



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Cisco Systems

Cisco UCS C240 M8 (Intel Xeon 6505P 2.2 GHz processor)

SPECrate®2017\_fp\_base = 391

SPECrate®2017\_fp\_peak = 396

CPU2017 License: 9019

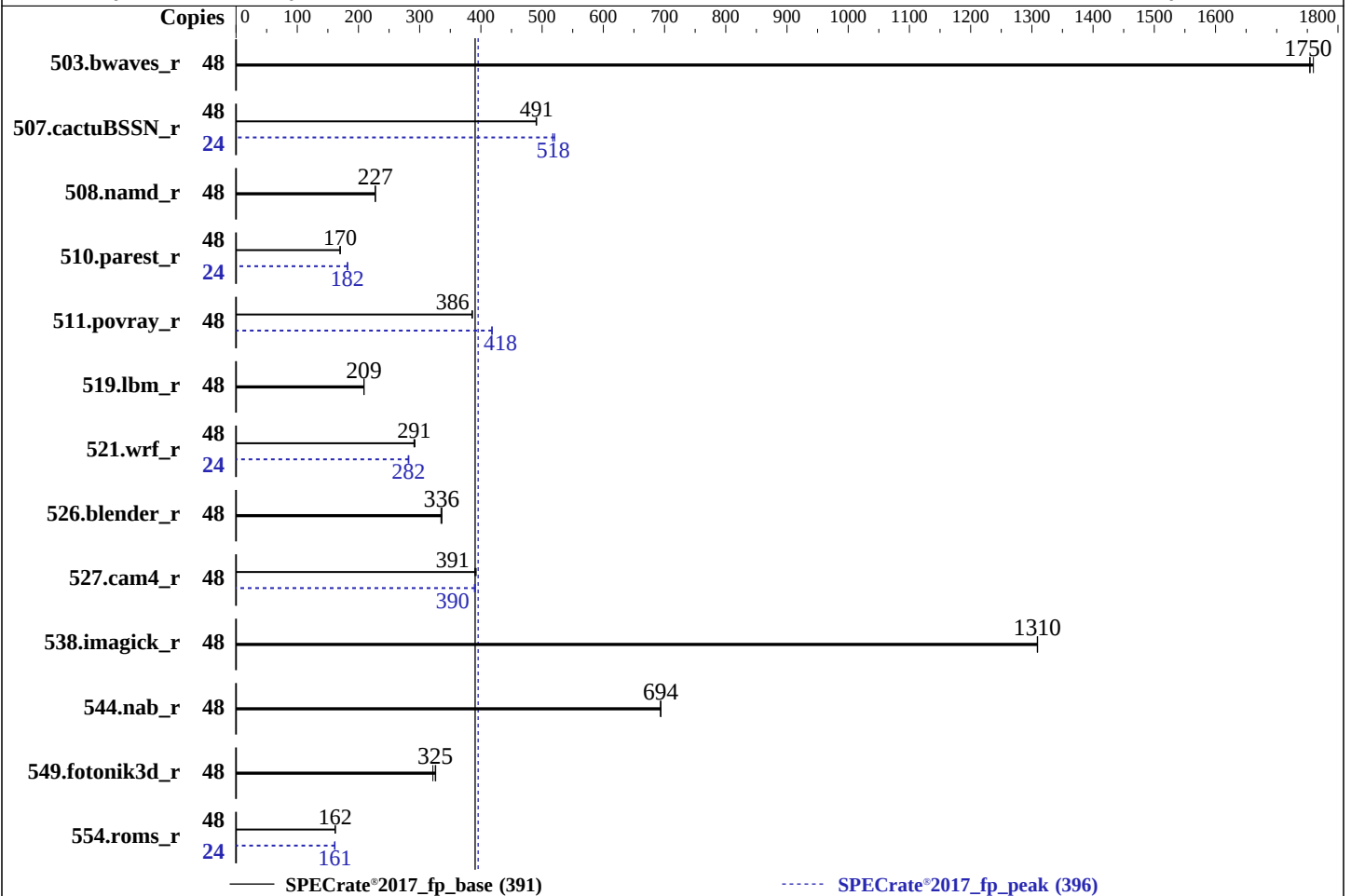
Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Nov-2025

Hardware Availability: Feb-2025

Software Availability: Jun-2024



### Hardware

CPU Name: Intel Xeon 6505P  
Max MHz: 4100  
Nominal: 2200  
Enabled: 24 cores, 2 chips, 2 threads/core  
Orderable: 1,2 Chips  
Cache L1: 64 KB I + 48 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 48 MB I+D on chip per chip  
Other: None  
Memory: 960 GB (15 x 64 GB 2Rx4 PC5-6400B-R)  
Storage: 1 x 445 GB SATA SSD  
Other: CPU Cooling: Air

### Software

OS: SUSE Linux Enterprise Server 15 SP6  
6.4.0-150600.21-default  
Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux;  
Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;  
Parallel: No  
Firmware: Version 4.3.6b released Apr-2025  
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 and OS set to prefer performance at the cost of additional power usage



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## Results Table

| Benchmark       | Base   |                   |                   |                   |                   |                    |                    | Peak   |                   |                   |                    |                   |                    |                    |
|-----------------|--------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------|-------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
|                 | Copies | Seconds           | Ratio             | Seconds           | Ratio             | Seconds            | Ratio              | Copies | Seconds           | Ratio             | Seconds            | Ratio             | Seconds            | Ratio              |
| 503.bwaves_r    | 48     | 274               | 1760              | 274               | 1750              | <b><u>274</u></b>  | <b><u>1750</u></b> | 48     | 274               | 1760              | 274                | 1750              | <b><u>274</u></b>  | <b><u>1750</u></b> |
| 507.cactuBSSN_r | 48     | 124               | 491               | 124               | 490               | <b><u>124</u></b>  | <b><u>491</u></b>  | 24     | 58.4              | 521               | <b><u>58.6</u></b> | <b><u>518</u></b> | 58.7               | 517                |
| 508.namd_r      | 48     | 200               | 228               | <b><u>200</u></b> | <b><u>227</u></b> | 200                | 227                | 48     | 200               | 228               | <b><u>200</u></b>  | <b><u>227</u></b> | 200                | 227                |
| 510.parest_r    | 48     | 739               | 170               | 738               | 170               | <b><u>738</u></b>  | <b><u>170</u></b>  | 24     | 345               | 182               | <b><u>345</u></b>  | <b><u>182</u></b> | 345                | 182                |
| 511.povray_r    | 48     | 290               | 386               | 291               | 385               | <b><u>290</u></b>  | <b><u>386</u></b>  | 48     | 268               | 418               | 268                | 418               | <b><u>268</u></b>  | <b><u>418</u></b>  |
| 519.lbm_r       | 48     | 242               | 209               | <b><u>242</u></b> | <b><u>209</u></b> | 242                | 209                | 48     | 242               | 209               | <b><u>242</u></b>  | <b><u>209</u></b> | 242                | 209                |
| 521.wrf_r       | 48     | 370               | 291               | 368               | 292               | <b><u>370</u></b>  | <b><u>291</u></b>  | 24     | 191               | 281               | <b><u>191</u></b>  | <b><u>282</u></b> | 190                | 282                |
| 526.blender_r   | 48     | 218               | 335               | <b><u>218</u></b> | <b><u>336</u></b> | 218                | 336                | 48     | 218               | 335               | <b><u>218</u></b>  | <b><u>336</u></b> | 218                | 336                |
| 527.cam4_r      | 48     | 214               | 392               | <b><u>215</u></b> | <b><u>391</u></b> | 215                | 390                | 48     | 216               | 389               | 215                | 391               | <b><u>215</u></b>  | <b><u>390</u></b>  |
| 538.imagick_r   | 48     | 91.2              | 1310              | 91.2              | 1310              | <b><u>91.2</u></b> | <b><u>1310</u></b> | 48     | 91.2              | 1310              | 91.2               | 1310              | <b><u>91.2</u></b> | <b><u>1310</u></b> |
| 544.nab_r       | 48     | <b><u>116</u></b> | <b><u>694</u></b> | 116               | 694               | 117                | 693                | 48     | <b><u>116</u></b> | <b><u>694</u></b> | 116                | 694               | 117                | 693                |
| 549.fotonik3d_r | 48     | 582               | 322               | <b><u>575</u></b> | <b><u>325</u></b> | 573                | 326                | 48     | 582               | 322               | <b><u>575</u></b>  | <b><u>325</u></b> | 573                | 326                |
| 554.roms_r      | 48     | 471               | 162               | 470               | 162               | <b><u>471</u></b>  | <b><u>162</u></b>  | 24     | 236               | 162               | 237                | 161               | <b><u>236</u></b>  | <b><u>161</u></b>  |

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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)

(Continued on next page)



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## General Notes (Continued)

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

sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

## Platform Notes

BIOS settings:

Hardware prefetcher set to Enabled

Adjacent cache line prefetcher set to Disabled

Patrol scrub set to Disabled

XPT prefetch set to Disabled

LLC prefetch set to Enabled

Enhanced CPU performance set to Auto

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on c240m8-spec1 Thu Oct 23 05:53:28 2025

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. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS
-----

-----
1. uname -a
Linux c240m8-spec1 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
x86_64 x86_64 x86_64 GNU/Linux
```

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## Platform Notes (Continued)

2. w

```
05:53:28 up 9 min,  4 users,  load average: 0.03, 0.33, 0.35
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
root      pts/0    10.29.148.194   05:52    5.00s  0.85s  0.01s  -bash
```

3. Username

From environment variable \$USER: root

4. ulimit -a

```
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size                (blocks, -f) unlimited
pending signals         (-i) 3867084
max locked memory        (kbytes, -l) 8192
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) 3867084
virtual memory           (kbytes, -v) unlimited
file locks               (-x) unlimited
```

5. sysinfo process ancestry

```
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/0
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 -c
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=24 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak -n 3 -o all fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 --configfile
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=24 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak --iterations 3 --output_format all
--nopower --runmode rate --tune base:peak --size refrate fprate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.486/temlogs/preenv.fprate.486.0.log --lognum 486.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

6. /proc/cpuinfo

```
model name      : Intel(R) Xeon(R) 6505P
vendor_id       : GenuineIntel
cpu family      : 6
model           : 173
stepping        : 1
microcode       : 0x1000380
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores       : 12
siblings        : 24
2 physical ids  (chips)
```

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## Platform Notes (Continued)

48 processors (hardware threads)

physical id 0: core ids 0-11

physical id 1: core ids 0-11

physical id 0: apicids 0-23

physical id 1: apicids 128-151

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 2.39.3:

```
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):                      48
On-line CPU(s) list:        0-47
Vendor ID:                   GenuineIntel
BIOS Vendor ID:              Intel(R) Corporation
Model name:                  Intel(R) Xeon(R) 6505P
BIOS Model name:             Intel(R) Xeon(R) 6505P  CPU @ 2.2GHz
BIOS CPU family:             179
CPU family:                  6
Model:                       173
Thread(s) per core:         2
Core(s) per socket:         12
Socket(s):                   2
Stepping:                    1
CPU(s) scaling MHz:         31%
CPU max MHz:                 4100.0000
CPU min MHz:                 800.0000
BogoMIPS:                    4400.00
Flags:                       fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge 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 ds_cpl 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 epb
                             cat_l3 cat_l2 cdp_l3 intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
                             ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms
                             invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
                             clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt
                             xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                             cqm_mbm_local split_lock_detect user_shstk avx_vnni avx512_bf16
                             wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp
                             hwp_pkg_req avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes
                             vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid
                             bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear
                             serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile
                             amx_int8 flush_l1d arch_capabilities
L1d cache:                   1.1 MiB (24 instances)
L1i cache:                   1.5 MiB (24 instances)
L2 cache:                    48 MiB (24 instances)
L3 cache:                    96 MiB (2 instances)
NUMA node(s):                2
NUMA node0 CPU(s):          0-11,24-35
NUMA node1 CPU(s):          12-23,36-47
Vulnerability Gather data sampling: Not affected
```

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### Platform Notes (Continued)

|                                       |                                                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Vulnerability Itlb multihit:          | Not affected                                                                                                  |
| Vulnerability L1tf:                   | Not affected                                                                                                  |
| Vulnerability Mds:                    | Not affected                                                                                                  |
| Vulnerability Meltdown:               | Not affected                                                                                                  |
| Vulnerability Mmio stale data:        | Not affected                                                                                                  |
| Vulnerability Reg file data sampling: | Not affected                                                                                                  |
| Vulnerability Retbleed:               | Not affected                                                                                                  |
| Vulnerability Spec rstack overflow:   | Not affected                                                                                                  |
| Vulnerability Spec store bypass:      | Mitigation; Speculative Store Bypass disabled via prctl                                                       |
| Vulnerability Spectre v1:             | Mitigation; usercopy/swapgs barriers and __user pointer sanitization                                          |
| Vulnerability Spectre v2:             | Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling; PBRSE-eIBRS Not affected; BHI BHI_DIS_S |
| Vulnerability Srbds:                  | Not affected                                                                                                  |
| Vulnerability Tsx async abort:        | Not affected                                                                                                  |

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS  | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d  | 48K      | 1.1M     | 12   | Data        | 1     | 64    | 1        | 64             |
| L1i  | 64K      | 1.5M     | 16   | Instruction | 1     | 64    | 1        | 64             |
| L2   | 2M       | 48M      | 16   | Unified     | 2     | 2048  | 1        | 64             |
| L3   | 48M      | 96M      | 16   | Unified     | 3     | 49152 | 1        | 64             |

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```
available: 2 nodes (0-1)
node 0 cpus: 0-11,24-35
node 0 size: 515270 MB
node 0 free: 514266 MB
node 1 cpus: 12-23,36-47
node 1 size: 451526 MB
node 1 free: 450586 MB
node distances:
node  0  1
 0:  10  21
 1:  21  10
```

9. /proc/meminfo

MemTotal: 990000752 kB

10. who -r

run-level 3 Oct 23 05:44

11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)

|                |         |
|----------------|---------|
| Default Target | Status  |
| multi-user     | running |

12. Services, from systemctl list-unit-files

| STATE           | UNIT FILES                                                                                                                                                                                                                                                                         |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| enabled         | YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance issue-generator kbdsettings klogd lvm2-monitor nsd postfix purge-kernels rollback rsyslog sep5 smartd sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny |
| enabled-runtime | systemd-remount-fs                                                                                                                                                                                                                                                                 |
| disabled        | autofs autovast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info                                                                                                            |

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### Platform Notes (Continued)

firewalld fsidd gpm grub2-once haveged ipmi ipmievdev issue-add-ssh-keys kexec-load lunmask  
man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@  
smartd\_generate\_opts snmpd snmptrapd systemd-boot-check-no-failures systemd-confext  
systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned  
udisks2 vncserver@  
systemd-userdbd wickedd

indirect

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

```
BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default  
root=UUID=52f44b73-418f-485e-abb1-6b40f358d6a0  
splash=silent  
mitigations=auto  
quiet  
security=apparmor
```

#### 14. cpupower frequency-info

```
analyzing CPU 20:  
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. tuned-adm active

Current active profile: latency-performance

#### 16. sysctl

```
kernel.numa_balancing          1  
kernel.randomize_va_space      2  
vm.compaction_proactiveness     20  
vm.dirty_background_bytes       0  
vm.dirty_background_ratio       3  
vm.dirty_bytes                  0  
vm.dirty_expire_centisecs       3000  
vm.dirty_ratio                  20  
vm.dirty_writeback_centisecs    500  
vm.dirtytime_expire_seconds     43200  
vm.extfrag_threshold            500  
vm.min_unmapped_ratio           1  
vm.nr_hugepages                  0  
vm.nr_hugepages_mempolicy        0  
vm.nr_overcommit_hugepages      0  
vm.swappiness                    10  
vm.watermark_boost_factor       15000  
vm.watermark_scale_factor       10  
vm.zone_reclaim_mode            0
```

#### 17. /sys/kernel/mm/transparent\_hugepage

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

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## Platform Notes (Continued)

### 18. /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
```

### 19. OS release

```
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP6
```

### 20. Disk information

SPEC is set to: /home/cpu2017

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|------|-------|------|------------|
| /dev/sdc2  | xfs  | 445G | 57G  | 388G  | 13%  | /          |

### 21. /sys/devices/virtual/dmi/id

```
Vendor: Cisco Systems Inc
Product: UCSC-C240-M8SX
Serial: WZP28449MSW
```

### 22. dmidecode

Additional information from dmidecode 3.4 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:

```
1x 0xCE00 M321R8GA0PB2-CCPEC 64 GB 2 rank 6400
7x 0xCE00 M321R8GA0PB2-CCPKC 64 GB 2 rank 6400
7x 0xCE00 M321R8GA0PB2-CCPPC 64 GB 2 rank 6400
```

### 23. BIOS

(This section combines info from /sys/devices and dmidecode.)

```
BIOS Vendor: Cisco Systems, Inc.
BIOS Version: C240M8.4.3.6b.0.0430251037
BIOS Date: 04/30/2025
BIOS Revision: 5.35
```

## 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 2024.1.0 Build 20240308
Copyright (C) 1985-2024 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 2024.1.0 Build 20240308
=====
```

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# SPEC CPU®2017 Floating Point Rate Result

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## Cisco Systems

Cisco UCS C240 M8 (Intel Xeon 6505P 2.2 GHz processor)

SPECrate®2017\_fp\_base = 391

SPECrate®2017\_fp\_peak = 396

CPU2017 License: 9019

Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Nov-2025

Hardware Availability: Feb-2025

Software Availability: Jun-2024

## Compiler Version Notes (Continued)

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=====  
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 2024.1.0 Build 20240308  
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.  
=====

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)  
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
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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 2024.1.0 Build 20240308  
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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 2024.1.0 Build 20240308  
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
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=====

## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Benchmarks using both Fortran and C:

ifx icx

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## Base Compiler Invocation (Continued)

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  
-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

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**Tested by:** Cisco Systems

**Test Date:** Nov-2025

**Hardware Availability:** Feb-2025

**Software Availability:** Jun-2024

## Base 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++:

```
-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

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx



# SPEC CPU®2017 Floating Point Rate Result

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CPU2017 License: 9019

Test Sponsor: Cisco Systems

Tested by: Cisco Systems

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Hardware Availability: Feb-2025

Software Availability: Jun-2024

## 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 -xsapfirerapids -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 -xsapfirerapids -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 -xsapfirerapids -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)

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CPU2017 License: 9019

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Tested by: Cisco Systems

Test Date: Nov-2025

Hardware Availability: Feb-2025

Software Availability: Jun-2024

## Peak Optimization Flags (Continued)

511.povray\_r (continued):

```
-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
-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-ic2024-official-linux64.2025-06-17.html>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V2.0-GNR-revI.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.2025-06-17.xml>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V2.0-GNR-revI.xml>

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