## Huawei XH321 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>128</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6134
- **Max MHz.:** 3700
- **Nominal:** 3200
- **Enabled:** 16 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:** 24.75 MB I+D on chip per chip
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)
- **Storage:** 1 x 1200 GB SAS, 10000 RPM
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server 7.3 (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
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** None
Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

SPEC CPU2017 Floating Point Rate Result

SPECrate2017_fp_base = 125

SPECrate2017_fp_peak = 128

Results Table

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<td>584</td>
<td>87.1</td>
</tr>
</tbody>
</table>

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 = "/spec/lib/ia32:/spec/lib/intel64:/spec/je5.0.1-32:/spec/je5.0.1-64"

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
runcpu command invoked through numactl i.e.:
umactl --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)
# SPEC CPU2017 Floating Point Rate Result

## Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
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<td>Huawei</td>
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<td>Tested by:</td>
<td>Huawei</td>
</tr>
</tbody>
</table>

### SPECrate2017_fp_base = 125

### SPECrate2017_fp_peak = 128

**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** /spec/bin/sysinfo
  - Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
  - running on localhost.localdomain Sun Apr 15 20:41:58 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

- **From /proc/cpuinfo**
  - model name: Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz
  - 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 1 3 4 6 7 18 20 22
    - physical 1: cores 0 2 3 9 16 19 26 27

- **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): 4
  - Vendor ID: GenuineIntel
  - CPU family: 6
  - Model: 85
  - Model name: Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz

(Continued on next page)
Huawei
Huawei XH321 V5 (Intel Xeon Gold 6134)

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

**Platform Notes (Continued)**

| Stepping: | 4 |
| CPU MHz: | 3200.000 |
| BogoMIPS: | 6405.70 |
| Virtualization: | VT-x |
| L1d cache: | 32K |
| L1i cache: | 32K |
| L2 cache: | 1024K |
| L3 cache: | 25344K |
| NUMA node0 CPU(s): | 0-2,5,16-18,21 |
| NUMA node1 CPU(s): | 3,4,6,7,19,20,22,23 |
| NUMA node2 CPU(s): | 8,9,11,12,24,25,27,28 |
| NUMA node3 CPU(s): | 10,13-15,26,29-31 |

/proc/cpuinfo cache data
- cache size : 25344 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 5 16 17 18 21
  - node 0 size: 96437 MB
  - node 0 free: 93589 MB
  - node 1 cpus: 3 4 6 7 19 20 22 23
  - node 1 size: 98304 MB
  - node 1 free: 95435 MB
  - node 2 cpus: 8 9 11 12 24 25 27 28
  - node 2 size: 98304 MB
  - node 2 free: 95757 MB
  - node 3 cpus: 10 13 14 15 26 29 30 31
  - node 3 size: 98304 MB
  - node 3 free: 95723 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

From /proc/meminfo
- MemTotal: 394174484 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION="7.3 (Maipo)"

(Continued on next page)
Platform Notes (Continued)

ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (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 Apr 15 13:13

SPEC is set to: /spec
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda8      xfs   325G   29G  297G   9% /

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. 0.59 02/24/2018
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)
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.

(Continued on next page)
Huawei
Huawei XH321 V5 (Intel Xeon Gold 6134)

SPECraten2017 fp_base = 125
SPECraten2017 fp_peak = 128

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

Compiler Version Notes (Continued)

==============================================================================
CXXC 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------
icpc (ICC) 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.
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==============================================================================
CC 511.povray_r(base) 526.blender_r(base)
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iccc (ICC) 18.0.0 20170811
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FC 507.cactuBSSN_r(base)
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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)
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(Continued on next page)
Huawei
Huawei XH321 V5 (Intel Xeon Gold 6134)

SPEC CPU2017 Floating Point Rate Result

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ifort (IFORT) 18.0.0 20170811
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------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc

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

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

Base Compiler Invocation (Continued)

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

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

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### Base Optimization Flags (Continued)

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
```

### Peak Compiler Invocation

C benchmarks:
```
icc
```

(Continued on next page)
Huawei

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Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

Peak Compiler Invocation (Continued)

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:
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

(Continued on next page)
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Huawei XH321 V5 (Intel Xeon Gold 6134)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base = 125</th>
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<td>SPECrate2017_fp_peak = 128</td>
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Tested by: Huawei

Test Date: Apr-2018
Hardware Availability: Jul-2017
Software Availability: Jan-2018

Peak Optimization Flags (Continued)

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++:

507.cactuBSSN_r: basepeak = yes

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

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

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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

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/Huawei-Platform-Settings-SKL-V1.9-revC.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 2018-04-15 20:41:57-0400.
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