



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 418

PowerEdge R570 (Intel Xeon 6527P)

SPECrate®2017\_fp\_peak = 426

CPU2017 License: 6573

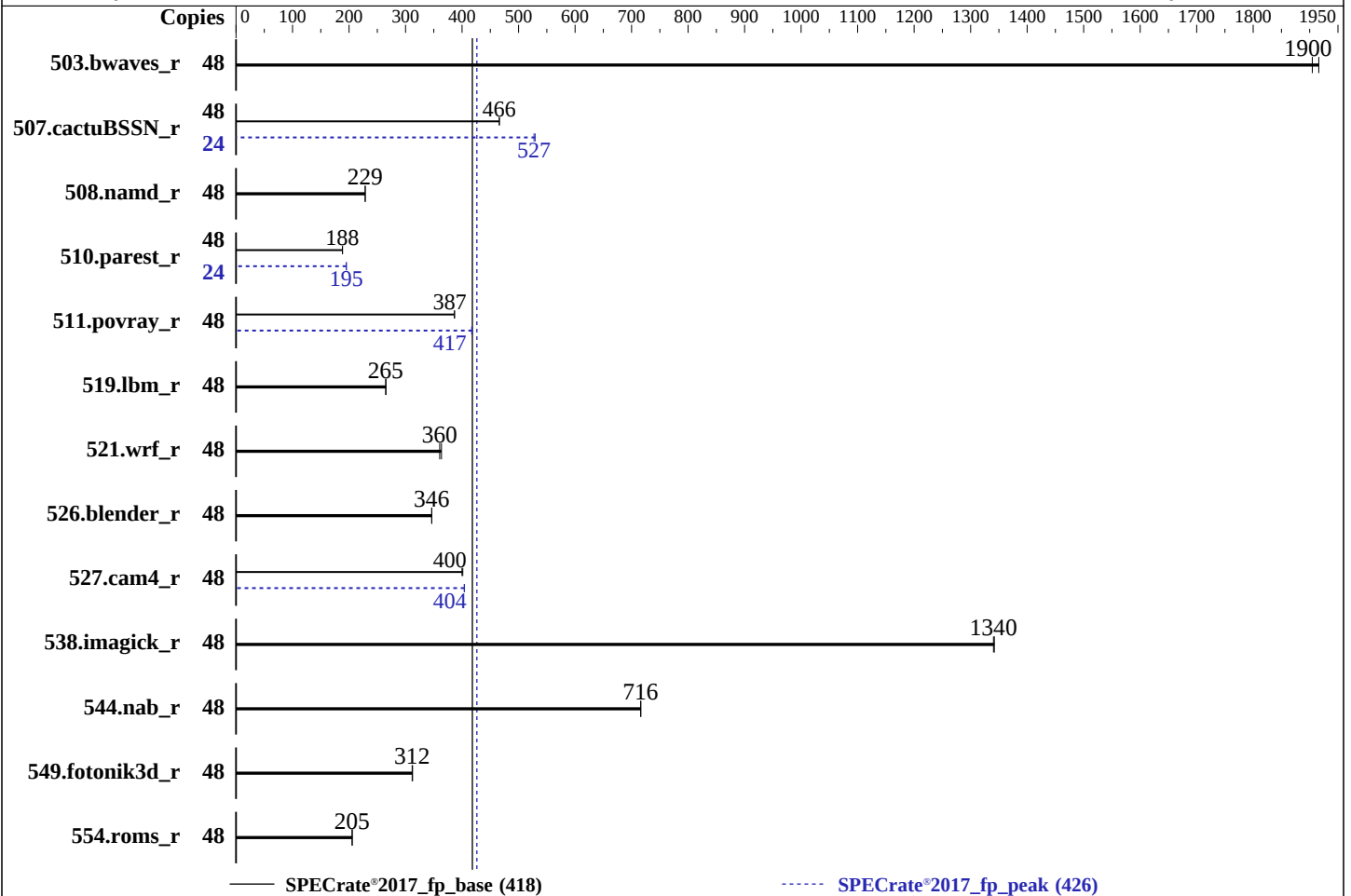
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Apr-2025

Software Availability: Jun-2024



## Hardware

CPU Name: Intel Xeon 6527P  
Max MHz: 4200  
Nominal: 3000  
Enabled: 24 cores, 1 chip, 2 threads/core  
Orderable: 1 chip  
Cache L1: 64 KB I + 48 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 144 MB I+D on chip per chip  
Other: None  
Memory: 256 GB (8 x 32 GB 2Rx8 PC5-6400B-R)  
Storage: 50 GB on tmpfs  
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 1.3.1 released Apr-2025  
File System: tmpfs  
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.



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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     | 251        | 1920       | <u>253</u>  | <u>1900</u> |         |       | 48     | 251        | 1920       | <u>253</u>  | <u>1900</u> |         |       |
| 507.cactuBSSN_r | 48     | <u>130</u> | <u>466</u> | 130         | 466         |         |       | 24     | 57.4       | 529        | <u>57.6</u> | <u>527</u>  |         |       |
| 508.namd_r      | 48     | 199        | 229        | <u>200</u>  | <u>229</u>  |         |       | 48     | 199        | 229        | <u>200</u>  | <u>229</u>  |         |       |
| 510.parest_r    | 48     | <u>667</u> | <u>188</u> | 666         | 188         |         |       | 24     | <u>322</u> | <u>195</u> | 322         | 195         |         |       |
| 511.povray_r    | 48     | 290        | 387        | <u>290</u>  | <u>387</u>  |         |       | 48     | <u>269</u> | <u>417</u> | 268         | 418         |         |       |
| 519.lbm_r       | 48     | 191        | 265        | <u>191</u>  | <u>265</u>  |         |       | 48     | 191        | 265        | <u>191</u>  | <u>265</u>  |         |       |
| 521.wrf_r       | 48     | <u>298</u> | <u>360</u> | 296         | 364         |         |       | 48     | <u>298</u> | <u>360</u> | 296         | 364         |         |       |
| 526.blender_r   | 48     | 211        | 346        | <u>211</u>  | <u>346</u>  |         |       | 48     | 211        | 346        | <u>211</u>  | <u>346</u>  |         |       |
| 527.cam4_r      | 48     | 209        | 401        | <u>210</u>  | <u>400</u>  |         |       | 48     | <u>208</u> | <u>404</u> | 208         | 404         |         |       |
| 538.imagick_r   | 48     | 89.0       | 1340       | <u>89.1</u> | <u>1340</u> |         |       | 48     | 89.0       | 1340       | <u>89.1</u> | <u>1340</u> |         |       |
| 544.nab_r       | 48     | <u>113</u> | <u>716</u> | 113         | 716         |         |       | 48     | <u>113</u> | <u>716</u> | 113         | 716         |         |       |
| 549.fotonik3d_r | 48     | 599        | 312        | <u>600</u>  | <u>312</u>  |         |       | 48     | 599        | 312        | <u>600</u>  | <u>312</u>  |         |       |
| 554.roms_r      | 48     | <u>372</u> | <u>205</u> | 371         | 206         |         |       | 48     | <u>372</u> | <u>205</u> | 371         | 206         |         |       |

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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 =

"/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/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>  
jemalloc, a general purpose malloc implementation

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## General Notes (Continued)

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>

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.  
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.  
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

Benchmark run from a 50 GB ramdisk created with the cmd: "mount -t tmpfs -o size=50G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS Settings:

Virtual NUMA Nodes : 8  
Sub NUMA Cluster : Enabled  
Optimizer Mode : Enabled

System Profile : Custom  
CPU Power Management : Maximum Performance  
Energy Efficient Turbo : Disabled  
C1E : Disabled  
C-States : Autonomous  
Latency Optimized Mode : Enabled  
Energy Efficient Policy : Performance  
CPU Interconnect Bus -

Link Power Management : Disabled  
PCI ASPM L1 Link Power Management : Disabled  
Correctable Memory ECC SMI : Disabled  
DIMM Self Healing -  
on Uncorrectable Memory Error : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.1/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on 1234567-R570 Wed May 7 19:31:11 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. sysctl
16. /sys/kernel/mm/transparent\_hugepage

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## Platform Notes (Continued)

```
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. BIOS
```

```
1. uname -a
Linux 1234567-R570 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
```

```
2. w
19:31:11 up 3:01, 1 user, load average: 33.78, 44.67, 46.64
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
root      tty1      -              16:30    2:59m  0.90s  0.00s /bin/bash
/home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.2a --output_format html, pdf, txt
```

```
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) 1030266
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) 1030266
virtual memory           (kbytes, -v) unlimited
file locks               (-x) unlimited
```

```
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
login -- root
-bash
/bin/bash /home/DellFiles/bin/DELL_rate.sh
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate
/bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.2a --output_format
html, pdf, txt
/bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.2a --output_format
html, pdf, txt
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 -o all --iterations 2 --define
DL-VERS=6.2a --output_format html, pdf, txt fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 --configfile
```

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```
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 --output_format all --iterations 2
--define DL-VERS=6.2a --output_format html,pdf,txt --nopower --runmode rate --tune base:peak --size
refrate fprate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log
--lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
```

```
-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) 6527P
vendor_id      : GenuineIntel
cpu family     : 6
model          : 173
stepping       : 1
microcode      : 0x10003a5
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores      : 24
siblings       : 48
1 physical ids (chips)
48 processors (hardware threads)
physical id 0: core ids 0-23
physical id 0: apicids 0-47
```

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:      52 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
Model name:        Intel(R) Xeon(R) 6527P
BIOS Model name:   Intel(R) Xeon(R) 6527P   CPU @ 3.0GHz
BIOS CPU family:   179
CPU family:        6
Model:            173
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s):         1
Stepping:          1
BogoMIPS:          6000.00
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 monitor ds_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 epb cat_l3 cat_l2 cdp_l3 intel_ppin cdp_l2
ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept
vpid ept_ad 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
```

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## Platform Notes (Continued)

### Virtualization:

L1d cache: 1.1 MiB (24 instances)  
L1i cache: 1.5 MiB (24 instances)  
L2 cache: 48 MiB (24 instances)  
L3 cache: 144 MiB (1 instance)

NUMA node(s): 8  
NUMA node0 CPU(s): 0, 8, 17, 32, 41, 47  
NUMA node1 CPU(s): 2, 10, 21, 26, 34, 45  
NUMA node2 CPU(s): 14, 22-24, 38, 46  
NUMA node3 CPU(s): 4, 6, 19, 28, 30, 43  
NUMA node4 CPU(s): 12, 13, 20, 36, 37, 44  
NUMA node5 CPU(s): 1, 11, 15, 25, 35, 39  
NUMA node6 CPU(s): 3, 9, 18, 27, 33, 42  
NUMA node7 CPU(s): 5, 7, 16, 29, 31, 40

Vulnerability Gather data sampling: Not affected  
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   | 144M     | 144M     | 16   | Unified     | 3     | 147456 | 1        | 64             |

### 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, 8, 17, 32, 41, 47  
node 0 size: 32253 MB  
node 0 free: 31486 MB  
node 1 cpus: 2, 10, 21, 26, 34, 45  
node 1 size: 32215 MB  
node 1 free: 31894 MB  
node 2 cpus: 14, 22-24, 38, 46  
node 2 size: 32254 MB  
node 2 free: 31928 MB  
node 3 cpus: 4, 6, 19, 28, 30, 43  
node 3 size: 32254 MB  
node 3 free: 31930 MB

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```
node 4 cpus: 12-13,20,36-37,44
node 4 size: 32254 MB
node 4 free: 31917 MB
node 5 cpus: 1,11,15,25,35,39
node 5 size: 32169 MB
node 5 free: 21709 MB
node 6 cpus: 3,9,18,27,33,42
node 6 size: 32221 MB
node 6 free: 31876 MB
node 7 cpus: 5,7,16,29,31,40
node 7 size: 31973 MB
node 7 free: 31672 MB
node distances:
node  0  1  2  3  4  5  6  7
  0: 10 20 20 20 20 20 20 20
  1: 20 10 20 20 20 20 20 20
  2: 20 20 10 20 20 20 20 20
  3: 20 20 20 10 20 20 20 20
  4: 20 20 20 20 10 20 20 20
  5: 20 20 20 20 20 10 20 20
  6: 20 20 20 20 20 20 10 20
  7: 20 20 20 20 20 20 20 10
```

```
-----
9. /proc/meminfo
   MemTotal:      263778176 kB
```

```
-----
10. who -r
    run-level 3 May 7 16:30
```

```
-----
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 appstream-sync-cache auditd bluetooth cron
               display-manager getty@ irqbalance issue-generator kbdsettings klog lvm2-monitor nscd
               postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4
               wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
    enabled-runtime systemd-remount-fs
    disabled    accounts-daemon autofs autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl
               ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell ebttables
               exchange-bmc-os-info firewalld fsidd gpm grub2-once haveged ipmi ipmievdev
               issue-add-ssh-keys kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nmb
               ostree-remount rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@
               smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures
               systemd-confext systemd-network-generator systemd-sysextd systemd-time-wait-sync
               systemd-timesyncd udisks2 update-system-flatpaks upower vncserver@
    indirect    systemd-userdbd wickedd
```

```
-----
13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
    root=UUID=a541ab2e-214d-40d0-aaf8-fce5ff1e22a3
    splash=silent
    resume=/dev/disk/by-uuid/bd16476a-4e2c-4189-af39-d1803d933a4c
```

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## Platform Notes (Continued)

mitigations=auto  
quiet  
security=apparmor

### 14. cpupower frequency-info

analyzing CPU 20:  
Unable to determine current policy  
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.extfrag_threshold         | 500   |
| vm.min_unmapped_ratio        | 1     |
| vm.nr_hugepages              | 0     |
| vm.nr_hugepages_mempolicy    | 0     |
| vm.nr_overcommit_hugepages   | 0     |
| vm.swappiness                | 60    |
| 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+madvice [madvice] never   |
| enabled        | [always] madvice 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 SP6

### 19. Disk information

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1  
Filesystem Type Size Used Avail Use% Mounted on

(Continued on next page)



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Test Date: May-2025

Hardware Availability: Apr-2025

Software Availability: Jun-2024

## Platform Notes (Continued)

tmpfs tmpfs 50G 5.0G 46G 10% /mnt/ramdisk

20. /sys/devices/virtual/dmi/id

Vendor: Dell Inc.  
Product: PowerEdge R570  
Product Family: PowerEdge  
Serial: 1234567

21. 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:

8x 00CE042300CE M321R4GA3PB2-CCPEC 32 GB 2 rank 6400

22. BIOS

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

BIOS Vendor: Dell Inc.  
BIOS Version: 1.3.1  
BIOS Date: 04/24/2025  
BIOS Revision: 1.3

## 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  
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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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C++, C | 511.povray\_r(base, peak) 526.blender\_r(base, peak)

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

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# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 418

PowerEdge R570 (Intel Xeon 6527P)

SPECrate®2017\_fp\_peak = 426

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Apr-2025

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## Compiler Version Notes (Continued)

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  
Copyright (C) 1985-2024 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 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

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

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

(Continued on next page)



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## Base Portability Flags (Continued)

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  
-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

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CPU2017 License: 6573

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Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Apr-2025

Software Availability: Jun-2024

## Base 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

## 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

538.imagick\_r: basepeak = yes

544.nab\_r: basepeak = yes

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## Peak Optimization Flags (Continued)

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: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf\_r: basepeak = yes

527.cam4\_r: -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.profddata(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  
-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



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.14.html>

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

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

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.14.xml>

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