Huawei

Huawei 1288H V5 (Intel Xeon Silver 4209T)

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<tr>
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</tr>
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<tbody>
<tr>
<td>SPECrate2017_fp_peak = Not Run</td>
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</table>

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<th>3175</th>
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</tr>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Mar-2019</td>
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<tr>
<td>Hardware Availability:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2018</td>
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<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Silver 4209T</td>
<td>OS: SUSE Linux Enterprise Server 12 SP4 (x86_64)</td>
</tr>
<tr>
<td>Max MHz.: 3200</td>
<td>Compiler: C/C++: Version 19.0.1.144 of Intel C/C++</td>
</tr>
<tr>
<td>Nominal: 2200</td>
<td>Compiler Build 20181018 for Linux;</td>
</tr>
<tr>
<td>Enabled: 16 cores, 2 chips, 2 threads/core</td>
<td>Fortran: Version 19.0.1.144 of Intel Fortran</td>
</tr>
<tr>
<td>Orderable: 1.2 chips</td>
<td>Compiler Build 20181018 for Linux</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>Parallel: No</td>
</tr>
<tr>
<td>L2: 1 MB I+D on chip per core</td>
<td>Firmware: Version 6.52 Released Mar-2019</td>
</tr>
<tr>
<td>L3: 11 MB I+D on chip per chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Storage: 1 x 1200 GB SAS, 10000 RPM</td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other: None</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>503.bwaves_r 32</td>
</tr>
<tr>
<td>507.cactuBSSN_r 32</td>
</tr>
<tr>
<td>508.namd_r 32</td>
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<tr>
<td>510.parest_r 32</td>
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<tr>
<td>511.povray_r 32</td>
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<tr>
<td>519.lbm_r 32</td>
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<tr>
<td>521.wrf_r 32</td>
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<td>526.blender_r 32</td>
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<tr>
<td>527.cam4_r 32</td>
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<tr>
<td>538.imagick_r 32</td>
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<tr>
<td>544.nab_r 32</td>
</tr>
<tr>
<td>549.fotonik3d_r 32</td>
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<tr>
<td>554.roms_r 32</td>
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SPECrate2017_fp_base (94.0)
### SPEC CPU2017 Floating Point Rate Result

**Huawei**

**Huawei 1288H V5 (Intel Xeon Silver 4209T)**

**SPECrate2017_fp_base = 94.0**

**SPECrate2017_fp_peak = Not Run**

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</table>

#### Results Table

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<th>Ratio</th>
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<tr>
<td>503.bwaves_r</td>
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<tr>
<td>554.roms_r</td>
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<td>1010</td>
<td>50.3</td>
<td>1008</td>
<td>50.5</td>
<td>1006</td>
<td>50.5</td>
</tr>
</tbody>
</table>

**SPECrate2017_fp_base = 94.0**

**SPECrate2017_fp_peak = Not Run**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### 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:
LD_LIBRARY_PATH = "/spec2017/lib/ia32:/spec2017/lib/intel64"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5
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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

(Continued on next page)
Huawei 1288H V5 (Intel Xeon Silver 4209T)

| SPECrate2017_fp_base = 94.0 |
| SPECrate2017_fp_peak = Not Run |

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

---

**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
XPT Prefetch Set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on sles12sp4 Fri Mar 29 11:58:11 2019

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) Silver 4209T CPU @ 2.20GHz
  2 "physical id"s (chips)
  32 "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 : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4209T CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2200.000
CPU max MHz: 3200.0000

(Continued on next page)
Huawei

Huawei 1288H V5 (Intel Xeon Silver 4209T)

**SPECRate2017_fp_base** = 94.0

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**CPU2017 License**: 3175

**Test Sponsor**: Huawei

**Test Date**: Mar-2019

**Tested by**: Huawei

**Hardware Availability**: Apr-2019

**Software Availability**: Dec-2018

---

**Platform Notes (Continued)**

CPU min MHz: 1000.0000

BogoMIPS: 4400.00

Virtualization: VT-x

L1d cache: 32K

L1i cache: 32K

L2 cache: 1024K

L3 cache: 11264K

NUMA node0 CPU(s): 0-7,16-23

NUMA node1 CPU(s): 8-15,24-31

Flags:

```
pu 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 noapic xtopology nonstop_tsc cpuid
aperfmperf pni pclmulqdq dtes64 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
rdseed lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd
mva ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1
hle avx2 smep bmi2 ibrscp bts aperfmperf pni pclmulqdq dtes64 ds_cpl vmx smx est
```

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 6 7 16 17 18 19 20 21 22 23
node 0 size: 191933 MB
node 0 free: 190845 MB
node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
node 1 size: 193252 MB
node 1 free: 192300 MB
node distances:
node 0 1
0: 10 21
1: 21 10
```

From `/proc/meminfo`

```
MemTotal: 394430276 kB
 HugePages_Total: 0
 Hugepagesize: 2048 kB
```

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

SuSE-release:

```
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
```

(Continued on next page)
Huawei

Huawei 1288H V5 (Intel Xeon Silver 4209T)

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SPEC CPU2017 Floating Point Rate Result

SPECrate2017_fp_base = 94.0
SPECrate2017_fp_peak = Not Run

Platform Notes (Continued)

PATCHLEVEL = 4
# 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-SP4"
  VERSION_ID="12.4"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Mar 29 06:54

SPEC is set to: /spec2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 700G 13G 687G 2% /

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. 6.52 03/16/2019
Memory:
  24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.1.144 Build 20181018

(Continued on next page)
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### Compiler Version Notes (Continued)

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
CXXC 508.namd_r(base) 510.parest_r(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
CC 511.povray_r(base) 526.blender_r(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
F 507.cactuBSSN_r(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
F 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
CC 521.wrf_r(base) 527.cam4_r(base)
```

(Continued on next page)
Huawei

Huawei 1288H V5 (Intel Xeon Silver 4209T)

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### Compiler Version Notes (Continued)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

### Base Compiler Invocation

C benchmarks:

```bash
icc -m64 -std=c11
```

C++ benchmarks:

```bash
icpc -m64
```

Fortran benchmarks:

```bash
ifort -m64
```

Benchmarks using both Fortran and C:

```bash
ifort -m64 icc -m64 -std=c11
```

Benchmarks using both C and C++:

```bash
icpc -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:

```bash
icpc -m64 icc -m64 -std=c11 ifort -m64
```

---

### 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.ibm.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
## Huawei

### Huawei 1288H V5 (Intel Xeon Silver 4209T)

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

### SPEC CPU2017 Floating Point Rate Result

- **Copyright 2017-2019 Standard Performance Evaluation Corporation**

**Base Optimization Flags**

**C benchmarks:**
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`  
- `-qopt-mem-layout-trans=4`

**C++ benchmarks:**
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`  
- `-qopt-mem-layout-trans=4`

**Fortran benchmarks:**
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`  
- `-qopt-mem-layout-trans=4 -auto -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=4 -auto -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=4`

**Benchmarks using Fortran, C, and C++:**
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`  
- `-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs`  
- `-align array32byte`

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

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

---

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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 v1.0.5 on 2019-03-29 11:58:10-0400.  