### Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Gold 5317, 3.00GHz)

**SPECratenet2017_int_base = 203**

**SPECratenet2017_int_peak = Not Run**

- **CPU2017 License:** 9019
- **Test Sponsor:** Cisco Systems
- **Tested by:** Cisco Systems
- **Test Date:** Dec-2021
- **Hardware Availability:** Sep-2021
- **Software Availability:** Sep-2021

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<tr>
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<td>525.x264_r 262</td>
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<td>48</td>
<td>548.exchange2_r 110</td>
</tr>
<tr>
<td>48</td>
<td>557.xz_r 402</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 5317
- **Max MHz:** 3600
- **Nominal:** 3000
- **Enabled:** 24 cores, 2 chips, 2 threads/core
- **Orderable:** 1,2 Chips
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **L2:** 1.25 MB I+D on chip per core
- **L3:** 18 MB I+D on chip per chip
- **Memory:** 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R, running at 2933)
- **Storage:** 1 x 240 GB M.2 SSD SATA
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
- **Compiler:** C/C++: Version 2021.4.0 of Intel oneAPI DPC++/C++ Compiler Build 20210924 for Linux;
  Fortran: Version 2021.4.0 of Intel Fortran Compiler Classic Build 20210910 for Linux;
- **Parallel:** No
- **Firmware:** Version 5.0.1d released Aug-2021
- **File System:** btrfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** None
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage
Cisco UCS X210c M6 (Intel Xeon Gold 5317, 3.00GHz)  

CPU2017 License: 9019  
Test Sponsor: Cisco Systems  
Tested by: Cisco Systems  

Test Date: Dec-2021  
Hardware Availability: Sep-2021  
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Results Table

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</tr>
</tbody>
</table>

SPECrate®2017_int_base = 203  
SPECrate®2017_int_peak = Not Run

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/home/intel/tbb/2021.4.0/env/../lib/intel64/gcc4.8:/home/intel/mpi/2021
.4.0/libfabric/lib:/home/intel/mpi/2021.4.0/lib/release:/home/intel/mpi
i/2021.4.0/lib:/home/intel/compiler/2021.4.0/linux/compiler/lib/intel64
_lin:/home/intel/compiler/2021.4.0/linux/lib:/home/intel/clck/2021.4.0/l
ib/intel64:/home/cpu2017/je5.0.1-32"
MALLOCONF_CONF = "retain:true"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7940X CPU + 64GB RAM
memory using openSUSE Leap 15.2
Transparent Huge Pages enabled by default

(Continued on next page)
### Cisco Systems

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Dec-2021  
**Hardware Availability:** Sep-2021  
**Software Availability:** Sep-2021

#### SPECrate\(^\text{®}2017\) Int. Results

<table>
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<tr>
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<th>SPECrate(^\text{®}2017) Int. Peak</th>
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</thead>
<tbody>
<tr>
<td>= 203</td>
<td>= Not Run</td>
</tr>
</tbody>
</table>

---

#### General Notes (Continued)

Prior to runcpus invocation
Filesystem page cache synced and cleared with:
```
sync; echo 3> /proc/sys/vm/drop_caches
```
runcpus command invoked through numactl i.e.:
```
numactl --interleave=all runcpu <etc>
```
NA: 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 Settings:**
- Adjacent Cache Line Prefetcher set to Disabled
- DCU Streamer Prefetch set to Disabled
- Sub NUMA Clustering set to Enabled
- LLC Dead Line set to Disabled
- Memory Refresh Rate set to 1x Refresh
- ADDDC Sparing set to Disabled
- Patrol Scrub set to Disabled
- Processor C6 Report set to Enabled

**Sysinfo program** /home/cpu2017/bin/sysinfo  
**Rev:** r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d  
**running on perf-blade3 Thu Dec 9 08:43:58 2021**

**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) Gold 5317 CPU @ 3.00GHz
   2 "physical id"s (chips)
   48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11
```

From lscpu from util-linux 2.33.1:  
**Architecture:** x86_64  
**CPU op-mode(s):** 32-bit, 64-bit

(Continued on next page)
Platform Notes (Continued)

Byte Order:          Little Endian
Address sizes:       46 bits physical, 57 bits virtual
CPU(s):              48
On-line CPU(s) list: 0-47
Thread(s) per core:  2
Core(s) per socket:  12
Socket(s):           2
NUMA node(s):        4
Vendor ID:           GenuineIntel
CPU family:          6
Model:               106
Model name:          Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz
Stepping:            6
CPU MHz:             800.000
CPU max MHz:         3600.0000
CPU min MHz:         800.0000
BogoMIPS:            6000.00
Virtualization:      VT-x
L1d cache:           48K
L1i cache:           32K
L2 cache:            1280K
L3 cache:            18432K
NUMA node0 CPU(s):   0-5,24-29
NUMA node1 CPU(s):   6-11,30-35
NUMA node2 CPU(s):   12-17,36-41
NUMA node3 CPU(s):   18-23,42-47
Flags:               fpu vme de pse tsc msr pae mce 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 pclid 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 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fs savebase tsc_adjust bmi1 hle avx2 smep bmi2  erms invpcid rtm cmp rdt_a avx512f avx512dq rseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xsavec xsaveas cmmllc cqm_occup_llc cqm_mbb_total cqm_mbb_local wbinvd dtherm ida arat pln pts hwp hwp_act_window hwp epp hwp_pkg_req avx512vbmi umip pku ospke avx512_vbmi2 gfnf vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
cache size : 18432 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
Cisco Systems
Cisco UCS X210c M6 (Intel Xeon Gold 5317, 3.00GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>203</th>
</tr>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
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**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Dec-2021  
**Hardware Availability:** Sep-2021  
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---

**Platform Notes (Continued)**

```
node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
node 0 size: 515652 MB
node 0 free: 515370 MB
node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
node 1 size: 516092 MB
node 1 free: 515809 MB
node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
node 2 size: 516092 MB
node 2 free: 515810 MB
node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
node 3 size: 516089 MB
node 3 free: 515844 MB

node distances:
node 0  1  2  3
0:  10 11 20 20
1:  11 10 20 20
2:  20 20 10 11
3:  20 20 11 10
```

From /proc/meminfo
```
MemTotal:       2113461664 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

From /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
```
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"
```

uname -a:
```
Linux perf-blade3 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba)
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- **CVE-2018-12207 (iTLB MultiHit):** Not affected
- **CVE-2018-3620 (L1 Terminal Fault):** Not affected
- Microarchitectural Data Sampling: Not affected

(Continued on next page)
Cisco Systems
Cisco UCS X210c M6 (Intel Xeon Gold 5317, 3.00GHz)

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</tbody>
</table>

### Platform Notes (Continued)

- **CVE-2017-5754 (Meltdown):** Not affected
- **CVE-2018-3639 (Speculative Store Bypass):** Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- **CVE-2017-5753 (Spectre variant 1):** Mitigation: usercopy/swapsgs barriers and __user pointer sanitation
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- **CVE-2020-0543 (Special Register Buffer Data Sampling):** Not affected
- **CVE-2019-11135 (TSX Asynchronous Abort):** Not affected

**run-level 3 Dec 9 08:41**

**SPEC is set to:** /home/cpu2017

**Filesystem**

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<tr>
<th>Type</th>
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<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
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<tr>
<td>btrfs</td>
<td>222G</td>
<td>60G</td>
<td>162G</td>
<td>27%</td>
<td>/home</td>
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</table>

**Additional information from dmidecode 3.2 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.

**Memory:**

32x 0xCE00 M393A8G40AB2-CWE 64 GB 2 rank 3200, configured at 2933

**BIOS:**

- BIOS Vendor: Cisco Systems, Inc.
- BIOS Version: X210M6.5.0.1d.0.0816211754
- BIOS Date: 08/16/2021
- BIOS Revision: 5.22

(End of data from sysinfo program)

### Compiler Version Notes

- **C**
  - 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
  - 525.x264_r(base) 557.xz_r(base)

**Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.4.0 Build 20210924**

(Continued on next page)
**Cisco Systems**
Cisco UCS X210c M6 (Intel Xeon Gold 5317, 3.00GHz)

**SPECrater®2017_int_base = 203**
**SPECrater®2017_int_peak = Not Run**

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**Compiler Version Notes (Continued)**

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==============================================================================
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<tr>
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<td>541.leela_r(base)</td>
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<tr>
<td>Version 2021.4.0 Build 20210924</td>
<td></td>
</tr>
</tbody>
</table>
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

==============================================================================
| Fortran | 548.exchange2_r(base) |

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on 
Intel(R) 64, Version 2021.4.0 Build 20210910_000000

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---

**Base Compiler Invocation**

C benchmarks:
- icx

C++ benchmarks:
- icpx

Fortran benchmarks:
- ifort

---

**Base Portability Flags**

500.perlbear_c_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
## Cisco Systems

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### SPEC CPU®2017 Integer Rate Result

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<tr>
<td>SPECrate®2017_int_peak = Not Run</td>
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</tbody>
</table>

### Base Optimization Flags

**C benchmarks:**
- `-w` `-std=c11` `-m64` `-Wl,-z,muldefs` `-xCORE-AVX512` `-O3` `-ffast-math` `-flto` `-mfpmath=sse` `-funroll-loops` `-qopt-mem-layout-trans=4` `-mbranches-within-32B-boundaries` `-L/home/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin` `-lqkmalloc`

**C++ benchmarks:**
- `-w` `-m64` `-Wl,-z,muldefs` `-xCORE-AVX512` `-O3` `-ffast-math` `-flto` `-mfpmath=sse` `-funroll-loops` `-qopt-mem-layout-trans=4` `-mbranches-within-32B-boundaries` `-L/home/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin` `-lqkmalloc`

**Fortran benchmarks:**
- `-w` `-m64` `-Wl,-z,muldefs` `-xCORE-AVX512` `-O3` `-ipo` `-no-prec-div` `-qopt-mem-layout-trans=4` `-nostandard-realloc-lhs` `-align array32byte` `-mbranches-within-32B-boundaries` `-L/home/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin` `-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:


http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-ICX-revl.xml

---

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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