## SPEC® CPU2017 Integer Rate Result

**Huawei**

**Huawei CH225 V5 (Intel Xeon Silver 4208)**

**SPECrate2017_int_base = 83.0**

**SPECrate2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
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<tr>
<td>83.0</td>
<td>Not Run</td>
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</tbody>
</table>

**CPU2017 License:** 3175

**Test Sponsor:** Huawei

**Tested by:** Huawei

**Test Date:** Mar-2019

**Hardware Availability:** Apr-2019

**Software Availability:** Dec-2018

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 12 SP4 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parallel: No</td>
</tr>
<tr>
<td></td>
<td>Firmware: Version 6.52 Released Mar-2019</td>
</tr>
<tr>
<td></td>
<td>File System: xfs</td>
</tr>
<tr>
<td></td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td></td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td></td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td></td>
<td>Other: None</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Silver 4208</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.:</td>
<td>3200</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2100</td>
</tr>
<tr>
<td>Enabled:</td>
<td>16 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 1200 GB SAS, 10000 RPM</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Copies

<table>
<thead>
<tr>
<th>Specbench_R</th>
<th>Specgcc_R</th>
<th>Specmcf_R</th>
<th>Specomnetpp_R</th>
<th>Specxalancbmk_R</th>
<th>Specx264_R</th>
<th>Specdeepsjeng_R</th>
<th>Specleela_R</th>
<th>Specexchange2_R</th>
<th>Specxz_R</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>71.8</td>
<td>58.9</td>
<td>115</td>
<td>102</td>
<td>146</td>
<td>68.2</td>
<td>61.6</td>
<td>143</td>
<td>56.1</td>
</tr>
</tbody>
</table>

---

**SPECrate2017_int_base (83.0)**
SPEC CPU2017 Integer Rate Result

Huawei
Huawei CH225 V5 (Intel Xeon Silver 4208)

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

SPECrate2017_int_base = 83.0
SPECrate2017_int_peak = Not Run

Test Date: Mar-2019
Hardware Availability: Apr-2019
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th></th>
<th>Base</th>
<th></th>
<th></th>
<th>Peak</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
</tr>
<tr>
<td>500.perlbench_r</td>
<td>32</td>
<td>804</td>
<td>63.3</td>
<td>801</td>
<td>63.6</td>
<td>810</td>
<td>62.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>32</td>
<td>633</td>
<td>71.6</td>
<td>631</td>
<td>71.8</td>
<td>629</td>
<td>72.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>32</td>
<td>448</td>
<td>115</td>
<td>444</td>
<td>117</td>
<td>448</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>32</td>
<td>710</td>
<td>59.1</td>
<td>713</td>
<td>58.9</td>
<td>712</td>
<td>58.9</td>
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</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>32</td>
<td>331</td>
<td>102</td>
<td>331</td>
<td>102</td>
<td>330</td>
<td>102</td>
<td></td>
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</tr>
<tr>
<td>525.x264_r</td>
<td>32</td>
<td>383</td>
<td>146</td>
<td>383</td>
<td>146</td>
<td>387</td>
<td>145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>32</td>
<td>538</td>
<td>68.2</td>
<td>537</td>
<td>68.3</td>
<td>538</td>
<td>68.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
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<td>861</td>
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<td>860</td>
<td>61.6</td>
<td>859</td>
<td>61.7</td>
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<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>32</td>
<td>587</td>
<td>143</td>
<td>587</td>
<td>143</td>
<td>588</td>
<td>143</td>
<td></td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>32</td>
<td>616</td>
<td>56.1</td>
<td>616</td>
<td>56.1</td>
<td>615</td>
<td>56.2</td>
<td></td>
<td></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:

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
runcpu command invoked through numactl i.e.:
numactl --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)
Huawei

Huawei CH225 V5 (Intel Xeon Silver 4208)

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

General Notes (Continued)

is mitigated in the system as tested and documented.

Platform Notes

BIOS configuration:
Power Policy Set to Performance
XPT Prefetch Set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on sles12sp4 Sun Mar 31 04:25:09 2019

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) Silver 4208 CPU @ 2.10GHz
- 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 0 1 2 3 4 5 6 7
  - physical 1: cores 0 1 2 3 4 5 6 7

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): 2
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Silver 4208 CPU @ 2.10GHz
- Stepping: 6
- CPU MHz: 2100.000
- CPU max MHz: 3200.0000
- CPU min MHz: 800.0000
- BogoMIPS: 4200.00
- Virtualization: VT-x

(Continued on next page)
Huawei

Huawei CH225 V5 (Intel Xeon Silver 4208)

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**Platform Notes (Continued)**

- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 11264K
- NUMA node0 CPU(s): 0-7,16-23
- NUMA node1 CPU(s): 8-15,24-31
- Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
- ... (Continued on next page)

---

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 6 7 16 17 18 19 20 21 22 23
- Node 0 size: 191904 MB
- Node 0 free: 190365 MB
- Node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
- Node 1 size: 193280 MB
- Node 1 free: 191820 MB

---

From `/proc/meminfo`

- MemTotal: 394429268 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.
Huawei CH225 V5 (Intel Xeon Silver 4208)

Huawei

**SPEC CPU2017 Integer Rate Result**

<table>
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**Platform Notes (Continued)**

```
os-release:
    NAME="SLES"
    VERSION="12-SP4"
    VERSION_ID="12.4"
    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

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

run-level 3 Mar 29 12:17

SPEC is set to: /spec2017
    Filesystem  Type  Size  Used Avail Use% Mounted on
    /dev/sda3   xfs   700G   15G  686G   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:
    24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2400

(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)
```

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

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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)

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 548.exchange2_r(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:**  
  ```  
  icc -m64 -std=c11  
  ```

- **C++ benchmarks:**  
  ```  
  icpc -m64  
  ```

- **Fortran benchmarks:**  
  ```  
  ifort -m64  
  ```

### Base Portability Flags

- 500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
- 502.gcc_r: -DSPEC_LP64
- 505.mcf_r: -DSPEC_LP64
- 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
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</tbody>
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**SPECrate2017_int_peak = Not Run**

### Base Optimization Flags

**C benchmarks:**
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
  `-lqkmalloc`

**C++ benchmarks:**
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -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:**
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
  `-lqkmalloc`

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 2019-03-31 04:25:09-0400.