SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge R670 (Intel Xeon 6787P)

$SPECrate®2017\_int\_base = 1550$

$SPECrate®2017\_int\_peak = 1600$
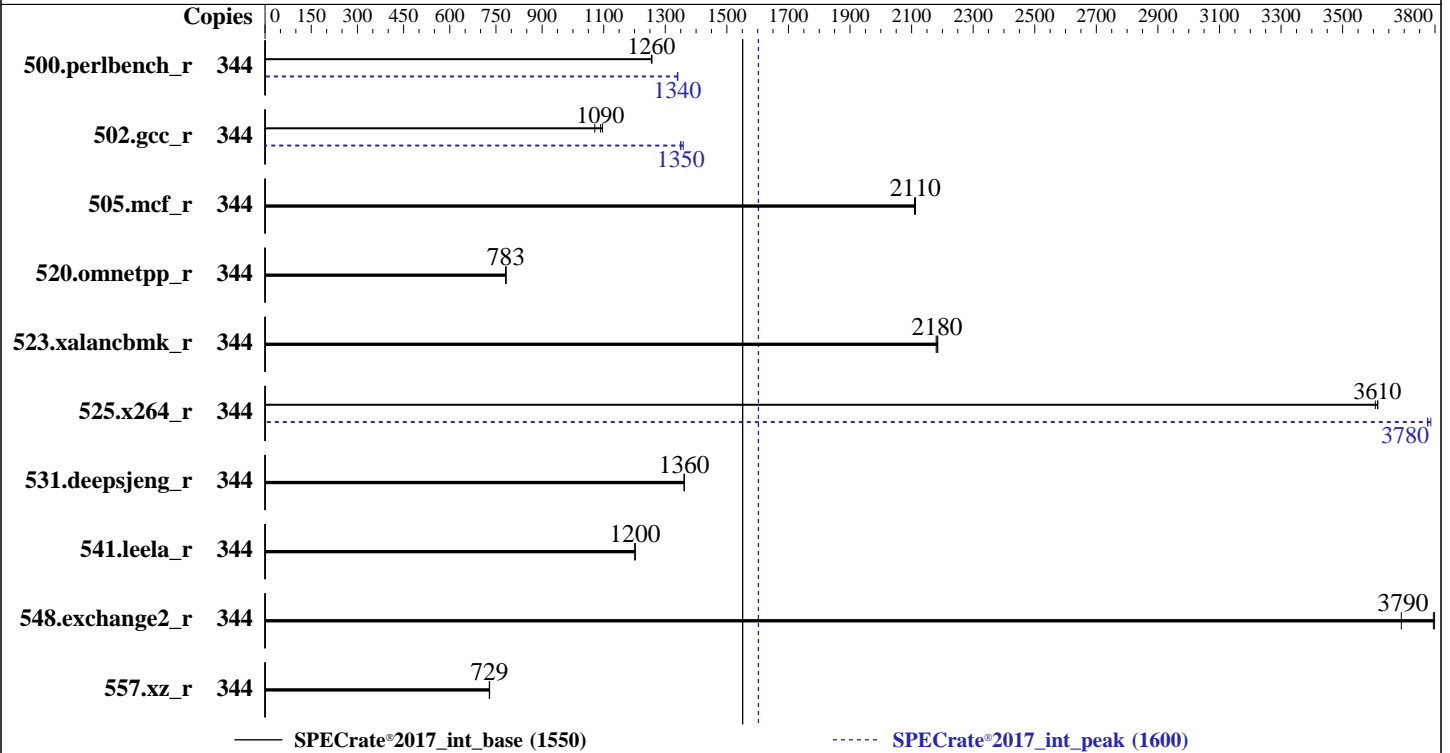
CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2025

Hardware Availability: Mar-2025

Software Availability: Jun-2024

Copies	Result
500.perlbench_r 344	1260 base / 1340 peak
502.gcc_r 344	1090 base / 1350 peak
505.mcf_r 344	2110
520.omnetpp_r 344	783
523.xalancbmk_r 344	2180
525.x264_r 344	3610 base / 3780 peak
531.deepsjeng_r 344	1360
541.leela_r 344	1200
548.exchange2_r 344	3790
557.xz_r 344	729

SPECrate®2017_int_base (1550)   SPECrate®2017_int_peak (1600)

Hardware

CPU Name: Intel Xeon 6787P
 Max MHz: 3800
 Nominal: 2000
Enabled: 172 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: 170 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: 32/64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of
 additional power usage.

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	344	436	1260	436	1250	**436**	**1260**	344	408	1340	409	1340	**409**	**1340**
502.gcc_r	344	**447**	**1090**	445	1100	455	1070	344	359	1360	**361**	**1350**	361	1350
505.mcf_r	344	**263**	**2110**	264	2110	263	2110	344	**263**	**2110**	264	2110	263	2110
520.omnetpp_r	344	**577**	**783**	577	783	578	781	344	**577**	**783**	577	783	578	781
523.xalancbmk_r	344	167	2180	**166**	**2180**	166	2190	344	167	2180	**166**	**2180**	166	2190
525.x264_r	344	167	3610	**167**	**3610**	167	3610	344	160	3780	159	3790	**159**	**3780**
531.deepsjeng_r	344	**290**	**1360**	289	1360	290	1360	344	**290**	**1360**	289	1360	290	1360
541.leela_r	344	474	1200	**474**	**1200**	474	1200	344	474	1200	**474**	**1200**	474	1200
548.exchange2_r	344	244	3690	**238**	**3790**	237	3800	344	244	3690	**238**	**3790**	237	3800
557.xz_r	344	510	728	509	729	**510**	**729**	344	510	728	509	729	**510**	**729**

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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/lib/ia32:/mnt/ram
    disk/cpu2017-1.1.9-ic2024.1/je5.0.1-32"
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
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
```

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General Notes (Continued)

```
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 170 GB ramdisk created with the cmd: "mount -t tmpfs -o size=170G 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 DNN3108-R670 Sun Mar  9 01:39:13 2025

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

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

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Platform Notes (Continued)

```
 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
     01:39:13 up 18 min,  1 user,  load average: 0.25, 0.06, 0.02
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                01:36   33.00s  0.98s  0.01s /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) 2059836
    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) 2059836
    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=344 -c
      ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=172 --define physicalfirst
      --define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 3 --define
      DL-VERS=6.1a --output_format html,pdf,txt intrate
    runcpu --nobuild --action validate --define default-platform-flags --define numcopies=344 --configfile
      ic2024.1-lin-sapphirerapids-rate-20240308.cfg --define smt-on --define cores=172 --define physicalfirst
      --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 3
      --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 intrate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.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) 6787P
    vendor_id         : GenuineIntel
    cpu family        : 6
    model             : 173
    stepping          : 1
    microcode         : 0x1000380
    bugs              : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
    cpu cores         : 86
    siblings          : 172
    2 physical ids (chips)
    344 processors (hardware threads)
    physical id 0: core ids 0-42,64-106
    physical id 1: core ids 0-42,64-106
    physical id 0: apicids 0-85,128-213
    physical id 1: apicids 256-341,384-469
  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):                        344
  On-line CPU(s) list:           0-343
  Vendor ID:                     GenuineIntel
  BIOS Vendor ID:                Intel
  Model name:                    Intel(R) Xeon(R) 6787P
  BIOS Model name:               Intel(R) Xeon(R) 6787P  CPU @ 2.0GHz
  BIOS CPU family:               179
  CPU family:                    6
  Model:                         173
  Thread(s) per core:            2
  Core(s) per socket:            86
  Socket(s):                     2
  Stepping:                      1
  BogoMIPS:                      4000.00
  Flags:                         fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
                                 pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx
                                 pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good
                                 nopl xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni
                                 pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
                                 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
                                 tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm
                                 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3 intel_ppin cdp_l2
                                 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept
                                 vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid
                                 rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt
                                 clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
                                 xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
```

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Platform Notes (Continued)

```
                              split_lock_detect user_shstk avx_vnni avx512_bf16 wbnoinvd dtherm ida
                              arat pln pts vnmi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni
                              vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57
                              rdpid bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear
                              serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile
                              amx_int8 flush_l1d arch_capabilities
  Virtualization:             VT-x
  L1d cache:                  8.1 MiB (172 instances)
  L1i cache:                  10.8 MiB (172 instances)
  L2 cache:                   344 MiB (172 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
                              ,50,52,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84,172,174,176,17
                              8,180,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212
                              ,214,216,218,220,222,224,226,228,230,232,234,236,238,240,242,244,246,
                              248,250,252,254,256
  NUMA node1 CPU(s):          86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,
                              124,126,128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,1
                              58,160,162,164,166,168,170,258,260,262,264,266,268,270,272,274,276,27
                              8,280,282,284,286,288,290,292,294,296,298,300,302,304,306,308,310,312
                              ,314,316,318,320,322,324,326,328,330,332,334,336,338,340,342
  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
                              ,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,173,175,177,17
                              9,181,183,185,187,189,191,193,195,197,199,201,203,205,207,209,211,213
                              ,215,217,219,221,223,225,227,229,231,233,235,237,239,241,243,245,247,
                              249,251,253,255,257
  NUMA node3 CPU(s):          87,89,91,93,95,97,99,101,103,105,107,109,111,113,115,117,119,121,123,
                              125,127,129,131,133,135,137,139,141,143,145,147,149,151,153,155,157,1
                              59,161,163,165,167,169,171,259,261,263,265,267,269,271,273,275,277,27
                              9,281,283,285,287,289,291,293,295,297,299,301,303,305,307,309,311,313
                              ,315,317,319,321,323,325,327,329,331,333,335,337,339,341,343
  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     8.1M   12 Data             1      64     1              64
      L1i      64K    10.8M   16 Instruction      1      64     1              64
      L2        2M     344M   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:
```

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Platform Notes (Continued)

```
   0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72,7
   4,76,78,80,82,84,172,174,176,178,180,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,21
   6,218,220,222,224,226,228,230,232,234,236,238,240,242,244,246,248,250,252,254,256
   node 0 size: 128460 MB
   node 0 free: 127744 MB
   node 1 cpus:
   86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126,128,130,132,134,136,138,140,14
   2,144,146,148,150,152,154,156,158,160,162,164,166,168,170,258,260,262,264,266,268,270,272,274,276,278,280,2
   82,284,286,288,290,292,294,296,298,300,302,304,306,308,310,312,314,316,318,320,322,324,326,328,330,332,334,
   336,338,340,342
   node 1 size: 129001 MB
   node 1 free: 117898 MB
   node 2 cpus:
   1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,7
   5,77,79,81,83,85,173,175,177,179,181,183,185,187,189,191,193,195,197,199,201,203,205,207,209,211,213,215,21
   7,219,221,223,225,227,229,231,233,235,237,239,241,243,245,247,249,251,253,255,257
   node 2 size: 129001 MB
   node 2 free: 128330 MB
   node 3 cpus:
   87,89,91,93,95,97,99,101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,131,133,135,137,139,141,14
   3,145,147,149,151,153,155,157,159,161,163,165,167,169,171,259,261,263,265,267,269,271,273,275,277,279,281,2
   83,285,287,289,291,293,295,297,299,301,303,305,307,309,311,313,315,317,319,321,323,325,327,329,331,333,335,
   337,339,341,343
   node 3 size: 128522 MB
   node 3 free: 127894 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:       527345080 kB


   -----------------------------------------------------------
   10. who -r
     run-level 3 Mar 9 01:22


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

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Platform Notes (Continued)

```
              ----------------------------------------------------------
              13. Linux kernel boot-time arguments, from /proc/cmdline
                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 202:
                  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

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

(Continued on next page)

Dell Inc.

SPECrate®2017_int_base = 1550

PowerEdge R670 (Intel Xeon 6787P)

SPECrate®2017_int_peak = 1600

CPU2017 License: 6573
Test Sponsor: Dell Inc.
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Test Date: Mar-2025
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Platform Notes (Continued)

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

    ----------------------------------------------------------
    19. Disk information
    SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
      Filesystem      Type   Size  Used Avail Use% Mounted on
      tmpfs           tmpfs  170G  5.0G  166G   3% /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       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_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       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------
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```

(Continued on next page)

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Compiler Version Notes (Continued)

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

==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
         | 557.xz_r(base, peak)
--------------------------------------------------------------------------------------
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--------------------------------------------------------------------------------------


==============================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
         | 541.leela_r(base, peak)
--------------------------------------------------------------------------------------
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--------------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------------------
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--------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Base Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-DSPEC_LP64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

SPEC CPU®2017 Integer Rate Result

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

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

Peak Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

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Peak Optimization Flags

C benchmarks:

500.perlbench_r: `-w -std=c11 -m64 -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`
`-fno-strict-overflow`
`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

502.gcc_r: `-m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89`
`-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`
`-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc`

505.mcf_r: `basepeak = yes`

525.x264_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-alias`
`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.13.html

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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 2025-03-08 15:09:13-0500.
Report generated on 2025-03-28 09:23:02 by CPU2017 PDF formatter v6716.
Originally published on 2025-03-27.