Huawei

Huawei XH321 V5 (Intel Xeon Bronze 3204)

CPU2017 License: 3175

Test Sponsor: Huawei

Test Date: Nov-2018

Hardware Availability: Apr-2019

Tested by: Huawei

Software Availability: Dec-2018

Brainbench_s 12  3.22
602.gcc_s 12  4.92
605.mcf_s 12  6.32
620.omnetpp_s 12  3.54
623.xalanchmk_s 12  6.19
625.x264_s 12  6.03
631.deepsjeng_s 12  2.36
641.leela_s 12  2.33
648.exchange2_s 12  6.88
657.xz_s 12  8.98

--- SPECspeed2017_int_base (4.75)

**Hardware**

CPU Name: Intel Xeon Bronze 3204
Max MHz.: 1900
Nominal: 1900
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: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R, running at 2133)
Storage: 1 x 1200 GB SAS, 10000 RPM
Other: None

**Software**

OS: SUSE Linux Enterprise Server 12 SP4 (x86_64)
Compiler: C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux:
Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux
Parallel: Yes
Firmware: Version 6.52 Released Mar-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
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Results Table

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<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>551</td>
<td>3.22</td>
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<td>694</td>
<td>6.80</td>
<td>692</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>6.20</td>
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<tr>
<td>625.x264_s</td>
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<tr>
<td>641.leela_s</td>
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<td>657.xz_s</td>
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<td>8.98</td>
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</tr>
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SPECspeed2017_int_base = 4.75
SPECspeed2017_int_peak = Not Run

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

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:
KMP_AFFINITY = "granularity=fine,compact,1,0"
OMP_STACKSIZE = "192M"

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
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.
## SPEC CPU2017 Integer Speed Result

**Huawei**

**Huawei XH321 V5 (Intel Xeon Bronze 3204)**

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

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**Test Date:** Nov-2018  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

### Platform Notes

**BIOS configuration:**
- Power Policy Set to Load Balance
- XPT Prefetch Set to Enabled

**Sysinfo program /spec2017/bin/sysinfo**
- Rev: r5974 of 2018-05-19 9bcd38f2999c33d61f64g859392f44859e9
- running on spec1 Tue Nov 13 06:36:39 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) Bronze 3204 CPU @ 1.90GHz
- **physical id**'s (chips)
- **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 3204 CPU @ 1.90GHz
- **Stepping**: 6
- **CPU MHz**: 1900.000
- **CPU max MHz**: 1900.0000
- **CPU min MHz**: 800.0000
- **BogoMIPS**: 3800.00
- **Virtualization**: VT-x
- **L1d cache**: 32K
- **L1i cache**: 32K
- **L2 cache**: 1024K
- **L3 cache**: 8448K
- **NUMA node0 CPU(s)**: 0-5

(Continued on next page)
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### Platform Notes (Continued)

```
NUMA node1 CPU(s):     6-11
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 rdtsscp
                      lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
                      aperfmperf pni pclmulqdq dtes64 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
                      pccd dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c
                      rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd
                      mba ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1
                      hle avx2 smep bmi2  2sms invpcid rtm cqm mxp rdt_a avx512f avx512dq rdseed adx smap
                      clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves
                      cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm arat pln pts pku ospke
                      avx512_vnni flush_lld arch_capabilities
```

```
/proc/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: 191935 MB
    node 0 free: 185638 MB
    node 1 cpus: 6 7 8 9 10 11
    node 1 size: 193251 MB
    node 1 free: 192771 MB
    node distances:
      node   0   1
      0:  10  21
      1:  21  10

From /proc/meminfo
    MemTotal:       394431096 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
    SuSE-release:
        SUSE Linux Enterprise Server 12 (x86_64)
        VERSION = 12
        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"
```

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Platform Notes (Continued)

```
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"
```

```
uname -a:
    Linux spec1 4.12.14-94.41-default #1 SMP Wed Oct 31 12:25:04 UTC 2018 (3090901) 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
```

```
runc-level 3 Nov 13 06:35
SPEC is set to: /spec2017
```

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 300G 8.8G 292G 3% /
```

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:
    4x NO DIMM NO DIMM
    12x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2133
```

(End of data from sysinfo program)

Compiler Version Notes

```
==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
    657.xz_s(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.

==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
    641.leela_s(base)
```

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

--- 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.
---

```
FC 648.exchange2_s(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.
---

Base Compiler Invocation

C benchmarks:
imc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalanchmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```
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### Base Optimization Flags

#### C benchmarks:

- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP`
- `-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=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc`

#### Fortran benchmarks:

- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs`

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 2018-11-13 06:36:38-0500.  