# SPEC CPU®2017 Floating Point Rate Result

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## Dell Inc.

## PowerEdge R670 (Intel Xeon 6767P)

$SPECrate®2017\_fp\_base = 1450$

$SPECrate®2017\_fp\_peak = 1500$

| | |
|---|---|
| **CPU2017 License:** 6573 | **Test Date:** Mar-2025 |
| **Test Sponsor:** Dell Inc. | **Hardware Availability:** Mar-2025 |
| **Tested by:** Dell Inc. | **Software Availability:** Jun-2024 |

**Copies**

- 503.bwaves_r — 256 — 5780
- 507.cactuBSSN_r — 256 — 1470; 128 — 1470
- 508.namd_r — 256 — 1060
- 510.parest_r — 256 — 872; 128 — 933
- 511.povray_r — 256 — 1730; 128 — 1880
- 519.lbm_r — 256 — 549
- 521.wrf_r — 256 — 919; 128 — 1090
- 526.blender_r — 256 — 1560
- 527.cam4_r — 256 — 1720
- 538.imagick_r — 256 — 5970
- 544.nab_r — 256 — 3210
- 549.fotonik3d_r — 256 — 732
- 554.roms_r — 256 — 486; 128 — 538

SPECrate®2017_fp_base (1450)  •••• SPECrate®2017_fp_peak (1500)

## Hardware

CPU Name: Intel Xeon 6767P
 Max MHz: 3900
 Nominal: 2400
Enabled: 128 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: 336 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-6400B-R)
Storage: 140 GB on tmpfs
Other: CPU Cooling: DLC

## 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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## Dell Inc.

SPECrate®2017_fp_base = 1450

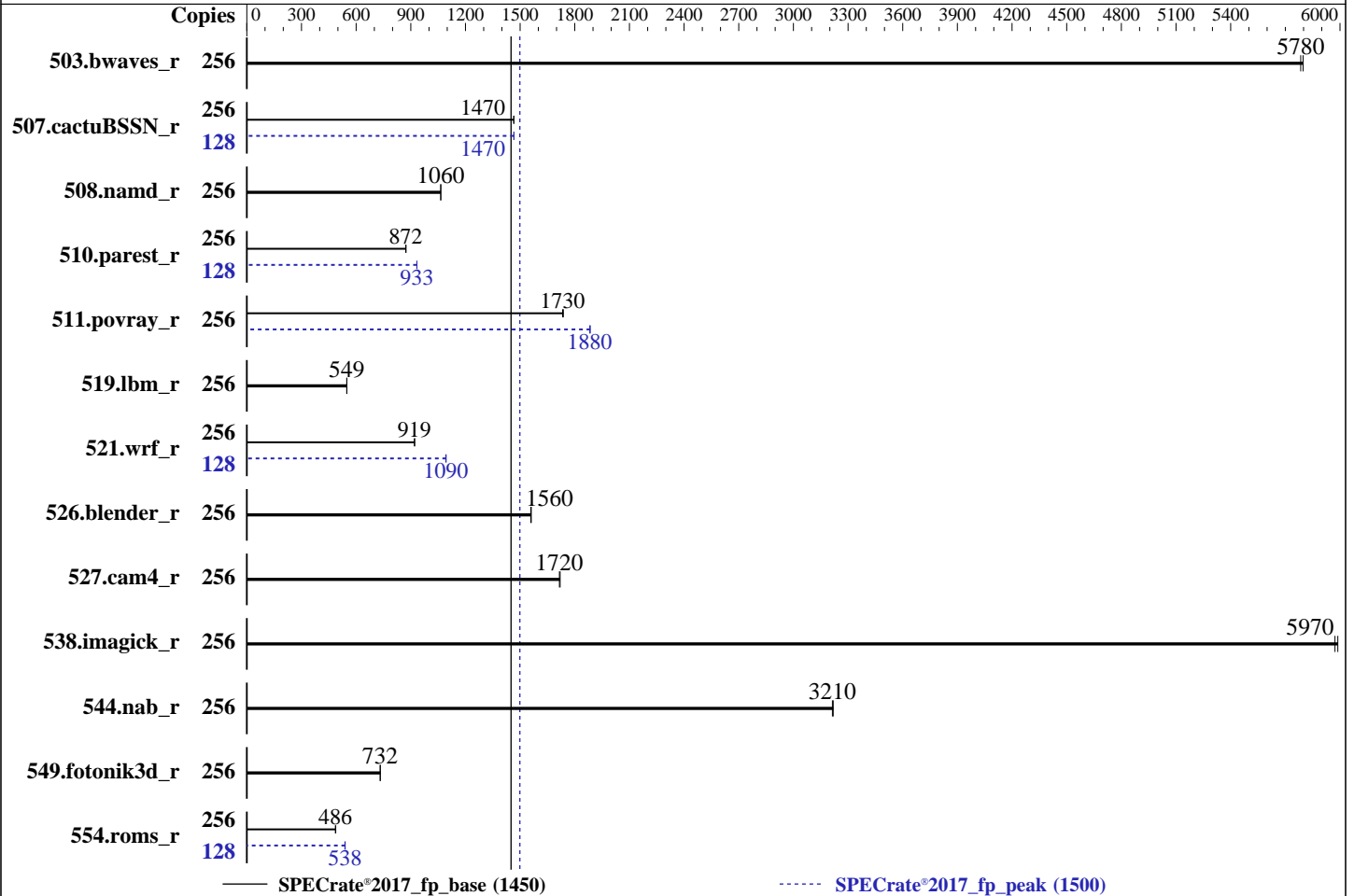### PowerEdge R670 (Intel Xeon 6767P)

SPECrate®2017_fp_peak = 1500

| | |
|---|---|
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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 | 256 | 443 | 5800 | **444** | **5780** | | | 256 | 443 | 5800 | **444** | **5780** | | |
| 507.cactuBSSN_r | 256 | 221 | 1470 | **221** | **1470** | | | 128 | 111 | 1470 | **111** | **1470** | | |
| 508.namd_r | 256 | 228 | 1060 | **228** | **1060** | | | 256 | 228 | 1060 | **228** | **1060** | | |
| 510.parest_r | 256 | **768** | **872** | 766 | 874 | | | 128 | **359** | **933** | 359 | 934 | | |
| 511.povray_r | 256 | 344 | 1740 | **345** | **1730** | | | 256 | 317 | 1890 | **318** | **1880** | | |
| 519.lbm_r | 256 | 492 | 549 | **492** | **549** | | | 256 | 492 | 549 | **492** | **549** | | |
| 521.wrf_r | 256 | 622 | 922 | **624** | **919** | | | 128 | **263** | **1090** | 262 | 1090 | | |
| 526.blender_r | 256 | **250** | **1560** | 250 | 1560 | | | 256 | **250** | **1560** | 250 | 1560 | | |
| 527.cam4_r | 256 | **261** | **1720** | 260 | 1720 | | | 256 | **261** | **1720** | 260 | 1720 | | |
| 538.imagick_r | 256 | 106 | 5990 | **107** | **5970** | | | 256 | 106 | 5990 | **107** | **5970** | | |
| 544.nab_r | 256 | 134 | 3220 | **134** | **3210** | | | 256 | 134 | 3220 | **134** | **3210** | | |
| 549.fotonik3d_r | 256 | 1361 | 733 | **1363** | **732** | | | 256 | 1361 | 733 | **1363** | **732** | | |
| 554.roms_r | 256 | 833 | 488 | **837** | **486** | | | 128 | 377 | 540 | **378** | **538** | | |

| | |
|---|---|
| **SPECrate®2017_fp_base =** | **1450** |
| **SPECrate®2017_fp_peak =** | **1500** |

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

**(Continued on next page)**

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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 140 GB ramdisk created with the cmd: "mount -t tmpfs -o size=140G tmpfs /mnt/ramdisk"
```

## Platform Notes

```
BIOS Settings:
        Adjacent Cache Line Prefetch : Disabled
            DCU Streamer Prefetcher : Disabled
                   Sub NUMA Cluster : Enabled
                       XPT Prefetch : Disabled
                       LLC Prefetch : Enabled
                     Optimizer Mode : Enabled

                     System Profile : Custom
                                C1E : Disabled
                           C-States : Autonomous
             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 DNN3108-R670 Sun Mar 30 22:29:03 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
```

(Continued on next page)

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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 DNN3108-R670 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
    22:29:03 up 41 min,  1 user,  load average: 0.13, 0.04, 0.01
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                22:27   54.00s  1.26s  0.02s /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) 2060201
   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) 2060201
   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=256 -c
    ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=128 --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=256 --configfile
```

(Continued on next page)

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## Platform Notes (Continued)

```
    ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=128 --define physicalfirst
    --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/CPU2017.001/templogs/preenv.fprate.001.0.log
    --lognum 001.0 --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) 6767P
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 173
    stepping        : 1
    microcode       : 0x1000380
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
    cpu cores       : 64
    siblings        : 128
    2 physical ids (chips)
    256 processors (hardware threads)
    physical id 0: core ids 0-31,64-95
    physical id 1: core ids 0-31,64-95
    physical id 0: apicids 0-63,128-191
    physical id 1: apicids 256-319,384-447
  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):                  256
  On-line CPU(s) list:     0-255
  Vendor ID:               GenuineIntel
  BIOS Vendor ID:          Intel
  Model name:              Intel(R) Xeon(R) 6767P
  BIOS Model name:         Intel(R) Xeon(R) 6767P  CPU @ 2.4GHz
  BIOS CPU family:         179
  CPU family:              6
  Model:                   173
  Thread(s) per core:      2
  Core(s) per socket:      64
  Socket(s):               2
  Stepping:                1
  BogoMIPS:                4800.00
  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
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
                            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 hfi 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_l1d arch_capabilities
    Virtualization:         VT-x
    L1d cache:              6 MiB (128 instances)
    L1i cache:              8 MiB (128 instances)
    L2 cache:               256 MiB (128 instances)
    L3 cache:               672 MiB (2 instances)
    NUMA node(s):           4
    NUMA node0 CPU(s):      0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48
                            ,50,52,54,56,58,60,62,128,130,132,134,136,138,140,142,144,146,148,150
                            ,152,154,156,158,160,162,164,166,168,170,172,174,176,178,180,182,184,
                            186,188,190
    NUMA node1 CPU(s):      64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106
                            ,108,110,112,114,116,118,120,122,124,126,192,194,196,198,200,202,204,
                            206,208,210,212,214,216,218,220,222,224,226,228,230,232,234,236,238,2
                            40,242,244,246,248,250,252,254
    NUMA node2 CPU(s):      1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49
                            ,51,53,55,57,59,61,63,129,131,133,135,137,139,141,143,145,147,149,151
                            ,153,155,157,159,161,163,165,167,169,171,173,175,177,179,181,183,185,
                            187,189,191
    NUMA node3 CPU(s):      65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,97,99,101,103,105,107
                            ,109,111,113,115,117,119,121,123,125,127,193,195,197,199,201,203,205,
                            207,209,211,213,215,217,219,221,223,225,227,229,231,233,235,237,239,2
                            41,243,245,247,249,251,253,255
    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;
                                          PBRSB-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       6M   12 Data           1     64       1          64
      L1i      64K       8M   16 Instruction    1     64       1          64
      L2        2M     256M   16 Unified        2   2048       1          64
      L3      336M     672M   16 Unified        3 344064       1          64


  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 4 nodes (0-3)
    node 0 cpus:
    0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,128,130,132,134,
```

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## Platform Notes (Continued)

```
    136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,180,182,184,186,188
    ,190
    node 0 size: 128494 MB
    node 0 free: 127695 MB
    node 1 cpus:
    64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,1
    26,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230,232,234,236,238,240,242,
    244,246,248,250,252,254
    node 1 size: 129007 MB
    node 1 free: 128154 MB
    node 2 cpus:
    1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,129,131,133,135,
    137,139,141,143,145,147,149,151,153,155,157,159,161,163,165,167,169,171,173,175,177,179,181,183,185,187,189
    ,191
    node 2 size: 129007 MB
    node 2 free: 128485 MB
    node 3 cpus:
    65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109,111,113,115,117,119,121,123,125,1
    27,193,195,197,199,201,203,205,207,209,211,213,215,217,219,221,223,225,227,229,231,233,235,237,239,241,243,
    245,247,249,251,253,255
    node 3 size: 128567 MB
    node 3 free: 117818 MB
    node distances:
    node   0   1   2   3
      0:  10  12  21  21
      1:  12  10  21  21
      2:  21  21  10  12
      3:  21  21  12  10


    ------------------------------------------------------------
 9. /proc/meminfo
    MemTotal:       527438432 kB


    ------------------------------------------------------------
10. who -r
    run-level 3 Mar 30 21:48


    ------------------------------------------------------------
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 firewalld getty@
                     irqbalance issue-generator kbdsettings kdump kdump-early kdump-notify 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         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                     chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info fsidd
                     gpm grub2-once haveged ipmi ipmievd 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 udisks2 vncserver@
    indirect         systemd-userdbd wickedd


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

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## Platform Notes (Continued)

```
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
  root=UUID=a2bcd2c3-ec40-4e98-a1b4-9c2707cdaa5a
  splash=silent
  mitigations=auto
  quiet
  security=apparmor
  crashkernel=363M,high
  crashkernel=72M,low


  ----------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 230:
    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+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force


  ----------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs   60000
  defrag                  1
  max_ptes_none           511
  max_ptes_shared         256
  max_ptes_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


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

**(Continued on next page)**

## Dell Inc.

## PowerEdge R670 (Intel Xeon 6767P)

$SPECrate^{®}2017\_fp\_base = 1450$

$SPECrate^{®}2017\_fp\_peak = 1500$

**CPU2017 License:** 6573
**Test Sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test Date:** Mar-2025
**Hardware Availability:** Mar-2025
**Software Availability:** Jun-2024

## Platform Notes (Continued)

```
    ----------------------------------------------------------
    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  140G  5.0G  136G   4% /mnt/ramdisk


    ----------------------------------------------------------
    20. /sys/devices/virtual/dmi/id
        Vendor:          Dell Inc.
        Product:         PowerEdge R670
        Product Family: PowerEdge
        Serial:          DNN3108


    ----------------------------------------------------------
    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:
        1x 002C0423002C MTC20F2085S1RC64BD2 UXCC 32 GB 2 rank 6400
        1x 002C069D002C MTC20F2085S1RC64BD1 USFF 32 GB 2 rank 6400
        14x 00AD063200AD HMCG88AHBRA286N 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
```

## 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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----------------------------------------------------------------------------------------------


==============================================================================================
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
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----------------------------------------------------------------------------------------------
```

# SPEC CPU®2017 Floating Point Rate Result

## Dell Inc.

$SPECrate^{®}2017\_fp\_base = 1450$

## PowerEdge R670 (Intel Xeon 6767P)

$SPECrate^{®}2017\_fp\_peak = 1500$

## Compiler Version Notes (Continued)

```
==============================================================================
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
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
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
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         | 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
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
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

## 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
```

# SPEC CPU®2017 Floating Point Rate Result

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## Dell Inc.

## PowerEdge R670 (Intel Xeon 6767P)

SPECrate®2017_fp_base = 1450

SPECrate®2017_fp_peak = 1500

**CPU2017 License:** 6573
**Test Sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test Date:** Mar-2025
**Hardware Availability:** Mar-2025
**Software Availability:** Jun-2024

## 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

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

**(Continued on next page)**

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

## Dell Inc.

SPECrate®2017_fp_base = 1450

## PowerEdge R670 (Intel Xeon 6767P)

SPECrate®2017_fp_peak = 1500

| | | | |
|---|---|---|---|
| **CPU2017 License:** 6573 | | **Test Date:** | Mar-2025 |
| **Test Sponsor:** | Dell Inc. | **Hardware Availability:** | Mar-2025 |
| **Tested by:** | Dell Inc. | **Software Availability:** | Jun-2024 |

# Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):
```
-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
```

# Peak Portability Flags

```
Same as Base Portability Flags
```

# Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

(Continued on next page)

## Dell Inc.

## PowerEdge R670 (Intel Xeon 6767P)

SPECrate®2017_fp_base = 1450

SPECrate®2017_fp_peak = 1500

**CPU2017 License:** 6573
**Test Sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test Date:** Mar-2025
**Hardware Availability:** Mar-2025
**Software Availability:** Jun-2024

# Peak Optimization Flags (Continued)

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`

Benchmarks using both Fortran and C:

521.wrf_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`

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.profdata`(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`

# SPEC CPU®2017 Floating Point Rate Result

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## Dell Inc.

## PowerEdge R670 (Intel Xeon 6767P)

SPECrate®2017_fp_base = 1450

SPECrate®2017_fp_peak = 1500

**CPU2017 License:** 6573
**Test Sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test Date:** Mar-2025
**Hardware Availability:** Mar-2025
**Software Availability:** Jun-2024

# Peak Optimization Flags (Continued)

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.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

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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