Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

SPECrate®2017_int_base = 178
SPECrate®2017_int_peak = 183

CPU2017 License: 9019
Test Date: Jun-2023
Test Sponsor: Cisco Systems
Hardware Availability: Mar-2023
Tested by: Cisco Systems
Software Availability: Dec-2022

CPU Name: Intel Xeon Gold 5415+
Max MHz: 4100
Nominal: 2900
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1,2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 22.5 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R, running at 4400)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None

Hardware

500.perlbench_r 32
502.gcc_r 32
505.mcf_r 32
520.omnetpp_r 32
523.xalancbmk_r 32
525.x264_r 32
531.deepsjeng_r 32
541.leela_r 32
548.exchange2_r 32
557.xz_r 32

Software

OS: SUSE Linux Enterprise Server 15 SP4
5.14.21-150400.22-default
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 5.1.1b released Mar-2023
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

CPU2017 License: 9019  Test Date: Jun-2023
Test Sponsor: Cisco Systems  Hardware Availability: Mar-2023
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Results Table

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<th>Ratio</th>
<th>Seconds</th>
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<tr>
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<td>541.leela_r</td>
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<tr>
<td>557.xz_r</td>
<td>32</td>
<td>445</td>
<td>77.7</td>
<td>444</td>
<td>77.9</td>
<td>448</td>
<td>77.2</td>
<td>32</td>
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<td>77.7</td>
<td>444</td>
<td>77.9</td>
<td>448</td>
<td>77.2</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.xalancbmk_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/je5.0.1-32"
MALLOCS_CONF = "retain:true"
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

SPECrater®2017_int_base = 178
SPECrater®2017_int_peak = 183

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 03:39:21 2023

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

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3. Username
4. ulimit -a
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6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
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10. who -r
11. Systemd service manager version: systemctl 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
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15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/transparent
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode

(Continued on next page)
Platform Notes (Continued)

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`
   03:39:21 up 2 min, 1 user, load average: 0.06, 0.07, 0.03
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                03:37    9.00s  1.07s  0.11s -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                 (-l) 4127022
   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) 4127022
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited

------------------------------------------------------------
5. `sysinfo process ancestry`
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   -bash
   runcpu --action=build --action validate --define default-platform-flags --define numcopies=32 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=16 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all --o all
   intrate
   runcpu --action build --action validate --define default-platform-flags --define numcopies=32 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=16 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all
   --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.030/templogs/preenv.intrate.030.0.log --lognum 030.0
   --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017
   $SPEC = /home/cpu2017

------------------------------------------------------------
6. `/proc/cpuinfo`
   model name : Intel(R) Xeon(R) Gold 5415+
   vendor_id  : GenuineIntel

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

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

SPECrate®2017_int_base = 178
SPECrate®2017_int_peak = 183

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

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

Platform Notes (Continued)

cpu family : 6
model : 143
stepping : 8
microcode : 0x2b000190
bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores : 8
siblings : 16
2 physical ids (chips)
32 processors (hardware threads)
physical id 0: core ids 0-7
physical id 1: core ids 0-7
physical id 0: apic ids 0-15
physical id 1: apic ids 128-143
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

7. lscpu
From lscpu from util-linux 2.37.2:

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): 32
On-line CPU(s) list: 0-31
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 5415+
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 2
Stepping: 8
CPU max MHz: 4100.000
CPU min MHz: 800.000
BogoMIPS: 5800.00

Flags:
fpu vme de pse tsc msr pae 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 tsc_known_freq pni pclmulqdq dtes64 monitor
des cpl vmx smx est tm2 ss ht sse2 sse3 sse3d sbdq fma cx16 xtpr pdcm pdcmid dca sse4_1
sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 cat_l2 cd cp l3
invpcid_single intel_puin cd l2 ssbd mba ibrs ibpb ibrs_enhanced
pr_shadow vnum flexpriority ept vpid ept_ad fsgsbase tsc_adjust bhi hle
avx2 amep bmi2 ets ins invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
avx512sfma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl
xsavesopt xsaveopt xgetbv1 xsave cs qmax llc cqm_occup llc cqm_mmm_total
cqm_mmm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
arat pln pts hwp_act_window hwp_epp hwp_pkg_req avx512vbm1 umip pku
oshpe waitpkg avx512_vmbi2 gfn vaes vpcmuli512q avx512_vnni avx512_bits8
avx512_vpopcntdq l57 rdpid bus_lock_detect cldemote movdir i movdir64b
enqcmd frsm md_clear serialize tsxldrkr pconfig arch_lbr avx512_fp16
amx_tile flush_lid arch_capabilities

Virtualization: VT-x
L1d cache: 768 KIB (16 instances)
L1i cache: 512 KIB (16 instances)
L2 cache: 32 MIB (16 instances)
L3 cache: 45 MIB (2 instances)

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

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

## Platform Notes (Continued)

- NUMA node(s): 4
- NUMA node 0 CPU(s): 0-3, 16-19
- NUMA node 1 CPU(s): 4-7, 20-23
- NUMA node 2 CPU(s): 8-11, 24-27
- NUMA node 3 CPU(s): 12-15, 28-31
- 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 Srbd: Not affected
- Vulnerability Tsx async abort: Not affected

From lscpu --cache:

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<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
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<th>SETS</th>
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<td>L1i</td>
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<td>512K</td>
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<td>2M</td>
<td>32M</td>
<td>16</td>
<td>Unified</td>
<td>2</td>
<td>2048</td>
<td></td>
<td>1</td>
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<tr>
<td>L3</td>
<td>22.5M</td>
<td>45M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>24576</td>
<td></td>
<td>1</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: 0-3, 16-19
node 0 size: 258010 MB
node 0 free: 257110 MB
node 1 cpus: 4-7, 20-23
node 1 size: 257697 MB
node 1 free: 257409 MB
node 2 cpus: 8-11, 24-27
node 2 size: 258045 MB
node 2 free: 257787 MB
node 3 cpus: 12-15, 28-31
node 3 size: 258025 MB
node 3 free: 257638 MB
node distances:
node 0 1 2 3
0: 10 20 20 20
1: 20 10 20 20
2: 20 10 20 20
3: 20 20 20 10

---

9. /proc/meminfo
MemTotal: 1056542012 kB

---

10. who --r
run-level 3 Jun 2 03:37

---

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

---

12. Services, from systemctl list-unit-files

(Continued on next page)
## Cisco Systems

**Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
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**SPEC CPU®2017 Integer Rate Result**

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<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>183</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
</table>
| enabled     | YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged IRCbalance
|             | issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickeded-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=d49b0b67-61d3-44db-8305-09074fb592fb`
   - `splash=silent`
   - `mitigations=auto`
   - `quiet`
   - `security=apparmor`

---

14. cpupower frequency-info
   - analyzing CPU 0:
     - current policy: frequency should be within 800 MHz and 4.10 GHz. The governor "performance" may decide which speed to use within this range.
   - `boost state support:
     - Supported: yes
     - Active: yes`

---

15. sysctl
   - `kernel.numa_balancing 1`
   - `kernel.randomize_va_space 2`
   - `vm.compartment_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.dirtytime_expire_seconds 43200`
   - `vm.extrathreshold 500`
   - `vm.min_unmapped_ratio 3`
   - `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`
   - `hpage_pmd_size 2097152`

---

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Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

| SPECrate®2017_int_base = 178 |
| SPECrate®2017_int_peak = 183 |

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

Platform Notes (Continued)

shmem_enabled always within_size advise [never] deny force

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<td>alloc_sleep_millisecs</td>
<td>60000</td>
</tr>
<tr>
<td>defrag</td>
<td>1</td>
</tr>
<tr>
<td>max_ptes_none</td>
<td>511</td>
</tr>
<tr>
<td>max_ptes_shared</td>
<td>256</td>
</tr>
<tr>
<td>max_ptes_swap</td>
<td>64</td>
</tr>
<tr>
<td>pages_to_scan</td>
<td>4096</td>
</tr>
<tr>
<td>scan_sleep_millisecs</td>
<td>10000</td>
</tr>
</tbody>
</table>

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/sda2 btrfs 892G 9.3G 882G 2% /home

20. /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSX-210C-M7
Serial: FCH270978GK

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 HMCG94MEBRA109N 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

<table>
<thead>
<tr>
<th>Compiler</th>
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<tr>
<td>C</td>
<td>502.gcc_r(peak)</td>
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<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201</td>
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Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

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(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

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<th>CPU2017 License:</th>
<th>9019</th>
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**SPEC CPU®2017 Integer Rate Result**

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<tr>
<th>SPECrate®2017_int_base</th>
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<tr>
<td>SPECrate®2017_int_peak</td>
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</table>

**Compiler Version Notes (Continued)**

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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<table>
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<tr>
<th>C++</th>
<th>520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)</th>
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<tr>
<td></td>
<td>541.leela_r(base, peak)</td>
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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<table>
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<th>Fortran</th>
<th>548.exchange2_r(base, peak)</th>
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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---

**Base Compiler Invocation**

**C benchmarks:**

icx

**C++ benchmarks:**

icpx

**Fortran benchmarks:**

ifx

---

**Base Portability Flags**

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)

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

SPECRate®2017_int_base = 178
SPECRate®2017_int_peak = 183

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Test Date: Jun-2023
Tested by: Cisco Systems
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Base Portability Flags (Continued)

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
-lqkmalloc

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
-lqkmalloc

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
-lqkmalloc

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx
Cisco Systems  
Cisco UCS X210c M7 (Intel Xeon Gold 5415+, 2.90GHz)  

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### 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.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

### Peak Optimization Flags

**C benchmarks:**

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs  
-fprofile-generatedata(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -fbase -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  
-lqkmalloc

502.gcc_r: -m32  
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin  
-std=gnu89 -Wl,-z,muldefs -fprofile-generatedata(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -fbase -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  
-lqkmalloc

557.xz_r: basepeak = yes

**C++ benchmarks:**

(Continued on next page)
Cisco Systems
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### 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

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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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