Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

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

SPECrate®2017_fp_base = 699
SPECrate®2017_fp_peak = 706

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

<table>
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<tr>
<th>Copy</th>
<th>503.bwaves_r</th>
<th>507.cactuBSSN_r</th>
<th>508.namd_r</th>
<th>510.parest_r</th>
<th>511.povray_r</th>
<th>519.lbm_r</th>
<th>521.wrf_r</th>
<th>526.blender_r</th>
<th>527.cam4_r</th>
<th>538.imagick_r</th>
<th>544.nab_r</th>
<th>549.fotonik3d_r</th>
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<td>319</td>
</tr>
</tbody>
</table>

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**Hardware**

CPU Name: Intel Xeon Platinum 8454H
Max MHz: 3400
Nominal: 2100
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1.2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
Cache L2: 2 MB I+D on chip per core
Cache L3: 82.5 MB I+D on chip per core
Orderable: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None

**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: 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

**Cisco Systems**  
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)  

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

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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/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**

**SPECrate®2017_fp_base = 699**
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**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
ADDDC 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 Wed Jun  7 13:24:25 2023

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

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2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lsmpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/embraced
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
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

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Test Date: Jun-2023
Hardware Availability: Mar-2023
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Platform Notes (Continued)

13:24:25 up 6:34, 1 user, load average: 88.95, 118.67, 124.09
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
root tty1 - 06:50 6:33m 1.29s 0.26s -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) 4125234
   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) 4125234
   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
   $SPEC = /home/cpu2017

6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Platinum 8454H
   vendor_id : GenuineIntel
   cpu family : 6
   model : 143
   stepping : 8
   microcode : 0x2b000190
   bugs : x2b000190
   cpu cores : 32
   siblings : 64
   2 physical ids (chips)
   128 processors (hardware threads)
   physical id 0: core ids 0-31

(Continued on next page)
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Platform Notes (Continued)

physical id 1: core ids 0-31
physical id 0: apicids 0-63
physical id 1: apicids 128-191
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): 128
On-line CPU(s) list: 0-127
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8454H
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
Stepping: 8
CPU max MHz: 3400.0000
CPU min MHz: 800.0000
BogoMIPS: 4200.00
Flags: fpu vme de pse tsc msrSEP mtrr pge mca cmov pat pse36
clflush dts acpi mmx fxsr mda cmov pat pse36
clflush dtscache acpi apic Roberts perfmon pebs bts rep_good nopl xtopology
nonstop_tsc tsc_known_freq pni pclmulqdq dtes64 monitor
lahf_lm abm 3dnowprefetch mcm_fault ebcd5 cat _13 cat _12 cd p_13
lmp constant_tsc arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfperfi tsc_known_freq pni pclmulqdq dtes64 monitor
ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca ssse4 l
ssse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
lahf_lm abm 3dnowprefetch cpuid_adjust bmi1 hle
vmmx avx2 smep bmi2 erms invpcid rtm cmq rdr avx512f avx512dq rdseed adx smap
avx512sfma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl
xsaveopt xsaveopt xsetbtlv xsaves cmq_l1c cmq_occursion_l1c cmq_mmb_total
cmq_mmb_local_split_lock_detect avx_vnni avx512_blend dtherm ida
arar pln pts hwp hwp_act_window hwp_epp hwp_pctk req avx512vbmi umip pku
ospke waitpkg avx512_vbmi gfnl vaes vpcmldq vavx512_vnni avx512_bitalg
time avx512_vpopcntdq la57 rdpid bus_lock_detect cideomov movdir movdir64
enqcmd fdm md_clear serialize tsxtdtrk pconfq arch_lbr avx512_fp16
axm_tlm flush_l1ld arch_capabilities

Virtualization: VT-x
L1d cache: 3 MiB (64 instances)
L1i cache: 2 MiB (64 instances)
L2 cache: 128 MiB (64 instances)
L3 cache: 162 MiB (2 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-7, 64-71
NUMA node1 CPU(s): 8-15, 72-79
NUMA node2 CPU(s): 16-23, 80-87
NUMA node3 CPU(s): 24-31, 98-95
NUMA node4 CPU(s): 32-39, 106-103
NUMA node5 CPU(s): 40-47, 104-111
NUMA node6 CPU(s): 48-55, 112-119
NUMA node7 CPU(s): 56-63, 120-127
Vulnerability Itlb multihit: Not affected

(Continued on next page)
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Platform Notes (Continued)

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 Tbx 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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<td>48K</td>
<td>3M</td>
<td>12</td>
<td>Data</td>
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<td>64</td>
<td>1</td>
<td>64</td>
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<td>L1i</td>
<td>32K</td>
<td>2M</td>
<td>8</td>
<td>Instruction</td>
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<td>64</td>
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<tr>
<td>L2</td>
<td>2M</td>
<td>128M</td>
<td>16</td>
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<td>2</td>
<td>2048</td>
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<tr>
<td>L3</td>
<td>82.5M</td>
<td>165M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>90112</td>
<td>1</td>
<td>64</td>
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</tbody>
</table>

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0–7)
node 0 cpus: 0-7,64-71
node 0 free: 117039 MB
node 1 cpus: 8-15,72-79
node 1 free: 129019 MB
node 2 cpus: 16-23,80-87
node 2 free: 122415 MB
node 3 cpus: 24-31,88-95
node 3 free: 122985 MB
node 3 free: 121968 MB
node 4 cpus: 32-39,96-103
node 4 size: 129019 MB
node 4 free: 122397 MB
node 5 cpus: 40-47,104-111
node 5 size: 129019 MB
node 5 free: 122388 MB
node 6 cpus: 48-55,112-119
node 6 size: 129019 MB
node 6 free: 122403 MB
node 7 cpus: 56-63,120-127
node 7 size: 128648 MB
node 7 free: 122055 MB
node distances:
node 0 1 2 3 4 5 6 7
0: 10 12 12 12 21 21 21 21
1: 12 10 12 12 21 21 21 21
2: 12 12 10 12 21 21 21 21
3: 12 12 12 10 21 21 21 21
4: 21 21 21 21 10 12 12 12
5: 21 21 21 21 12 10 12 12
6: 21 21 21 21 12 10 12 10
7: 21 21 21 21 12 10 12 10

9. /proc/meminfo
MemTotal: 1056084164 kB

(Continued on next page)
### Platform Notes (Continued)

10. `who -r`
   
   ```
   run-level 3 Jun 7 06:50
   ```

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`
   
<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged irqbalance issue-generator kbdsettings kdump kdump-early klog lvm2-monitor nsd postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp5 wickedd-nanny</td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
</tbody>
</table>

13. Linux kernel boot-time arguments, from `/proc/cmdline`
   
   ```
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=2e322596-48f4-44a0-8090-3822dcae83ac
   splash=silent
   resume=/dev/disk/by-uuid/f130aef7-db88-4514-8959-00b71dfdd2cd
   mitigations=auto
   quiet
   security=apparmor
   crashkernel=324M,high
   crashkernel=72M,low
   ```

14. `cpupower frequency-info`
   
   Analyzing CPU 0:
   
   ```
   current policy: frequency should be within 800 MHz and 3.40 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.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.extral_time_expire = 500
   vm.min_unmapped_ratio  1
   ```

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Platform Notes (Continued)

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
   shmem_enabled always within_size advise [never] deny force

17. /sys/kernel/mm/transparent_hugepage/khugepaged
   alloc_sleep_millisecs 60000
   defrag 1
   max_ptes_none 511
   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 57G 294G 17% /home

20. /sys/devices/virtual/dmi/id
    Vendor: Cisco Systems Inc
    Product: UCSX-210C-M7
    Serial: FCH270978GR

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
    12x 0xAD00 HMCG94MEBRA121N 64 GB 2 rank 4800

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
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

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<td>Software Availability: Dec-2022</td>
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**Base Compiler Invocation**

C benchmarks:
- icx

**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.spectral_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++, C     | 511.povray_r(base, peak) 526.blender_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++, C, Fortran | 507.cactusBSSN_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.
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.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

Fortran     | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.zoms_r(base, peak)
---------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

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
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
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.
```
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

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

SPECrate®2017_fp_base = 699
SPECrate®2017_fp_peak = 706

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

Base Compiler Invocation (Continued)

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

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

(Continued on next page)
## Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

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### Base Optimization Flags (Continued)

#### C++ benchmarks (continued):
- `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 -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib`

#### Benchmarks using Fortran, C, and C++:
- `-w` `-std=c++14` `-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`

### Peak Compiler Invocation

#### C benchmarks:
- icx

#### C++ benchmarks:
- icpx

#### Fortran benchmarks:
- ifx

#### Benchmarks using both Fortran and C:
- ifx icx

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

SPECrate®2017_fp_base = 699
SPECrate®2017_fp_peak = 706

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

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

Peak Compiler Invocation (Continued)

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
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

(Continued on next page)
Cisco Systems
Cisco UCS X210c M7 (Intel Xeon Platinum 8454H, 2.10GHz)

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Peak Optimization Flags (Continued)

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)
-fi1to -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 -mfunroll_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

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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Tested with SPEC CPU®2017 v1.1.9 on 2023-06-07 16:24:25-0400.
Report generated on 2023-07-05 11:08:25 by CPU2017 PDF formatter v6716.
Originally published on 2023-07-04.