## Cisco Systems
Cisco UCS C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

### CPU2017 License:
9019

### Test Sponsor:
Cisco Systems

### Tested by:
Cisco Systems

### Test Date:
Sep-2023

### Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>192</td>
<td>1050</td>
<td>1080</td>
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<tr>
<td>507.caCTuBSSN_r</td>
<td>96</td>
<td>691</td>
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<tr>
<td>508.namd_r</td>
<td>192</td>
<td>397</td>
<td>619</td>
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<tr>
<td>510.parest_r</td>
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<tr>
<td>511.povray_r</td>
<td>192</td>
<td>956</td>
<td>1100</td>
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<tr>
<td>519.lbm_r</td>
<td>192</td>
<td>595</td>
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<tr>
<td>521.wrf_r</td>
<td>192</td>
<td>565</td>
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</tr>
<tr>
<td>526.blender_r</td>
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<td>338</td>
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<tr>
<td>527.cam4_r</td>
<td>192</td>
<td>352</td>
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</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default</th>
</tr>
</thead>
<tbody>
<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 4.3.1d released May-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>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 Sponsor:
Cisco Systems

### Hardware Availability:
Mar-2023

### Software Availability:
Dec-2022

### CPU Name:
Intel Xeon Platinum 8468

### Max MHz:
3800

### Nominal:
2100

### Enabled:
96 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:
105 MB I+D on chip per chip

### Other:
None

### Memory:
1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)

### Storage:
1 x 960 GB M.2 SSD SATA

### Other:
None

### Copies (953)

### SPECrate®2017_fp_base = 914

### SPECrate®2017_fp_peak = 953
**SPEC CPU®2017 Floating Point Rate Result**

---

**Cisco Systems**

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---

**SPECrate®2017_fp_base = 914**

**SPECrate®2017_fp_peak = 953**

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td>456</td>
<td>4220</td>
<td>456</td>
<td>4230</td>
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<td>1050</td>
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<td>397</td>
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<td>406</td>
<td>619</td>
<td>406</td>
<td>619</td>
<td>406</td>
</tr>
</tbody>
</table>

---

**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:

```bash
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)
Cisco Systems
Cisco UCS C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

**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.

cpupower frequency-set -g performance
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 Enabled
DCU streamer Prefetch set to Enabled
Enhanced CPU Performance set to Auto
LLC Dead Line set to Disabled
ADDC Sparing set to Disabled
Processor C6 Report set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c6ae2c92cc097bec197
running on srv04 Thu Sep 21 18:45:43 2023

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

Table of contents
1. uname -a
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. systcl
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
22. BIOS

1. uname -a
Linux srv04 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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Tested by: Cisco Systems

Platform Notes (Continued)

2. `w`

```
18:45:43 up 5 min,  1 user,  load average: 0.07, 1.14, 0.77
USER   TTY   FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
root   tty1   -                18:45    7.00s  1.56s  0.27s  -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) 4126743
  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) 4126743
  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=192 --c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
cores=96 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all -o all
fprate
runcpu --action-build --define default-platform-flags --define numcopies=92 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
cores=96 --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/CPU2017.293/templogs/preenv.fprate.293.0.log --lognum 293.0
--from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

6. `/proc/cpuinfo`
```
model name      : Intel(R) Xeon(R) Platinum 8468
vendor_id       : GenuineIntel
cpu family      : 6
model           : 143
stepping        : 8
microcode       : 0x2b000461
bugs            : spectre_v1 spectre_v2 spec_store_bypass swaps
cpu cores       : 48
siblings        : 96
2 physical ids (chips)
192 processors (hardware threads)
```

(Continued on next page)
Cisco Systems
Cisco UCS C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

SPECrate®2017_fp_base = 914
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CPU2017 License: 9019
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Test Date: Sep-2023
Tested by: Cisco Systems
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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): 192
On-line CPU(s) list: 0-191
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8468
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 48
Stepping: 8
CPU max MHz: 3800.0000
CPU min MHz: 800.0000
BogoMIPS: 4200.00

Virtualization: VT-x
L1d cache: 4.5 MiB (96 instances)
L1i cache: 3 MiB (96 instances)
L2 cache: 192 MiB (96 instances)
L3 cache: 210 MiB (2 instances)
NUMA node(s): 8
NUMA node0 CPU(s): 0-11, 96-107
NUMA node1 CPU(s): 12-23, 108-119
NUMA node2 CPU(s): 24-35, 120-131
NUMA node3 CPU(s): 36-47, 132-143
NUMA node4 CPU(s): 48-59, 144-155
NUMA node5 CPU(s): 60-71, 156-167
NUMA node6 CPU(s): 72-83, 168-179
NUMA node7 CPU(s): 84-95, 180-191

(Continued on next page)
Platform Notes (Continued)

Vulnerability Itlb multihit: Not affected
Vulnerability Lltf: Not affected
Vulnerability Mdsi: 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 Tsa 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>4.5M</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>3M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
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<td>L2</td>
<td>2M</td>
<td>192M</td>
<td>16</td>
<td>Unified</td>
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<td>2048</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L3</td>
<td>105M</td>
<td>210M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>114688</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: 8 nodes (0-7)
node 0 cpus: 0-11,96-107
node 0 size: 128666 MB
node 0 free: 127591 MB
node 1 cpus: 12-23,108-119
node 1 size: 129017 MB
node 1 free: 128445 MB
node 2 cpus: 24-35,120-131
node 2 size: 129017 MB
node 2 free: 128447 MB
node 3 cpus: 36-47,132-143
node 3 size: 129017 MB
node 3 free: 128386 MB
node 4 cpus: 48-59,144-155
node 4 size: 129017 MB
node 4 free: 128198 MB
node 5 cpus: 60-71,156-167
node 5 size: 129017 MB
node 5 free: 128435 MB
node 6 cpus: 72-83,168-179
node 6 size: 129017 MB
node 6 free: 128476 MB
node 7 cpus: 84-95,180-191
node 7 size: 128936 MB
node 7 free: 128370 MB
node distances:

node 0  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 12
7:  21 21 21 21 12 12 12 10

9. /proc/meminfo
MemTotal: 1056471024 kB

(Continued on next page)
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SPECCpu®2017 Floating Point Rate Result
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SPECRate®2017_fp_base = 914
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Platform Notes (Continued)

10. who -r
    run-level 3 Sep 21 18:40

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 UNIT FILES
    enabled apparmor auditd cron getty@ haviged irqbalance issue-generator kbdssettings klog
    lvm2-monitor nscd postfix-kerneles rollback rsyslog smartd sshd wicked wickedd-auto4
    wickeddd-dhcp4 wickeddd-nanny
    enabled-runtime systemd-remount-fs
    disabled autos blk-availability boot-sysct1 ca-certificates chrony-wait chronyd console-getty cups
    cups-browsed debug-shell ebtables exchange-bmc-os-info firewalld gpm grub2- once
    haviged-switch-root ipmi ipmienvd issue-add-ssh-keys kexec-load lmunask man-db-create
    multipathd nfs nfs-blkmap rdispc rlpbind rpmconfigcheck rsyncd serial-getty@ smartd_generate_opts snmpd
    snmptrapd svserve systemd-boot-check-no-failures systemd-network-generator systemd-sysext systemd-time-wait-sync
    systemd-timesyncd indirect wickeddd

13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
    root=UUID=82136e43-7b14-445e-80c8-a54855d5e2c7
    splash=silent
    mitigations=auto
    quiet
    security=apparmor

14. cpupower frequency-info
    analyzing CPU 0:
    current policy: frequency should be within 800 MHz and 3.80 GHz.
    The governor "powersave" 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.extrfrag_threshold 500
    vm.min_unmapped_ratio 1
    vm.nr_hugepages 0
    vm.nr_hugepages_mempolicy 0
    vm.nr_overcommit_hugepages 0

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Platform Notes (Continued)

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+advise 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_milliseconds 60000
    defrag 1
    max_ptes_none 511
    max_ptes_shared 256
    max_ptes_swap 64
    pages_to_scan 4096
    scan_sleep_milliseconds 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 436G 14G 423G 4% /

20. /sys/devices/virtual/dmi/id
    Vendor: Cisco Systems Inc
    Product: UCSC-C240-M7SX
    Serial: WZP26360KC7

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 0xCE00 M321R8GA0BB0-CQKDG 64 GB 2 rank 4800

22. BIOS
    (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor: Cisco Systems, Inc.
    BIOS Version: C240M7.4.3.1d.0.0503232353
    BIOS Date: 05/03/2023
    BIOS Revision: 5.29
## Compiler Version Notes

<table>
<thead>
<tr>
<th>Language</th>
<th>Benchmark</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td>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.</td>
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<td></td>
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</tr>
<tr>
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<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

**Base Compiler Invocation**

C benchmarks:
icx

(Continued on next page)
Cisco Systems
Cisco UCS C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)  

**SPEC CPU®2017 Floating Point Rate Result**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 914</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 953</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Sep-2023  
**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.xbm_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:**

**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 C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

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

SPECrate®2017_fp_base = 914
SPECrate®2017_fp_peak = 953

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

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 -m64 -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 C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

SPECrate®2017_fp_base = 914
SPECrate®2017_fp_peak = 953

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

Test Date: Sep-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 C240 M7 (Intel Xeon Platinum 8468, 2.10GHz)

Specrate®2017_fp_base = 914
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
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Test Date: Sep-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:
-ffast-math -flto -mfpmath=sse -funroll-loops
-std=c11 -z,muldefs -xsapphirerapids -Ofast -ffast-math
-fopt -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)
-ffast -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++:
-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

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

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