Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

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

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

Hardware
CPU Name: Intel Xeon Gold 5418Y
Max MHz: 3800
Nominal: 2000
Enabled: 48 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: 45 MB I+D on chip per core
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

Software
OS: SUSE Linux Enterprise Server 15 SP4
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: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage
SPEC CPU®2017 Floating Point Rate Result

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
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<th>Seconds</th>
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<td>48</td>
<td>293</td>
<td>260</td>
<td>293</td>
<td>260</td>
<td>293</td>
<td>260</td>
</tr>
</tbody>
</table>

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/je5.0.1-64"
MALLOC_CONF = "retain:true"

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
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>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

(Continued on next page)
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SPEC CPU 2017 Floating Point Rate Result

General Notes (Continued)

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
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 09:54:03 2023

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

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10. who -r
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12. Services, from systemctl list-unit-files
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17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
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21. dmidecode
22. BIOS

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

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SPEC CPU® 2017 Floating Point Rate Result

**SPEC CPU® 2017 fp_base = 540**
**SPEC CPU® 2017 fp_peak = 548**

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

### Platform Notes (Continued)

09:54:03 up 6:23, 1 user, load average: 59.57, 86.74, 92.15

<table>
<thead>
<tr>
<th>USER</th>
<th>TTY</th>
<th>FROM</th>
<th>LOGIN@</th>
<th>IDLE</th>
<th>JCPU</th>
<th>PCPU</th>
<th>WHAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>tty1</td>
<td>-</td>
<td>03:36</td>
<td>6:16m</td>
<td>1.07s</td>
<td>0.16s</td>
<td>-bash</td>
</tr>
</tbody>
</table>

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) 4125341
   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) 4125341
   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=96 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=48 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all --o all
   fprate
   runcpu --action build --action validate --define default-platform-flags --define numcopies=96 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=48 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all
   --output_format all --nopower --runmode rate --tune base:peak --size refrate fprate --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.031/templogs/preenv.fprate.031.0.log --lognum 031.0
   --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017

6. /proc/cpuinfo

   model name : Intel(R) Xeon(R) Gold 5418Y
   vendor_id : GenuineIntel
   cpu family : 6
   model     : 143
   stepping  : 8
   microcode : 0x2b000190
   bugs      : spectre_v1 spectre_v2 spec_store_bypass swapped
   cpu cores : 24
   siblings : 48
   2 physical ids (chips)
   96 processors (hardware threads)

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SPECrate®2017_fp_base = 540
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Platform Notes (Continued)

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): 96
On-line CPU(s) list: 0-95
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 5418Y
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 2
Stepping: 8
CPU max MHz: 3800.0000
CPU min MHz: 800.0000
BogoMIPS: 4000.00

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 rdtsdp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperf perfctr tsc_known_freq pni pclmulqdq dtes64 monitor
des_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 avx f16c rdrand
lahf_lm abm 3dnowprefetch cpuid_fault ebp cat_13 cat_12 cpd_13
invariantsimple intel_pinn cd_p12 asbd mba ibs ibs_enhanced
trp_shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle
avx2 smep bmi2 erms invpcid rtm cmq rdt_a avx512f avx512q dq rsdseed adv simap
avx512ifma cfi flushed opt cfi intel_pt avx512d cd sa ni_avx2x Disabled via prctl and seccomp

Virtualization: VT-x
L1d cache: 2.3 MiB (48 instances)
L1i cache: 1.5 MiB (48 instances)
L2 cache: 96 MiB (48 instances)
L3 cache: 90 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-11,48-59
NUMA node1 CPU(s): 12-23,60-71
NUMA node2 CPU(s): 24-35,72-83
NUMA node3 CPU(s): 36-47,84-95
Vulnerability Itlb multihit: Not affected
Vulnerability L1it: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp

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Platform Notes (Continued)

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:

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<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>
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<tr>
<td>L1d</td>
<td>48K</td>
<td>2.3M</td>
<td>12</td>
<td>Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>1.5M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L2</td>
<td>2M</td>
<td>90M</td>
<td>16</td>
<td>Unified</td>
<td>2</td>
<td>2048</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L3</td>
<td>45M</td>
<td>90M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>49152</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: 0-11,48-59
node 0 size: 258040 MB
node 0 free: 242621 MB
node 1 cpus: 12-23,60-71
node 1 size: 257622 MB
node 1 free: 247618 MB
node 2 cpus: 24-35,72-83
node 2 size: 258041 MB
node 2 free: 248052 MB
node 3 cpus: 36-47,84-95
node 3 size: 257654 MB
node 3 free: 247638 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: 1056111676 kB

10. who -r
run-level 3 Jun 2 03:30

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
STATE enabled enabled-runtime disabled
UNIT FILES YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged
 YaST2-Third-Stage libavaudio lm-sensors avahi authdata
 chrony balance issue-generator kbdsettings ldmp kgdb early klog lvm2-monitor nscd postfix
 purge-kernels rollback rsyslog smartd sshd wicked wicked::auto4 wicked::dhcpp4
 wounded::dhcpp6 wicked::nanny

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Platform Notes (Continued)

```plaintext
serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2 indirect wickedd
```

---

13. Linux kernel boot-time arguments, from /proc/cmdline

```plaintext
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=UUID=2e322596-48f4-44a0-8090-3822dc8e83ac
splash=silent
resume=/dev/disk/by-uuid/f130ae8f7-db88-4514-8959-00b71df7d2cd
mitigations=auto
quiet
security=apparmor
```

---

14. cpupower frequency-info

```plaintext
analyzing CPU 0:
current policy: frequency should be within 800 MHz and 3.80 GHz.
The governor "performance" may decide which speed to use
within this range.
boost state support:
  Supported: yes
  Active: yes
```

---

15. sysctl

```plaintext
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.dirtytime_expire_seconds         43200
vm.extrfrag_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

```plaintext
defrag           [always] defer defer+madvise madvise never
enabled          [always] madvise never
hpage_pmd_size   2097152
shmem_enabled    always within_size advise [never] deny force
```

---

17. /sys/kernel/mm/transparent_hugepage/klhugepaged

```plaintext
alloc_sleep_millisecs 60000
defrag 1
max_ptes_none 511
```

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Platform Notes (Continued)

max_ptes_shared = 256
max_ptes_swap = 64
pages_to_scan = 4096
scan_sleep_millisecs = 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/sdb3      xfs   351G   46G  305G  14% /home

20. /sys/devices/virtual/dmi/id
   Vendor:         Cisco Systems Inc
   Product:        UCSX-210C-M7
   Serial:         FCH27097GR

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:
   4x 0xAD00 HMCG94MEBRA109N 64 GB 2 rank 4800, configured at 4400
   12x 0xAD00 HMCG94MEBRA121N 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 | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
-----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)
-----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)
(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

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

SPECrater®2017_fp_base = 540
SPECrater®2017_fp_peak = 548

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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C++, C, Fortran  | 507.cactuBSSN_r(base, peak)
---------------------------------------------------------------

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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Fortran          | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
-----------------------------------------------------------------------------------------------

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
-----------------------------------------------------------------------------------------------

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

Benchmarks using both Fortran and C:
ifx icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifx
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

| SPECrate®2017_fp_base = 540 |
| SPECrate®2017_fp_peak = 548 |

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

**Base Portability Flags**

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

**Base Optimization Flags**

C benchmarks:
- w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- Wno-implicit-int -mprefer-vector-width=512 -ljemalloc
  -L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:
- w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
- ffast-math -flto -mfpmath=sse -funroll-loops
- qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
  -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
- w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto
- mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- nostandard-realloc-lhs -align array32byte -auto -ljemalloc
  -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
- w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
  -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
  -align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
- w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
  -ffast-math -flto -mfpmath=sse -funroll-loops
  -qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512

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Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

SPECrate®2017_fp_base = 540
SPECrate®2017_fp_peak = 548

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

Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -fhto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:	ifx

Benchmarks using both Fortran and C:	ifx icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifx

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: basepeak = yes

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

| SPECrate®2017_fp_base = 540 |
| SPECrate®2017_fp_peak = 548 |

Cisco Systems
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)

538.imagick_r:basepeak = yes
544.nab_r:basepeak = yes
C++ benchmarks:
508.namd_r:basepeak = yes
510.parest_r: -w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mprefer-vector-width=512
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
503.bwaves_r:basepeak = yes
549.fotonik3d_r:basepeak = yes
554.roms_r: -w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
511.povray_r: -w -std=c++14 -m64 -std=c11 -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 -Wno-implicit-int
-mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
526.blender_r:basepeak = yes

Benchmarks using Fortran, C, and C++:
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Gold 5418Y, 2.00GHz)

SPECraten®2017_fp_base = 540
SPECraten®2017_fp_peak = 548

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)

Benchmarks using Fortran, C, and C++ (continued):
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

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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