## Huawei CH121 V5 (Intel Xeon Gold 6244)

### SPECspeed2017_int_base = 11.3

**SPECspeed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
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<tr>
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**CPU2017 License:** 3175  
**Test Date:** Feb-2019  
**Test Sponsor:** Huawei  
**Hardware Availability:** Apr-2019  
**Tested by:** Huawei  
**Software Availability:** Dec-2018

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>16</td>
<td>7.72</td>
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<tr>
<td>gcc_s</td>
<td>16</td>
<td>11.2</td>
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<tr>
<td>mcf_s</td>
<td>16</td>
<td>8.66</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>16</td>
<td>14.6</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>16</td>
<td>14.3</td>
</tr>
<tr>
<td>x264_s</td>
<td>16</td>
<td>24.1</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>16</td>
<td>6.27</td>
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<tr>
<td>leela_s</td>
<td>16</td>
<td>5.50</td>
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<tr>
<td>exchange2_s</td>
<td>16</td>
<td>16.2</td>
</tr>
<tr>
<td>xz_s</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

---

### Hardware

- **CPU Name:** Intel Xeon Gold 6244  
- **Max MHz.:** 4400  
- **Nominal:** 3600  
- **Enabled:** 16 cores, 2 chips  
- **Orderable:** 1.2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **Cache L2:** 1 MB I+D on chip per core  
- **Cache L3:** 24.75 MB I+D on chip per chip  
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 1200 GB SAS, 10000 RPM  
- **Orderable:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64)  
  4.12.14-94.41-default  
- **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 6.36 Released Feb-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
SPEC CPU2017 Integer Speed Result

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CPU2017 License: 3175
Test Sponsor: Huawei
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>623.xalancbmk_s</td>
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<td>100</td>
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<td>625.x264_s</td>
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<td>16.2</td>
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<tr>
<td>657.xz_s</td>
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<td>257</td>
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SPECspeed2017_int_base = 11.3
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
Huawei

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CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: Feb-2019
Tested by: Huawei
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes

BIOS configuration:
Power Policy Set to Load Balance
Hyper-Threading Set to Disable
XPT Prefetch Set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-xz5s Mon Dec 3 22:47:30 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 6244 CPU @ 3.60GHz
  2 "physical id"s (chips)
  16 "processors"
core(s), 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 : 8
physical 0: cores 2 3 9 11 17 24 27
physical 1: cores 4 8 17 18 19 24 25 27
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
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) Gold 6244 CPU @ 3.60GHz
Stepping: 6
CPU MHz: 3600.000
CPU max MHz: 4400.0000
CPU min MHz: 1200.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
```
Huawei

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**Platform Notes (Continued)**

NUMA node0 CPU(s): 0-7  
NUMA node1 CPU(s): 8-15  
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 rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor 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 f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vmx flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ets invvpidd rtm cqm mxp rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaves xsaved xsaveopt xsavec xgetbv1 xsavec qcm_llc qcm_occrlc qcm_mbm_total qcm_mbm_local dtether ida arat pln pts pku ospke avx512_vnni flush_l1d arch_capabilities

```
/proc/cpuinfo cache data
  cache size : 25344 KB
```

From numactl --hardware  
WARNING: a numactl 'node' might or may not correspond to a physical chip.  
available: 2 nodes (0-1)  
nodes 0 cpus: 0 1 2 3 4 5 6 7  
node 0 size: 385471 MB  
node 0 free: 382305 MB  
node 1 cpus: 8 9 10 11 12 13 14 15  
node 1 size: 386787 MB  
node 1 free: 380364 MB  
nodes distances:  
node 0 1  
  0: 10 21  
  1: 21 10

From /proc/meminfo

<table>
<thead>
<tr>
<th>MemTotal:</th>
<th>790792768 kB</th>
</tr>
</thead>
<tbody>
<tr>
<td>HugePages_Total:</td>
<td>0</td>
</tr>
<tr>
<td>Hugepagesize:</td>
<td>2048 kB</td>
</tr>
</tbody>
</table>

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"

(Continued on next page)
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Platform Notes (Continued)

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

run-level 3 Dec 3 19:29

SPEC is set to: /spec2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 212G 73G 139G 35% /

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 SM BIOS" standard.

BIOS INSYDE Corp. 6.36 02/15/2019
Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

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)
==============================================================================

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.
==============================================================================

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### SPEC CPU2017 Integer Speed Result

**Huawei**

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### Compiler Version Notes (Continued)

**Base Compiler Invocation**

- C benchmarks: 
  - icc -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.xalancbmk_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

### Base Optimization Flags

- C benchmarks: 
  - -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
  - -qopt-mem-layout-trans=4 -gopenmp -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

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### Base Optimization Flags (Continued)

**C++ benchmarks (continued):**

- `-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 v1.0.2 on 2018-12-03 22:47:30-0500.  