Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

**SPECrate2017_int_base** = 109
**SPECrate2017_int_peak** = 116

**CPU2017 License:** 3175
**Test Date:** Apr-2018

**Test Sponsor:** Huawei
**Hardware Availability:** Jul-2017

**Tested by:** Huawei
**Software Availability:** Jan-2018

---

### Hardware

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<thead>
<tr>
<th>Spec</th>
<th>Name</th>
<th>Value</th>
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<tbody>
<tr>
<td>CPU Name</td>
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<td></td>
</tr>
<tr>
<td>Max MHz.</td>
<td>3700</td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>3200</td>
<td></td>
</tr>
<tr>
<td>Enabled</td>
<td>16 cores, 2 chips, 2 threads/core</td>
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<tr>
<td>Orderable</td>
<td>1.2 chips</td>
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<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>L2</td>
<td>1 MB I+D on chip per core</td>
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<td>L3</td>
<td>24.75 MB I+D on chip per chip</td>
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<td>Other</td>
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<tr>
<td>Memory</td>
<td>384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)</td>
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<tr>
<td>Storage</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
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### Software

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<tr>
<th>Spec</th>
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<tr>
<td>OS</td>
<td>Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-693.11.6.el7.x86_64</td>
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<tr>
<td>Compiler</td>
<td>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</td>
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<tr>
<td>Parallel</td>
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<td>Firmware</td>
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<tr>
<td>File System</td>
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<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
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<tr>
<td>Base Pointers</td>
<td>64-bit</td>
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<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
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<tr>
<td>Other</td>
<td>jemalloc: jemalloc memory allocator library V5.0.1;</td>
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Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

SPECrate2017_int_base = 109
SPECrate2017_int_peak = 116

Results Table

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<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>500.perlbench_r</td>
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<td>634</td>
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<td>95.9</td>
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<td>95.9</td>
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<td>505.mcf_r</td>
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<td>520.omnetpp_r</td>
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<td>66.7</td>
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<td>531.deepsjeng_r</td>
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<td>548.exchange2_r</td>
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<tr>
<td>557.xz_r</td>
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<td>438</td>
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<td>78.8</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 109
SPECrate2017_int_peak = 116

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.:
numactl --interleave=all runcpu <etc>
jemalloc: configured and built at default for
32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4,
and the system compiler gcc 4.8.5;
jemalloc: sources available from jemalloc.net or

(Continued on next page)
Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

SPEC CPU2017 Integer Rate Result

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SPECrate2017_int_base = 109
SPECrate2017_int_peak = 116

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

General Notes (Continued)

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
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 13:13:51 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 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

(Continued on next page)
Platform Notes (Continued)

Model: 85
Model name: Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz
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

From /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: 93910 MB
  node 1 cpus: 3 4 6 7 19 20 22 23
  node 1 size: 98304 MB
  node 1 free: 95712 MB
  node 2 cpus: 8 9 11 12 24 25 27 28
  node 2 size: 98304 MB
  node 2 free: 96060 MB
  node 3 cpus: 10 13 14 15 26 29 30 31
  node 3 size: 98304 MB
  node 3 free: 96016 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:
## SPEC CPU2017 Integer Rate Result

**Huawei**

**Huawei XH321 V5 (Intel Xeon Gold 6134)**

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
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- **CPU2017 License:** 3175
- **Test Sponsor:** Huawei
- **Test Date:** Apr-2018
- **Hardware Availability:** Jul-2017
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### Platform Notes (Continued)

```plaintext
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
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  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
     525.x264_r(base, peak) 557.xz_r(base, peak)
```

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

```
 CC  500.perlbench_r(peak) 502.gcc_r(peak)
```

(Continued on next page)
Huawei

Huawei XH321 V5 (Intel Xeon Gold 6134)

SPEC CPU2017 Integer Rate Result

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CPU2017 License: 3175
Test Sponsor: Huawei
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Tested by: Huawei
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Compiler Version Notes (Continued)

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

==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)
==============================================================================

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

==============================================================================
CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)
==============================================================================

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

==============================================================================
FC 548.exchange2_r(base, peak)
==============================================================================

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

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64

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Huawei XH321 V5 (Intel Xeon Gold 6134)

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Base Portability Flags (Continued)

520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

Peak Compiler Invocation

C benchmarks:
icc

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### SPEC CPU2017 Integer Rate Result

| Huawei | SPECrate2017_int_base = 109 |
| Huawei XH321 V5 (Intel Xeon Gold 6134) | SPECrate2017_int_peak = 116 |

**CPU2017 License:** 3175  
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#### Peak Compiler Invocation (Continued)

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort

#### Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64  
502.gcc_r: -D_FILE_OFFSET_BITS=64  
505.mcf_r: -DSPEC_LP64  
520.omnetpp_r: -DSPEC_LP64  
523.xmlchmknr_r: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX  
525.x264_r: -DSPEC_LP64  
531.deepsjeng_r: -DSPEC_LP64  
541.leela_r: -DSPEC_LP64  
548.exchange2_r: -DSPEC_LP64  
557.xz_r: -DSPEC_LP64

#### Peak Optimization Flags

C benchmarks:
- 500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc  
- 502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3  
- 525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

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

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

Peak Optimization Flags (Continued)

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc

523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:

-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Other Flags

C benchmarks (except as noted below):

-m64 -std=c11

502.gcc_r: -m32 -std=c11

C++ benchmarks (except as noted below):

-m64

523.xalancbmk_r: -m32

Fortran benchmarks:

-m64

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
### Huawei

**Huawei XH321 V5 (Intel Xeon Gold 6134)**

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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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