 06/25/2018
- Memory:
  - 4x NO DIMM NO DIMM
  - 12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base)
==============================================================================

(Continued on next page)
Huawei

Huawei 2288 V5 (Intel Xeon Gold 6126)

SPECrate2017_fp_base = 144
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CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: Jul-2018
Hardware Availability: Sep-2018
Tested by: Huawei
Software Availability: Jan-2018

Compiler Version Notes (Continued)

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

==============================================================================
CC 519.lbm_r(peak) 544.nab_r(peak)
==============================================================================

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

==============================================================================
CXXC 508.namd_r(base) 510.parest_r(base)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CXXC 508.namd_r(peak) 510.parest_r(peak)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC 511.povray_r(base) 526.blender_r(base)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC 511.povray_r(peak) 526.blender_r(peak)
==============================================================================
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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC 507.cactuBSSN_r(base)
==============================================================================
icpc (ICC) 18.0.0 20170811

(Continued on next page)
Huawei

Huawei 2288 V5 (Intel Xeon Gold 6126)

SPECrate2017_fp_base = 144
SPECrate2017_fp_peak = 148

Compiler Version Notes (Continued)

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

------------------------------------------------------------------------------
FC  507.cactuBSSN_r(peak)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
FC  503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base)
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
FC  554.roms_r(peak)
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
CC  521.wrf_r(base) 527.cam4_r(base)
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
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icc (ICC) 18.0.0 20170811

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Compiler Version Notes (Continued)

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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

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

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64
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Huawei 2288 V5 (Intel Xeon Gold 6126)

SPECrate2017_fp_base = 144
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CPU2017 License: 3175
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Base Optimization Flags

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

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

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

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

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

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

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

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

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

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

Huawei 2288 V5 (Intel Xeon Gold 6126)

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CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei

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Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

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

---

Peak Portability Flags

Same as Base Portability Flags

---

Peak Optimization Flags

C benchmarks:
519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3

544.nab_r: Same as 519.lbm_r

C++ benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:

(Continued on next page)
## Huawei 2288 V5 (Intel Xeon Gold 6126)

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## Peak Optimization Flags (Continued)

### 503.bwaves_r
- `-xCORE-AVX2`
- `-ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3`
- `-nostandard-realloc-lhs -align array32byte`

### 549.fotonik3d_r
- Same as 503.bwaves_r

### 554.roms_r
- `-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

## Benchmarks using both Fortran and C:

- `-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

## Benchmarks using both C and C++:

- `-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3`

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

- `-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3`
- `-no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

## Peak Other Flags

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

### C++ benchmarks:
- `-m64`

### Fortran benchmarks:
- `-m64`

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

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

**Huawei 2288 V5 (Intel Xeon Gold 6126)**

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**SPEC CPU2017 Floating Point Rate Result**

- **Huawei 2288 V5 (Intel Xeon Gold 6126)**
- **SPECrate2017_fp_base** = 144
- **SPECrate2017_fp_peak** = 148

**CPU2017 License:** 3175

**Test Sponsor:** Huawei

**Test Date:** Jul-2018

**Tested by:** Huawei

**Hardware Availability:** Sep-2018

**Software Availability:** Jan-2018

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### Peak Other Flags (Continued)

**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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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.2 on 2018-07-06 05:24:20-0400.


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