SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

$SPECrate^{®}2017\_fp\_base = 1270$

PowerEdge XE7740 (Intel Xeon 6747P)
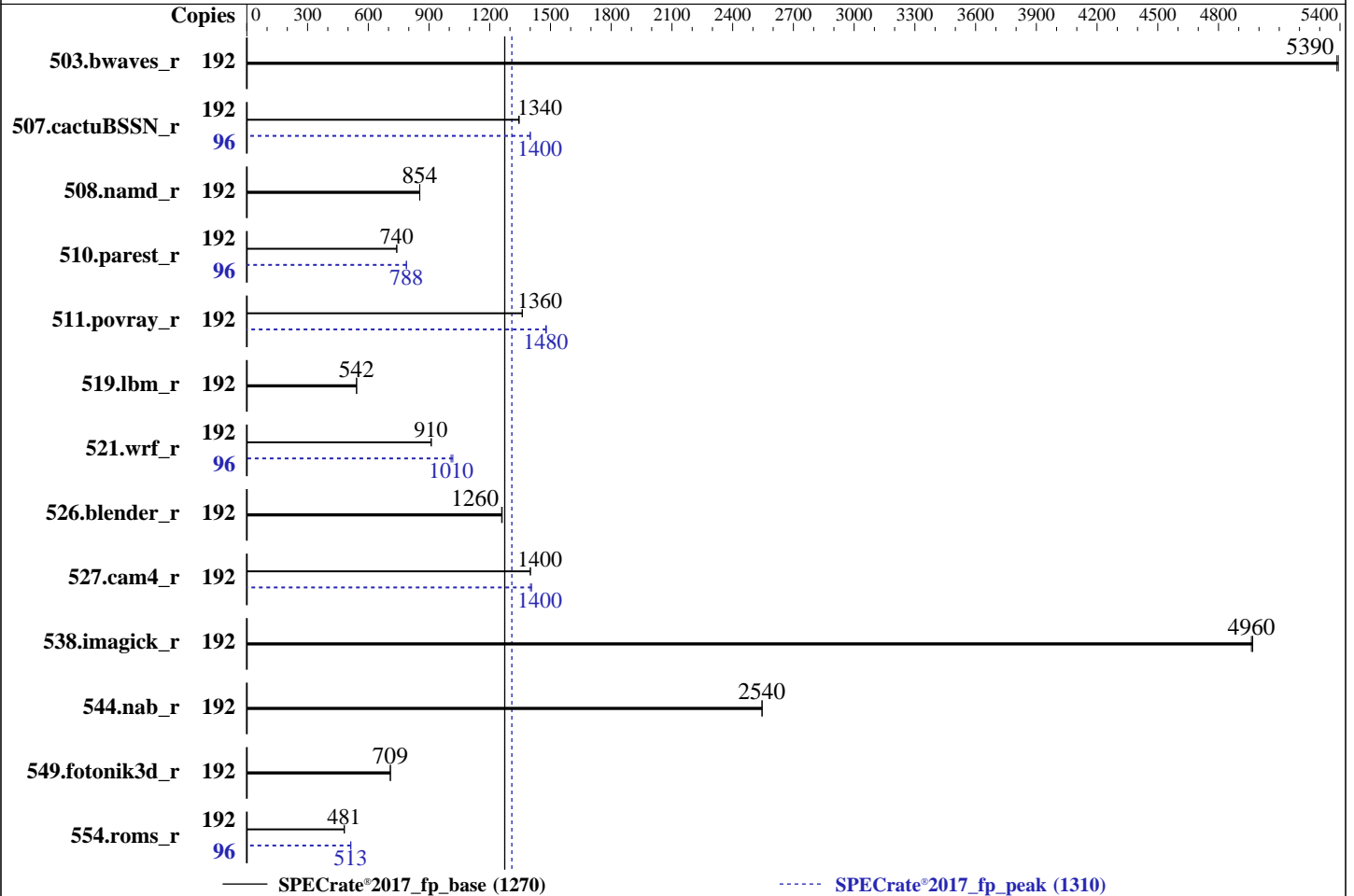
$SPECrate^{®}2017\_fp\_peak = 1310$

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

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

Copies

Benchmark	Copies	base	peak
503.bwaves_r	192	5390	
507.cactuBSSN_r	192 / 96	1340	1400
508.namd_r	192	854	
510.parest_r	192 / 96	740	788
511.povray_r	192 / 96	1360	1480
519.lbm_r	192	542	
521.wrf_r	192 / 96	910	1010
526.blender_r	192	1260	
527.cam4_r	192 / 96	1400	1400
538.imagick_r	192	4960	
544.nab_r	192	2540	
549.fotonik3d_r	192	709	
554.roms_r	192 / 96	481	513

SPECrate®2017_fp_base (1270)   SPECrate®2017_fp_peak (1310)

Hardware

CPU Name: Intel Xeon 6747P
 Max MHz: 3900
 Nominal: 2700
Enabled: 96 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: 288 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-6400B-R)
Storage: 110 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 1.0.2 released Mar-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	192	357	5390	**358**	**5390**			192	357	5390	**358**	**5390**		
507.cactuBSSN_r	192	181	1350	**181**	**1340**			96	**86.8**	**1400**	86.8	1400		
508.namd_r	192	**214**	**854**	213	854			192	**214**	**854**	213	854		
510.parest_r	192	678	741	**678**	**740**			96	319	788	**319**	**788**		
511.povray_r	192	**330**	**1360**	329	1360			192	**304**	**1480**	303	1480		
519.lbm_r	192	**373**	**542**	373	542			192	**373**	**542**	373	542		
521.wrf_r	192	**472**	**910**	472	912			96	**213**	**1010**	211	1020		
526.blender_r	192	232	1260	**232**	**1260**			192	232	1260	**232**	**1260**		
527.cam4_r	192	**240**	**1400**	240	1400			192	239	1410	**240**	**1400**		
538.imagick_r	192	**96.2**	**4960**	96.1	4970			192	**96.2**	**4960**	96.1	4970		
544.nab_r	192	127	2550	**127**	**2540**			192	127	2550	**127**	**2540**		
549.fotonik3d_r	192	**1056**	**709**	1055	709			192	**1056**	**709**	1055	709		
554.roms_r	192	**635**	**481**	633	482			96	**297**	**513**	297	514		

SPECrate®2017_fp_base =	1270
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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 110 GB ramdisk created with the cmd: "mount -t tmpfs -o size=110G 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
           Correctable Memory ECC SMI : Disabled
                    DIMM Self Healing -
       on Uncorrectable Memory Error : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on 1234567-XE7740 Wed Mar 26 23:26:31 2025

SUT (System Under Test) info as seen by some common utilities.

-----------------------------------------------------------
Table of contents
-----------------------------------------------------------
 1. uname -a
 2. w
 3. Username
 4. ulimit -a
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
```

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Platform Notes (Continued)

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


------------------------------------------------------------
 1. uname -a
   Linux 1234567-XE7740 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
   23:26:31 up 4 min,  1 user,  load average: 0.24, 0.39, 0.19
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                23:23   55.00s  0.92s  0.00s /bin/bash
   /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1 --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) 2060426
   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) 2060426
   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=6.1 --output_format
    html,pdf,txt
  /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-VERS=6.1 --output_format
    html,pdf,txt
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
    ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=96 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 2 --define
    DL-VERS=6.1 --output_format html,pdf,txt fprate
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 --configfile
```

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Platform Notes (Continued)

```
    ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=96 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 2
    --define DL-VERS=6.1 --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) 6747P
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 173
    stepping        : 1
    microcode       : 0x1000380
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
    cpu cores       : 48
    siblings        : 96
    2 physical ids (chips)
    192 processors (hardware threads)
    physical id 0: core ids 0-23,64-87
    physical id 1: core ids 0-23,64-87
    physical id 0: apicids 0-47,128-175
    physical id 1: apicids 256-303,384-431
  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):                  192
  On-line CPU(s) list:     0-191
  Vendor ID:               GenuineIntel
  BIOS Vendor ID:          Intel
  Model name:              Intel(R) Xeon(R) 6747P
  BIOS Model name:         Intel(R) Xeon(R) 6747P  CPU @ 2.7GHz
  BIOS CPU family:         179
  CPU family:              6
  Model:                   173
  Thread(s) per core:      2
  Core(s) per socket:      48
  Socket(s):               2
  Stepping:                1
  BogoMIPS:                5400.00
  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
```

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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:             4.5 MiB (96 instances)
  L1i cache:             6 MiB (96 instances)
  L2 cache:              192 MiB (96 instances)
  L3 cache:              576 MiB (2 instances)
  NUMA node(s):          4
  NUMA node0 CPU(s):     0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,96
                         ,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126,128,130,1
                         32,134,136,138,140,142
  NUMA node1 CPU(s):     48,50,52,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,
                         94,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,17
                         6,178,180,182,184,186,188,190
  NUMA node2 CPU(s):     1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,97
                         ,99,101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,131,1
                         33,135,137,139,141,143
  NUMA node3 CPU(s):     49,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,
                         95,145,147,149,151,153,155,157,159,161,163,165,167,169,171,173,175,17
                         7,179,181,183,185,187,189,191
  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     4.5M   12 Data            1     64       1            64
      L1i      64K       6M   16 Instruction     1     64       1            64
      L2        2M     192M   16 Unified         2   2048       1            64
      L3      288M     576M   16 Unified         3 294912       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:
  0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,96,98,100,102,104,106,108,110,112,114,11
  6,118,120,122,124,126,128,130,132,134,136,138,140,142
    node 0 size: 128540 MB
    node 0 free: 127452 MB
    node 1 cpus:
```

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Platform Notes (Continued)

```
   48,50,52,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94,144,146,148,150,152,154,156,158,160
   ,162,164,166,168,170,172,174,176,178,180,182,184,186,188,190
   node 1 size: 128972 MB
   node 1 free: 128430 MB
   node 2 cpus:
   1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,97,99,101,103,105,107,109,111,113,115,11
   7,119,121,123,125,127,129,131,133,135,137,139,141,143
   node 2 size: 129011 MB
   node 2 free: 128348 MB
   node 3 cpus:
   49,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,145,147,149,151,153,155,157,159,161
   ,163,165,167,169,171,173,175,177,179,181,183,185,187,189,191
   node 3 size: 128608 MB
   node 3 free: 117860 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:       527496328 kB


   ------------------------------------------------------------
10. who -r
   run-level 3 Mar 26 23:23


   ------------------------------------------------------------
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         ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                   YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance
                   issue-generator kbdsettings kdump kdump-early kdump-notify klog lvm2-monitor nscd
                   nvmefc-boot-connections nvmf-autoconnect postfix purge-kernels rollback rsyslog smartd
                   sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
                   wpa_supplicant
   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 dnsmasq ebtables exchange-bmc-os-info
                   firewalld 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@ wpa_supplicant@
   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=4a3e821d-6b9c-4812-b236-2943a80df76d
   splash=silent
   resume=/dev/disk/by-uuid/e83077a7-9fb8-4d68-bd08-bee9447e0b0e
   mitigations=auto
```

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Platform Notes (Continued)

```
    quiet
    security=apparmor
    crashkernel=363M,high
    crashkernel=72M,low


  ----------------------------------------------------------
  14. cpupower frequency-info
    analyzing CPU 179:
      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


  ----------------------------------------------------------
  19. Disk information
  SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
```

(Continued on next page)

Dell Inc.

PowerEdge XE7740 (Intel Xeon 6747P)

SPECrate®2017_fp_base = 1270

SPECrate®2017_fp_peak = 1310

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

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

Platform Notes (Continued)

```
  Filesystem      Type   Size  Used Avail Use% Mounted on
  tmpfs           tmpfs  110G  5.0G  106G   5% /mnt/ramdisk


  -------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         Dell Inc.
    Product:        PowerEdge XE7740
    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:
    2x 002C0423002C MTC20F2085S1RC64BD2 UXCC 32 GB 2 rank 6400
    1x 002C0632002C MTC20F2085S1RC64BD2 MWFF 32 GB 2 rank 6400
    2x 002C069D002C MTC20F2085S1RC64BD2 QSFF 32 GB 2 rank 6400
    11x 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:   1.0.2
    BIOS Date:      03/07/2025
    BIOS Revision:  1.0
```

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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----------------------------------------------------------------------------------------------


==============================================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
----------------------------------------------------------------------------------------------
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

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PowerEdge XE7740 (Intel Xeon 6747P)

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Compiler Version Notes (Continued)

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

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Benchmarks using both Fortran and C:
`ifx icx`

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

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

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`

(Continued on next page)

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Base Portability Flags (Continued)

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
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

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SPEC CPU®2017 Floating Point Rate Result

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Dell Inc.

PowerEdge XE7740 (Intel Xeon 6747P)

SPECrate®2017_fp_base = 1270

SPECrate®2017_fp_peak = 1310

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

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

Base Optimization Flags (Continued)

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`

538.imagick_r: `basepeak = yes`

(Continued on next page)

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

Dell Inc.

SPECrate®2017_fp_base = 1270

PowerEdge XE7740 (Intel Xeon 6747P)

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

Peak Optimization Flags (Continued)

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)
-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

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Dell Inc.

PowerEdge XE7740 (Intel Xeon 6747P)

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Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

```
-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.

Tested with SPEC CPU®2017 v1.1.9 on 2025-03-26 13:56:31-0400.
Report generated on 2025-04-22 18:11:46 by CPU2017 PDF formatter v6716.
Originally published on 2025-04-22.