SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge XR8610t (Intel Xeon Gold 6433N)

$SPECrate^{®}2017\_fp\_base = 262$

$SPECrate^{®}2017\_fp\_peak = 273$

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

Benchmark	Copies	base	peak
503.bwaves_r	64	943	
507.cactuBSSN_r	64 / 32	295	313
508.namd_r	64	167	
510.parest_r	64 / 32	116	160
511.povray_r	64	246	267
519.lbm_r	64	154	
521.wrf_r	64 / 32	199	200
526.blender_r	64	246	
527.cam4_r	64	240	241
538.imagick_r	64	989	
544.nab_r	64	503	
549.fotonik3d_r	64	221	
554.roms_r	64 / 32	102	112

SPECrate®2017_fp_base (262)   **SPECrate®2017_fp_peak (273)**

Hardware

CPU Name: Intel Xeon Gold 6433N
Max MHz: 3600
Nominal: 2000
Enabled: 32 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 60 MB I+D on chip per chip
Other: None
Memory: 512 GB (8 x 64 GB 2Rx4 PC5-4800B-R, running at 4400)
Storage: 60 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 1.9.3 released Mar-2024
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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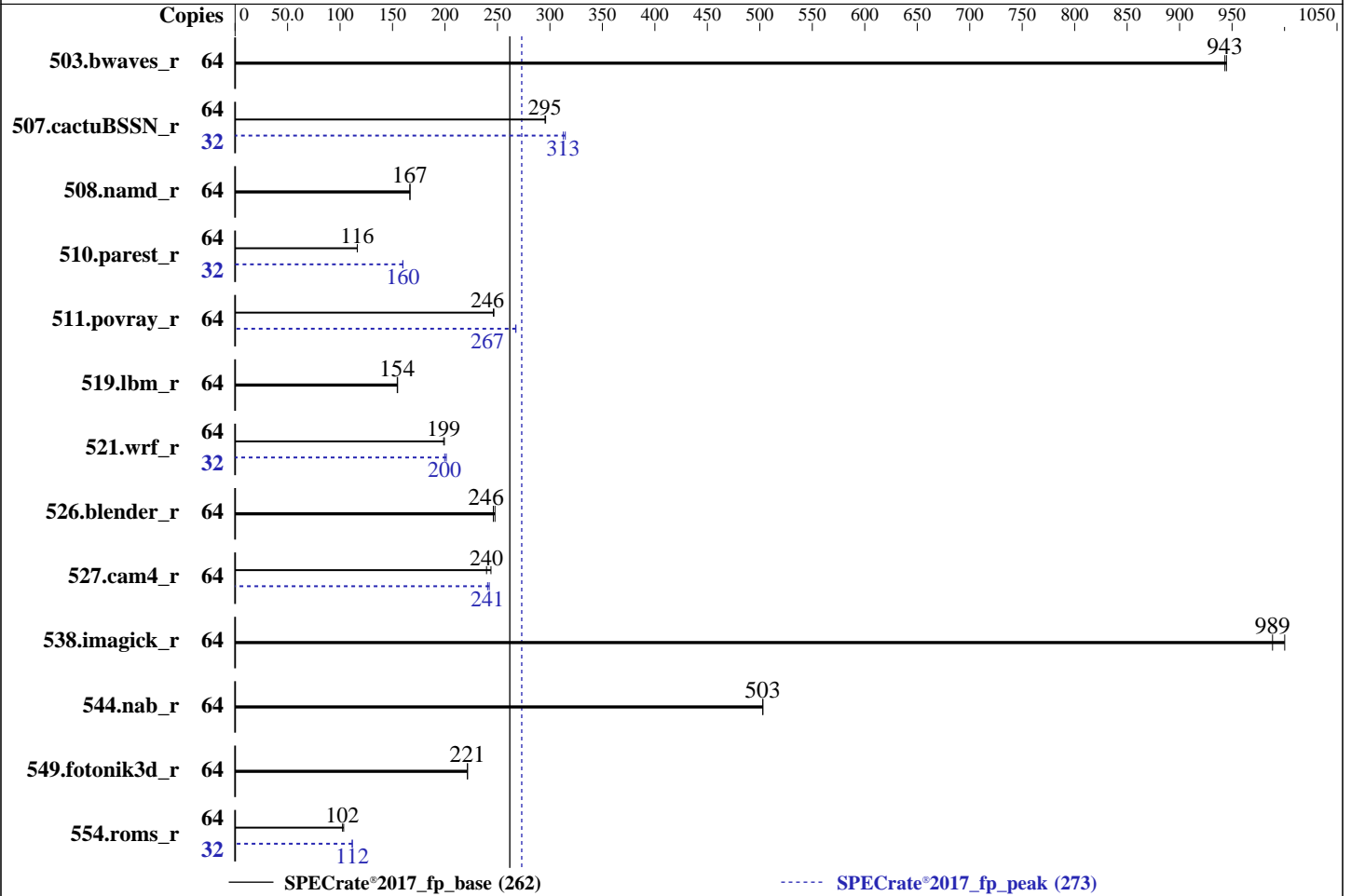
CPU2017 License: 6573

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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	64	679	945	**680**	**943**			64	679	945	**680**	**943**		
507.cactuBSSN_r	64	274	296	**274**	**295**			32	129	315	**130**	**313**		
508.namd_r	64	365	167	**365**	**167**			64	365	167	**365**	**167**		
510.parest_r	64	**1438**	**116**	1437	117			32	524	160	**524**	**160**		
511.povray_r	64	606	247	**607**	**246**			64	558	268	**559**	**267**		
519.lbm_r	64	**437**	**154**	436	155			64	**437**	**154**	436	155		
521.wrf_r	64	**721**	**199**	719	199			32	356	201	**359**	**200**		
526.blender_r	64	394	248	**396**	**246**			64	394	248	**396**	**246**		
527.cam4_r	64	459	244	**467**	**240**			64	**465**	**241**	462	242		
538.imagick_r	64	159	1000	**161**	**989**			64	159	1000	**161**	**989**		
544.nab_r	64	214	503	**214**	**503**			64	214	503	**214**	**503**		
549.fotonik3d_r	64	1126	221	**1126**	**221**			64	1126	221	**1126**	**221**		
554.roms_r	64	983	103	**994**	**102**			32	**456**	**112**	455	112		
SPECrate®2017_fp_base =			**262**											
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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 60 GB ramdisk created with the cmd: "mount -t tmpfs -o size=60G tmpfs /mnt/ramdisk"
```

Platform Notes

```
BIOS Settings:
   Virtualization Technology : Disabled
            Sub NUMA Cluster : 2-Way Clustering
 UMA Based Clustering Status : Disable
               x2APIC Mode : Disabled

              System Profile : Custom
      CPU Power Management : Maximum Performance
     Energy Efficient Turbo : Disabled
                        C1E : Disabled
                   C-States : Autonomous
        Memory Patrol Scrub : Disabled
     Energy Efficient Policy : Performance
             ADDDC Setting : 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 SLX8620-XR8610t Sun Mar 30 02:19:04 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. sysctl
15. /sys/kernel/mm/transparent_hugepage
16. /sys/kernel/mm/transparent_hugepage/khugepaged
17. OS release
18. Disk information
```

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Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

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Platform Notes (Continued)

```
   19. /sys/devices/virtual/dmi/id
   20. dmidecode
   21. BIOS
   ------------------------------------------------------------

   ------------------------------------------------------------
   1. uname -a
     Linux SLX8620-XR8610t 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
      02:19:04 up  5:14,  1 user,  load average: 46.01, 59.71, 62.38
     USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1     -                21:05    5:13m  1.33s  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) 2060014
     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) 2060014
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited

   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize=31
    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=64 -c
      ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=32 --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=64 --configfile
      ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=32 --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
```

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Platform Notes (Continued)

```
    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) Gold 6433N
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 8
     microcode       : 0x2b0005c0
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb bhi
     cpu cores       : 32
     siblings        : 64
     1 physical ids (chips)
     64 processors (hardware threads)
     physical id 0: core ids 0-31
     physical id 0: apicids 0-63
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.


    -------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.39.3:
  Architecture:             x86_64
  CPU op-mode(s):           32-bit, 64-bit
  Address sizes:            46 bits physical, 57 bits virtual
  Byte Order:               Little Endian
  CPU(s):                   64
  On-line CPU(s) list:      0-63
  Vendor ID:                GenuineIntel
  BIOS Vendor ID:           Intel
  Model name:               Intel(R) Xeon(R) Gold 6433N
  BIOS Model name:          Intel(R) Xeon(R) Gold 6433N  CPU @ 2.0GHz
  BIOS CPU family:          179
  CPU family:               6
  Model:                    143
  Thread(s) per core:       2
  Core(s) per socket:       32
  Socket(s):                1
  Stepping:                 8
  CPU(s) scaling MHz:       31%
  CPU max MHz:              3600.0000
  CPU min MHz:              800.0000
  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 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 cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced
                            fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm
                            rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb
                            intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1
                            xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
```

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Platform Notes (Continued)

```
                         split_lock_detect user_shstk avx_vnni avx512_bf16 wbnoinvd dtherm ida
                         arat pln pts hfi 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 avx512_fp16 flush_l1d
                         arch_capabilities
  L1d cache:             1.5 MiB (32 instances)
  L1i cache:             1 MiB (32 instances)
  L2 cache:              64 MiB (32 instances)
  L3 cache:              60 MiB (1 instance)
  NUMA node(s):          2
  NUMA node0 CPU(s):     0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,31,32,34,36,38,40,42,44,46,48
                         ,50,52,54,56,58,60,63
  NUMA node1 CPU(s):     1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,30,33,35,37,39,41,43,45,47,49
                         ,51,53,55,57,59,61,62
  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 SW sequence; 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     1.5M   12 Data            1    64        1             64
      L1i      32K      1M     8 Instruction     1    64        1             64
      L2        2M      64M   16 Unified         2  2048        1             64
      L3       60M      60M   15 Unified         3 65536        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: 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,31-32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,63
    node 0 size: 257381 MB
    node 0 free: 256282 MB
    node 1 cpus: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29-30,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61-62
    node 1 size: 257648 MB
    node 1 free: 246756 MB
    node distances:
    node   0   1
      0:  10  12
      1:  12  10

  ------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:       527390620 kB

  ------------------------------------------------------------
  10. who -r
    run-level 3 Mar 29 21:05
```

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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           apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings kdump
                       kdump-early kdump-notify lvm2-monitor nvmefc-boot-connections nvmf-autoconnect postfix
                       purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4
                       wickedd-dhcp6 wickedd-nanny
     enabled-runtime   systemd-remount-fs
     disabled          blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell
                       ebtables fsidd grub2-once haveged issue-add-ssh-keys kexec-load lunmask nfs nfs-blkmap
                       rpcbind rpmconfigcheck rsyncd serial-getty@ systemd-boot-check-no-failures systemd-confext
                       systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2
     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=1420f0de-cf2a-452f-9c6a-d3257d093ae8
     splash=silent
     resume=/dev/disk/by-uuid/322e7a60-cd58-41d2-8e97-7a815c571f90
     mitigations=auto
     quiet
     security=apparmor
     crashkernel=370M,high
     crashkernel=72M,low


   ----------------------------------------------------------
   14. 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


   ----------------------------------------------------------
   15. /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
```

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Platform Notes (Continued)

```
     ----------------------------------------------------------------
     16. /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


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


     ----------------------------------------------------------------
     18. Disk information
     SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
       Filesystem      Type    Size  Used Avail Use% Mounted on
       tmpfs           tmpfs    60G  5.0G   56G   9% /mnt/ramdisk


     ----------------------------------------------------------------
     19. /sys/devices/virtual/dmi/id
         Vendor:         Dell Inc.
         Product:        PowerEdge XR8610t
         Product Family: PowerEdge
         Serial:         SLX8620


     ----------------------------------------------------------------
     20. 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:
         7x 002C00B3002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800, configured at 4400
         1x 002C0632002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800, configured at 4400



     ----------------------------------------------------------------
     21. BIOS
     (This section combines info from /sys/devices and dmidecode.)
         BIOS Vendor:      Dell Inc.
         BIOS Version:     1.9.3
         BIOS Date:        03/20/2024
         BIOS Revision:    1.9
```

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)
```

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

Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
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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--------------------------------------------------------------------------------


================================================================================
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)
--------------------------------------------------------------------------------
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)
--------------------------------------------------------------------------------
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--------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Benchmarks using both Fortran and C:
`ifx icx`

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge XR8610t (Intel Xeon Gold 6433N)

SPECrate®2017_fp_base = 262

SPECrate®2017_fp_peak = 273

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

Base Compiler Invocation (Continued)

Benchmarks using both C and C++:
`icpx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifx`

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
526.blender_r: `-DSPEC_LP64 -DSPEC_LINUX -funsigned-char`
527.cam4_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
538.imagick_r: `-DSPEC_LP64`
544.nab_r: `-DSPEC_LP64`
549.fotonik3d_r: `-DSPEC_LP64`
554.roms_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
```

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Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

Dell Inc.

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Hardware Availability: Apr-2024
Software Availability: Jun-2024

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
```
-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
```

Benchmarks using both C and C++:
```
icpx icx
```

Benchmarks using Fortran, C, and C++:
```
icpx icx ifx
```

Dell Inc.

PowerEdge XR8610t (Intel Xeon Gold 6433N)

SPECrate®2017_fp_base = 262

SPECrate®2017_fp_peak = 273

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

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

538.imagick_r: basepeak = yes

544.nab_r: basepeak = yes

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: -w -std=c++14 -m64 -Wl,-z,muldefs -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:
-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.profdata(pass 2) -xCORE-AVX2(pass 1)

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Dell Inc.

PowerEdge XR8610t (Intel Xeon Gold 6433N)

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CPU2017 License: 6573
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Test Date: Mar-2025
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Software Availability: Jun-2024

Peak Optimization Flags (Continued)

511.povray_r (continued):
```
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -Wno-implicit-int
-mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:
```
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.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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