## Cisco Systems

Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>285</td>
<td>293</td>
</tr>
</tbody>
</table>

### CPU2017 License:
9019

### Test Sponsor:
Cisco Systems

### Tested by:
Cisco Systems

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon Gold 5416S</td>
</tr>
<tr>
<td>Max MHz</td>
<td>4000</td>
</tr>
<tr>
<td>Nominal</td>
<td>2000</td>
</tr>
<tr>
<td>Enabled</td>
<td>32 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 + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>2 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>30 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>1 TB (16 x 64 GB 2Rx4 PC5-4800B-R, running at 4400)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 960 GB M.2 SSD SATA</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++; Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td>Parallel</td>
<td>No</td>
</tr>
<tr>
<td>Firmware</td>
<td>Version 5.1.1b released Mar-2023</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management</td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

### Test Date:
Jun-2023

### Hardware Availability:
Mar-2023

### Software Availability:
Dec-2022

### Test Date

<table>
<thead>
<tr>
<th>Test Date</th>
<th>CPU2017 License</th>
<th>Test Sponsor</th>
<th>Tested by</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
</table>

### Test Details

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>64</td>
<td>219</td>
<td>293</td>
</tr>
<tr>
<td>gcc</td>
<td>64</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>mcf</td>
<td>64</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>omnetpp</td>
<td>64</td>
<td>201</td>
<td></td>
</tr>
<tr>
<td>xalancbmk</td>
<td>64</td>
<td>468</td>
<td></td>
</tr>
<tr>
<td>x264</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deepsjeng</td>
<td>64</td>
<td>194</td>
<td></td>
</tr>
<tr>
<td>leela</td>
<td>64</td>
<td>183</td>
<td></td>
</tr>
<tr>
<td>exchange2</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xz</td>
<td>64</td>
<td>129</td>
<td></td>
</tr>
</tbody>
</table>

### Performance Graph

- SPECrate®2017_int_base (285)
- SPECrate®2017_int_peak (293)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>64</td>
<td>503</td>
<td>202</td>
<td>503</td>
<td>202</td>
<td>503</td>
<td>202</td>
<td>64</td>
<td>466</td>
<td>219</td>
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<td>219</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>64</td>
<td>368</td>
<td>246</td>
<td>368</td>
<td>246</td>
<td>368</td>
<td>246</td>
<td>64</td>
<td>319</td>
<td>284</td>
<td>319</td>
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<tr>
<td>505.mcf_r</td>
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<td>222</td>
<td>468</td>
<td>223</td>
<td>465</td>
<td>221</td>
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<td>520.omnetpp_r</td>
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<td>201</td>
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<td>202</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>64</td>
<td>122</td>
<td>554</td>
<td>122</td>
<td>554</td>
<td>123</td>
<td>552</td>
<td>64</td>
<td>122</td>
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<td>525.x264_r</td>
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<td>209</td>
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<td>64</td>
<td>198</td>
<td>565</td>
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<tr>
<td>531.deepsjeng_r</td>
<td>64</td>
<td>378</td>
<td>194</td>
<td>378</td>
<td>194</td>
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<td>194</td>
<td>64</td>
<td>378</td>
<td>194</td>
<td>378</td>
<td>194</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>64</td>
<td>579</td>
<td>183</td>
<td>579</td>
<td>183</td>
<td>579</td>
<td>183</td>
<td>64</td>
<td>579</td>
<td>183</td>
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<tr>
<td>548.exchange2_r</td>
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<td>296</td>
<td>566</td>
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<td>564</td>
<td>299</td>
<td>561</td>
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<td>296</td>
<td>566</td>
<td>297</td>
<td>564</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>64</td>
<td>534</td>
<td>129</td>
<td>538</td>
<td>129</td>
<td>541</td>
<td>128</td>
<td>64</td>
<td>534</td>
<td>129</td>
<td>538</td>
<td>129</td>
</tr>
</tbody>
</table>

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

Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalanchmk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

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/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/jes5.0.1-32"
MALLOCC_CONF = "retain=true"
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 285</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 293</td>
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</table>

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

Test Date: Jun-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

**General Notes**

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
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>
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

**Platform Notes**

BIOS Settings:
Adjacent Cache Line Prefetcher set to Disabled
DCU streamer Prefetch set to Disabled
Enhanced CPU Performance set to Auto
LLC Dead Line set to Disabled
ADDCS Sparing set to Disabled
Processor C6 Report set to Enabled

SysInfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Fri Jun 2 03:38:39 2023

SUT (System Under Test) info as seen by some common utilities.

(Continued on next page)
22. BIOS

1. `uname -a`

```
Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
x86_64 x86_64 x86_64 GNU/Linux
```

2. `w`

```
03:38:39 up 10 min,  1 user,  load average: 0.20, 0.07, 0.03
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
root     tty1     -                03:37    7.00s  1.19s  0.15s -bash
```

3. `Username`

```
From environment variable $USER: root
```

4. `ulimit -a`

```
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority             (-e) 0
file size               (blocks, -f) unlimited
pending signals                 (-i) 4126958
max locked memory       (kbytes, -l) 64
max memory size         (kbytes, -m) unlimited
open files                      (-n) 1024
pipe size            (512 bytes, -p) 8
POSIX message queues     (bytes, -q) 819200
real-time priority              (-r) 0
stack size              (kbytes, -s) unlimited
cpu time               (seconds, -t) unlimited
max user processes              (-u) 4126958
virtual memory          (kbytes, -v) unlimited
file locks                      (-x) unlimited
```

5. `sysinfo process ancestry`

```
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
```

6. `/proc/cpuinfo`

```
model name      : Intel(R) Xeon(R) Gold 5416S
vendor_id       : GenuineIntel
```

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

**SPEC CPU®2017 Integer Rate Result**

---

**SPECrate®2017_int_base = 285**

**SPECrate®2017_int_peak = 293**

---

**CPU2017 License:** 9019  
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---

**Platform Notes (Continued)**

- **cpu family**: 6  
- **model**: 143  
- **stepping**: 8  
- **microcode**: 0x2b000190  
- **bugs**: spectre_v1 spectre_v2 spec_store_bypass swapgs  
- **cpu cores**: 16  
- **siblings**: 32  
- **2 physical ids (chips)**  
- **64 processors (hardware threads)**  
- **physical id 0**: core ids 0-15  
- **physical id 1**: core ids 0-15  
- **physical id 0**: apicids 0-31  
- **physical id 1**: apicids 128-159

---

For the sake of completeness, I'll include the full list of options here:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 5416S
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
Stepping: 8
CPU max MHz: 4000.000
CPU min MHz: 800.000
BogoMIPS: 4000.00

Flags:
  fpu vme de pse tsc msr pae mca cmov pat pse36
  cli fpu vme de pse tsc msr pae mca cmov pat pse36
  clflush dtscache mmx fxsr sse sse2 ss ht tm pse syscall nx pdpe1gb
  rdtsscp lm constant_tsc art arch_perfmon pebs tsr rep_good nopl xtopology
  nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
  msr pcr rcx rdp virt vmx smx est tm sse2 sse3 sse3                                                           
  sse4_1 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c
  rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3_cat_l2
  cdcp-md cld cld pclmulqdq dtes64 monitor
  cpu-specific
  lock侯
  vmx vaex f16c xsaveopt xsaves lcid cmpxchg8b popcnt rogue
tm
```

---

(Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.)

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(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

| SPECrate®2017_int_base = 285 |
| SPECrate®2017_int_peak = 293 |

CPU2017 License: 9019
Test Sponsor: Cisco Systems
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Test Date: Jun-2023
Hardware Availability: Mar-2023
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Platform Notes (Continued)

NUMA node(s): 4
NUMA node0 CPU(s): 0-7,32-39
NUMA node1 CPU(s): 8-15,40-47
NUMA node2 CPU(s): 16-23,48-55
NUMA node3 CPU(s): 24-31,56-63
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d</td>
<td>48K</td>
<td>1.5M</td>
<td>12</td>
<td>Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1</td>
<td>32K</td>
<td>1M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L2</td>
<td>2M</td>
<td>64M</td>
<td>16</td>
<td>Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>30M</td>
<td>60M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>32768</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0-7,32-39
node 0 size: 258042 MB
node 1 cpus: 8-15,40-47
node 1 size: 257661 MB
node 1 free: 256844 MB
node 2 cpus: 16-23,48-55
node 2 size: 258043 MB
node 2 free: 257676 MB
node 3 cpus: 24-31,56-63
node 3 size: 258014 MB
node 3 free: 257666 MB
node distances:
node 0 1 2 3
0: 10 20 20 20
1: 20 10 20 20
2: 20 20 10 20
3: 20 20 20 10

9. /proc/meminfo
MemTotal: 1056525580 kB

10. who -r
run-level 3 Jun 2 03:28

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
Default Target Status
multi-user running

12. Services, from systemctl list-unit-files
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Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

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SPECrate®2017_int_base = 285
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Platform Notes (Continued)

STATE UNIT FILES
enabled YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged irqbalance issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp wickedd-dhcpd wickedd-nanny
enabled-runtime systemd-remount-fs

13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=3e915eb9-6d94-4f07-93e5-9c09a940cb2e
   splash=silent
   resume=/dev/disk/by-uuid/6aafd8c5-6694-4fd6-8231-7db8d20ac0ea
   mitigations=auto
   quiet
   security=apparmor

14. cpupower frequency-info
   analyzing CPU 0:
   current policy: frequency should be within 800 MHz and 4.00 GHz.
   The governor "performance" may decide which speed to use
   within this range.
   boost state support:
   Supported: yes
   Active: yes

15. sysct1
   kernel.numa_balancing 1
   kernel.randomize_va_space 2
   vm.compaction_proactiveness 20
   vm.dirty_background_bytes 0
   vm.dirty_background_ratio 10
   vm.dirty_bytes 0
   vm.dirty_expire_centisecs 3000
   vm.dirty_ratio 20
   vm.dirty_writeback_centisecs 500
   vm.dirtyexpire_seconds 43200
   vm.extfrag_threshold 500
   vm.min_unmapped_ratio 1
   vm.nr_hugepages 0
   vm.nr_hugepages_mempolicy 0
   vm.nr_overcommit_hugepages 0
   vm.swappiness 1
   vm.watermark_boost_factor 15000
   vm.watermark_scale_factor 10
   vm.zone_reclaim_mode 0

16. /sys/kernel/mm/transparent_hugepage
   defrag [always] defer defer+madvise madvise never
   enabled [always] madvise never

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Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

SPEC CPU® 2017 Integer Rate Result

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Platform Notes (Continued)

hpae_pmd_size  2097152
shmem_enabled always within_size advise [never] deny force

17. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleepMillisecs 60000
defrag 1
max_ptes_none 511
max_ptes_shared 256
max_ptes_swap 64
pages_to_scan 4096
scan_sleepMillisecs 10000

18. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP4

19. Disk information
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 351G 6.9G 344G 2% /home

20. /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSX-210C-M7
Serial: FCH270978F6

21. dmidecode
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:
16x 0xAD00 HMC94MEBRA109N 64 GB 2 rank 4800, configured at 4400

22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: Cisco Systems, Inc.
BIOS Version: X210M7.5.1.1b.0.0308231534
BIOS Date: 03/08/2023
BIOS Revision: 5.29

Compiler Version Notes

C | 502.gcc_r(peak)
---|---------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
---|--------------------------------------------------
C | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 285</th>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak = 293</td>
</tr>
</tbody>
</table>

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

Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64

(Continued on next page)
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

SPECrater®2017_int_base = 285
SPECrater®2017_int_peak = 293

CPU2017 License: 9019
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<th>Jun-2023</th>
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<td>Hardware Availability:</td>
<td>Mar-2023</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2022</td>
</tr>
</tbody>
</table>

**Base Portability Flags (Continued)**

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

**Base Optimization Flags**

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-1qkmalloc

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-1qkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-1qkmalloc

**Peak Compiler Invocation**

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5416S, 2.00GHz)

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

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

Test Date: Jun-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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.xalanckbmk_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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lopmlcore

502.gcc_r: -m32
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lopmlcore

557.xz_r: basepeak = yes

C++ benchmarks:

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Cisco Systems
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| SPECrate®2017_int_base = 285 |
| SPECrate®2017_int_peak = 293 |

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

| Test Date: Jun-2023 |
| Hardware Availability: Mar-2023 |
| Software Availability: Dec-2022 |

Peak Optimization Flags (Continued)

520.omnetpp_r: basepeak = yes
523.xalancbmk_r: basepeak = yes
531.deepsjeng_r: basepeak = yes
541.leela_r: basepeak = yes

Fortran benchmarks:
548.exchange2_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml