



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 791

PowerEdge R570 (Intel Xeon 6787P)

SPECrate®2017\_fp\_peak = 834

CPU2017 License: 6573

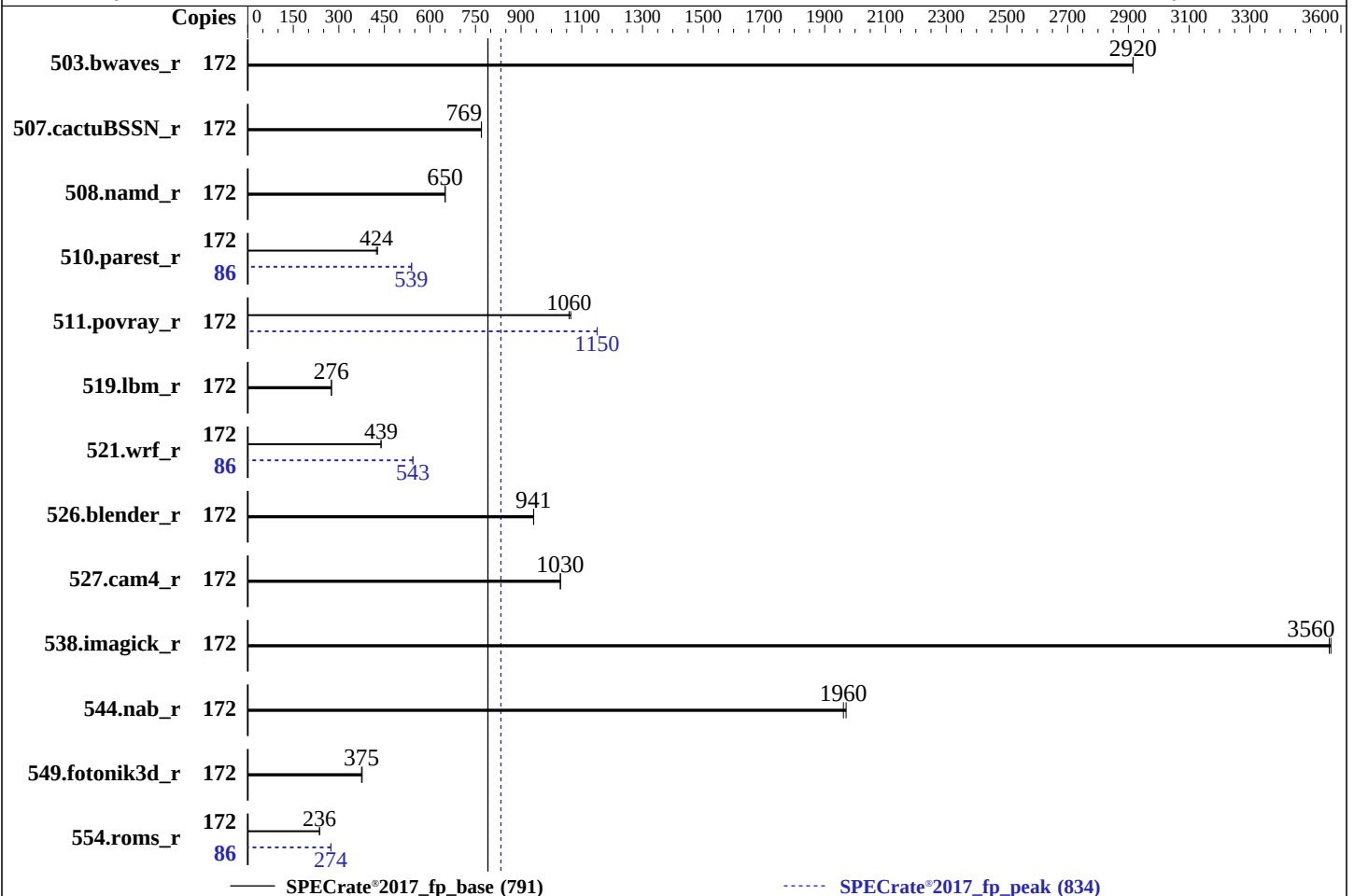
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024



## Hardware

CPU Name: Intel Xeon 6787P  
Max MHz: 3800  
Nominal: 2000  
Enabled: 86 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: 336 MB I+D on chip per chip  
Other: None  
Memory: 256 GB (8 x 32 GB 2Rx8 PC5-6400B-R)  
Storage: 100 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 1.2.6 released Feb-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    | 172    | 592         | 2920       | <u>592</u>  | <u>2920</u> |         |       | 172    | 592         | 2920        | <u>592</u> | <u>2920</u> |         |       |
| 507.cactuBSSN_r | 172    | 283         | 770        | <u>283</u>  | <u>769</u>  |         |       | 172    | 283         | 770         | <u>283</u> | <u>769</u>  |         |       |
| 508.namd_r      | 172    | 251         | 650        | <u>251</u>  | <u>650</u>  |         |       | 172    | 251         | 650         | <u>251</u> | <u>650</u>  |         |       |
| 510.parest_r    | 172    | 1053        | 427        | <u>1062</u> | <u>424</u>  |         |       | 86     | 417         | 540         | <u>417</u> | <u>539</u>  |         |       |
| 511.povray_r    | 172    | 378         | 1060       | <u>380</u>  | <u>1060</u> |         |       | 172    | <u>349</u>  | <u>1150</u> | 349        | 1150        |         |       |
| 519.lbm_r       | 172    | 658         | 276        | <u>658</u>  | <u>276</u>  |         |       | 172    | 658         | 276         | <u>658</u> | <u>276</u>  |         |       |
| 521.wrf_r       | 172    | 878         | 439        | <u>878</u>  | <u>439</u>  |         |       | 86     | 354         | 544         | <u>354</u> | <u>543</u>  |         |       |
| 526.blender_r   | 172    | 278         | 942        | <u>278</u>  | <u>941</u>  |         |       | 172    | 278         | 942         | <u>278</u> | <u>941</u>  |         |       |
| 527.cam4_r      | 172    | 292         | 1030       | <u>292</u>  | <u>1030</u> |         |       | 172    | 292         | 1030        | <u>292</u> | <u>1030</u> |         |       |
| 538.imagick_r   | 172    | 120         | 3570       | <u>120</u>  | <u>3560</u> |         |       | 172    | 120         | 3570        | <u>120</u> | <u>3560</u> |         |       |
| 544.nab_r       | 172    | 147         | 1970       | <u>148</u>  | <u>1960</u> |         |       | 172    | 147         | 1970        | <u>148</u> | <u>1960</u> |         |       |
| 549.fotonik3d_r | 172    | <u>1789</u> | <u>375</u> | 1779        | 377         |         |       | 172    | <u>1789</u> | <u>375</u>  | 1779       | 377         |         |       |
| 554.roms_r      | 172    | <u>1158</u> | <u>236</u> | 1155        | 237         |         |       | 86     | <u>500</u>  | <u>274</u>  | 499        | 274         |         |       |

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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 100 GB ramdisk created with the cmd: "mount -t tmpfs -o size=100G tmpfs /mnt/ramdisk"

## Platform Notes

### BIOS Settings:

DCU Streamer Prefetcher : Disabled  
Sub NUMA Cluster : Enabled  
Dead Line LLC Alloc : Disabled  
Optimizer Mode : Enabled

System Profile : Custom  
CPU Power Management : Maximum Performance  
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  
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 Tue Apr 8 20:32:22 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
17. /sys/kernel/mm/transparent\_hugepage/khugepaged

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## Platform Notes (Continued)

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`  
20:32:22 up 4:07, 1 user, load average: 104.27, 155.26, 165.82  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root tty1 - 16:25 4:04m 0.95s 0.00s /bin/bash  
/home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1a --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) 1029985  
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) 1029985  
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=6.1a --output\_format  
html,pdf,txt  
/bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1a --output\_format  
html,pdf,txt  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=172 -c  
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=86 --define physicalfirst  
--define invoke\_with\_interleave --define drop\_caches --tune base,peak -o all --iterations 2 --define  
DL-VERS=6.1a --output\_format html,pdf,txt fprate  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=172 --configfile  
ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=86 --define physicalfirst

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```
--define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 2
--define DL-VERS=6.1a --output_format html,pdf,txt --nopower --runmode rate --tune base:peak --size
refrate fprate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.002/temlogs/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) 6787P
vendor_id       : GenuineIntel
cpu family      : 6
model           : 173
stepping        : 1
microcode       : 0x1000380
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
cpu cores       : 86
siblings        : 172
1 physical ids (chips)
172 processors (hardware threads)
physical id 0: core ids 0-42,64-106
physical id 0: apicids 0-85,128-213
```

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):             172
On-line CPU(s) list: 0-171
Vendor ID:          GenuineIntel
BIOS Vendor ID:     Intel
Model name:         Intel(R) Xeon(R) 6787P
BIOS Model name:    Intel(R) Xeon(R) 6787P   CPU @ 2.0GHz
BIOS CPU family:    179
CPU family:         6
Model:              173
Thread(s) per core: 2
Core(s) per socket: 86
Socket(s):          1
Stepping:           1
BogoMIPS:           4000.00
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 pdc cmov 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
xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
```

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## Platform Notes (Continued)

split\_lock\_detect user\_shstk avx\_vnni avx512\_bf16 wbnoinvd dtherm ida  
arat pln pts vnmi 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\_lld arch\_capabilities

VT-x

Virtualization:

L1d cache: 4 MiB (86 instances)

L1i cache: 5.4 MiB (86 instances)

L2 cache: 172 MiB (86 instances)

L3 cache: 336 MiB (1 instance)

NUMA node(s): 2

NUMA node0 CPU(s): 0-42,86-128

NUMA node1 CPU(s): 43-85,129-171

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      | 4M       | 12   | Data        | 1     | 64     | 1        | 64             |
| L1i  | 64K      | 5.4M     | 16   | Instruction | 1     | 64     | 1        | 64             |
| L2   | 2M       | 172M     | 16   | Unified     | 2     | 2048   | 1        | 64             |
| L3   | 336M     | 336M     | 16   | Unified     | 3     | 344064 | 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: 0-42,86-128

node 0 size: 128602 MB

node 0 free: 125445 MB

node 1 cpus: 43-85,129-171

node 1 size: 128922 MB

node 1 free: 127960 MB

node distances:

node 0 1

0: 10 12

1: 12 10

9. /proc/meminfo

MemTotal: 263706192 kB

10. who -r

run-level 3 Apr 8 16:25

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## Platform Notes (Continued)

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 ipmievdm 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=64719623-bfd1-4cc8-b330-c74001787a29  
splash=silent  
resume=/dev/disk/by-uuid/ed1a4e86-9b27-4b0e-ab40-b9acc5967907  
mitigations=auto  
quiet  
security=apparmor

14. cpupower frequency-info

analyzing CPU 115:  
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 |

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## Platform Notes (Continued)

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  
tmpfs tmpfs 100G 5.0G 96G 5% /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: 1.2.6  
BIOS Date: 02/26/2025  
BIOS Revision: 1.2





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Test Date: Apr-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

## 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)  
=====

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=====

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

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=====

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

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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)  
=====

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=====

=====  
Fortran, C | 521.wrf\_r(base, peak) 527.cam4\_r(base, peak)  
=====

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=====

## Base Compiler Invocation

C benchmarks:  
icx

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# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 791

PowerEdge R570 (Intel Xeon 6787P)

SPECrate®2017\_fp\_peak = 834

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

## 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 -xsapfirerapids -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 -xsapfirerapids -Ofast

-ffast-math -flto -mfpmath=sse -funroll-loops

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

SPECrate®2017\_fp\_base = 791

PowerEdge R570 (Intel Xeon 6787P)

SPECrate®2017\_fp\_peak = 834

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

## 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

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# SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

SPECrate®2017\_fp\_base = 791

PowerEdge R570 (Intel Xeon 6787P)

SPECrate®2017\_fp\_peak = 834

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

## 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

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## Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

```
521.wrf_r: -w -m64 -std=c11 -Wl,-z,muldefs -xsaphirerapids -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
```

527.cam4\_r: basepeak = yes

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++:

507.cactuBSSN\_r: basepeak = yes

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-v1.13.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-v1.13.xml>

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Tested with SPEC CPU®2017 v1.1.9 on 2025-04-08 08:32:21-0400.

Report generated on 2025-05-08 09:59:32 by CPU2017 PDF formatter v6716.

Originally published on 2025-05-06.