Huawei
Huawei XH628 V5 (Intel Xeon Bronze 3104)

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

Software
OS: Red Hat Enterprise Linux Server release 7.4 (Maipo) 3.10.0-693.11.6.el7.x86_64
Compiler: C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;
Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux
Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1

Hardware
CPU Name: Intel Xeon Bronze 3104
Max MHz.: 1700
Nominal: 1700
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: 8.25 MB I+D on chip per chip
Other: None
Memory: 352 GB (11 x 32 GB 2Rx4 PC4-2666V-R, running at 2133)
Storage: 1 x 1800 GB SAS, 10000 RPM
Other: None

SPEC® CPU2017 Integer Rate Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Huawei
Huawei XH628 V5 (Intel Xeon Bronze 3104)

SPECrate2017_int_base = 33.2
SPECrate2017_int_peak = 34.9

Copies

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SPECrates: SPECrate2017_int_base = 33.2 SPECrate2017_int_peak = 34.9
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Test Date: Aug-2018
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Software Availability: Mar-2018

Results Table

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</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:

Binaries compiled on a system with 1x Intel Core i7-6700K 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.:
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.
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)

(Continued on next page)
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General Notes (Continued)

is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS configuration:
Power Policy Set to Performance
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Thu Aug 16 16:57:07 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) Bronze 3104 CPU @ 1.70GHz
  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 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5

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
Model: 85
Model name: Intel(R) Xeon(R) Bronze 3104 CPU @ 1.70GHz
Stepping: 4
CPU MHz: 1700.000
BogoMIPS: 3400.00
Virtualization: VT-x

(Continued on next page)
SPEC CPU2017 Integer Rate Result

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Platform Notes (Continued)

L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
NUMA node0 CPU(s): 0-5
NUMA node1 CPU(s): 6-11

Flags: fpu vme de pm xse tsc mce pse 3dnow mtrr psn pse36 clflush dts acpi mpxiox smx est tm2 ssse3 fma cx16 xtpr pdcm pcid dcasse4_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 cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc
cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm arat pln pts

/platform/cpuinfo cache data
cache size: 8448 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: 195701 MB
node 0 free: 190903 MB
node 1 cpus: 6 7 8 9 10 11
node 1 size: 163840 MB
node 1 free: 159870 MB
node distances:
node 0: 10 21
node 1: 21 10

From /proc/meminfo
MemTotal: 362113528 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=rhel
ID_LIKE=fedora
VARIANT=server
VARIANT_ID=server

(Continued on next page)
Huawei

Huawei XH628 V5 (Intel Xeon Bronze 3104)

**SPEC CPU2017**

- **Test Date:** Aug-2018
- **Hardware Availability:** Aug-2018
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**CPU2017 License:** 3175

**Test Sponsor:** Huawei

**Tested by:** Huawei

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**Platform Notes (Continued)**

```
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)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server
```

```
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 Aug 16 16:55
```

**SPEC is set to: /spec2017**

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs   1.5T  8.2G  1.5T   1% /
```

**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. 0.86 08/06/2018
- Memory:
  - 5x NO DIMM NO DIMM
  - 11x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666, configured at 2133

(End of data from sysinfo program)

---

**Compiler Version Notes**

```
## CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
  557.xz_r(base)
```

```
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
## CC 500.perlbench_r(peak) 502.gcc_r(peak) 505.mcf_r(peak) 525.x264_r(peak)
  557.xz_r(peak)
```

```
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
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Hardware Availability: Aug-2018
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Compiler Version Notes (Continued)

CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)
---------------------------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------

CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)
---------------------------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------

FC 548.exchange2_r(base)
---------------------------------------------------------------
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------

FC 548.exchange2_r(peak)
---------------------------------------------------------------
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64

(Continued on next page)
**SPEC CPU2017 Integer Rate Result**

**Huawei**

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**SPECrate2017_int_base = 33.2**  
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**Base Portability Flags (Continued)**

502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64 -DSPEC_LINUX
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-AVX2 -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-AVX2 -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-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
- L/usr/local/je5.0.1-64/lib -ljemalloc

**Peak Compiler Invocation**

C benchmarks (except as noted below):
icc -m64 -std=c11

502.gcc_r.icc -m32 -std=c11 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):
icpc -m64

523.xalancbmk_r.icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64
## Huawei

**Huawei XH628 V5 (Intel Xeon Bronze 3104)**

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### 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.xalancbmk_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:** basepeak = yes

### Peak Optimization Flags

**C benchmarks:**

- **500.perlbench_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

- **502.gcc_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib
-ljemalloc

- **505.mcf_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib
-ljemalloc

- **525.x264_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-alias -L/usr/local/je5.0.1-64/lib
-ljemalloc

- **557.xz_r:** basepeak = yes

**C++ benchmarks:**

- **520.omnetpp_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib
-ljemalloc

- **523.xalancbmk_r:** -Wl,-z,muldefs, -prof-gen(pass 1), -prof-use(pass 2), -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib
-ljemalloc

(Continued on next page)
## SPEC CPU2017 Integer Rate Result

**Huawei**

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### Peak Optimization Flags (Continued)

531.deepsjeng_r; basepeak = yes

541.leela_r; Same as 520.omnetpp_r

Fortran benchmarks:

548.exchange2_r; basepeak = yes

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 v1.0.2 on 2018-08-16 12:57:06-0400.
Originally published on 2018-10-30.