SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R760 (Intel Xeon Platinum 8462Y+)

$SPECrate^{®}2017\_int\_base = 646$

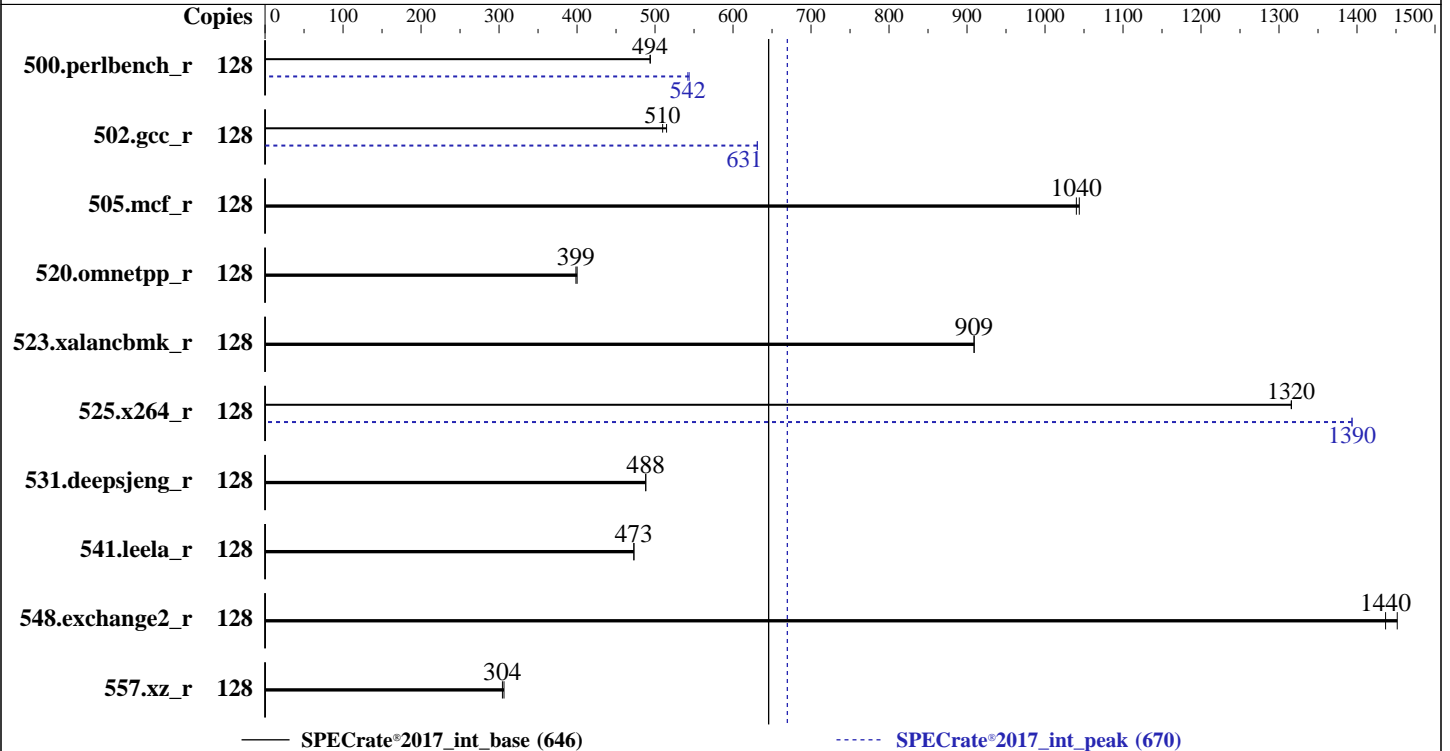$SPECrate^{®}2017\_int\_peak = 670$

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

Test Date: Apr-2024
Hardware Availability: Apr-2023
Software Availability: Dec-2023

Copies		Value
500.perlbench_r	128	494 / 542
502.gcc_r	128	510 / 631
505.mcf_r	128	1040
520.omnetpp_r	128	399
523.xalancbmk_r	128	909
525.x264_r	128	1320 / 1390
531.deepsjeng_r	128	488
541.leela_r	128	473
548.exchange2_r	128	1440
557.xz_r	128	304

SPECrate®2017_int_base (646)   SPECrate®2017_int_peak (670)

Hardware

CPU Name: Intel Xeon Platinum 8462Y+
 Max MHz: 4100
 Nominal: 2800
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
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: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 90 GB on tmpfs
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.24.81-default
Compiler: C/C++: Version 2024.0.2 of Intel oneAPI DPC++/C++
 Compiler for Linux;
 Fortran: Version 2024.0.2 of Intel Fortran
 Compiler for Linux;
Parallel: No
Firmware: Version 2.1.5 released Mar-2024
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 and OS 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
500.perlbench_r	128	**413**	**494**	412	494			128	375	544	**376**	**542**		
502.gcc_r	128	**356**	**510**	352	515			128	**287**	**631**	287	631		
505.mcf_r	128	198	1040	**199**	**1040**			128	198	1040	**199**	**1040**		
520.omnetpp_r	128	420	400	**421**	**399**			128	420	400	**421**	**399**		
523.xalancbmk_r	128	**149**	**909**	149	909			128	**149**	**909**	149	909		
525.x264_r	128	170	1320	**170**	**1320**			128	161	1390	**161**	**1390**		
531.deepsjeng_r	128	301	488	**301**	**488**			128	301	488	**301**	**488**		
541.leela_r	128	**448**	**473**	448	473			128	**448**	**473**	448	473		
548.exchange2_r	128	231	1450	**233**	**1440**			128	231	1450	**233**	**1440**		
557.xz_r	128	451	306	**454**	**304**			128	451	306	**454**	**304**		

SPECrate®2017_int_base =	**646**
SPECrate®2017_int_peak =	**670**

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-ic2024.0.2/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2024.0.2/lib/ia32:/mnt
    /ramdisk/cpu2017-1.1.9-ic2024.0.2/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 90 GB ramdisk created with the cmd: "mount -t tmpfs -o size=90G tmpfs /mnt/ramdisk"
```

Platform Notes

```
BIOS settings:
                 ADDDC Setting : Disabled
          DIMM Self Healing on
    Uncorrectable Memory Error : Disabled

      Virtualization Technology : Disabled
        DCU Streamer Prefetcher : Disabled
               Sub NUMA Cluster : 2-way Clustering
                   LLC Prefetch : Disabled
            Dead Line LLC Alloc : Disabled
                 Optimizer Mode : Enabled

                 System Profile : Custom
          CPU Power Management : Maximum Performance
                            C1E : Disabled
                       C States : Autonomous
            Memory Patrol Scrub : Disabled
        Energy Efficiency Policy : Performance
             PCI ASPM L1 Link
              Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.0.2/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on sut Fri Apr 12 06:30:30 2024

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 249 (249.16+suse.195.gb473c02cc0)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
```

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Platform Notes (Continued)

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

-----------------------------------------------------------
1. uname -a
  Linux sut 5.14.21-150400.24.81-default #1 SMP PREEMPT_DYNAMIC Tue Aug 8 14:10:43 UTC 2023 (90a74a8) x86_64
  x86_64 x86_64 GNU/Linux

-----------------------------------------------------------
2. w
  06:30:30 up  2:27,  1 user,  load average: 8.61, 74.25, 106.46
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1     -                04:35   22.00s  1.02s  0.00s /bin/bash
  /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define
  DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.0 --output_format html,pdf,txt --define
  DL-LQC=1

-----------------------------------------------------------
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) 4125953
  max locked memory       (kbytes, -l) 64
  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) 4125953
  virtual memory          (kbytes, -v) unlimited
  file locks                      (-x) unlimited

-----------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 30
 login -- root
 -bash
 /bin/bash ./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-BIOSinc=Dell-BIOS_Xeon-4.inc
   --define DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.0 --output_format html,pdf,txt
   --define DL-LQC=1
 /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc
   --define DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.0 --output_format html,pdf,txt
   --define DL-LQC=1
```

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Dell Inc.

PowerEdge R760 (Intel Xeon Platinum 8462Y+)

SPECrate®2017_int_base = 646

SPECrate®2017_int_peak = 670

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Hardware Availability: Apr-2023
Software Availability: Dec-2023

Platform Notes (Continued)

```
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
  ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=64 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak -o all --define DL-BIOS-SNC=2
  --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-LogProc=1 --define
  DL-BIOS-adddcD=1 --define DL-VERS=5.0 --output_format html,pdf,txt --define DL-LQC=1 intrate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --configfile
  ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=64 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --define
  DL-BIOS-SNC=2 --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-LogProc=1 --define
  DL-BIOS-adddcD=1 --define DL-VERS=5.0 --output_format html,pdf,txt --define DL-LQC=1 --nopower --runmode
  rate --tune base:peak --size 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-ic2024.0.2


--------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8462Y+
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 8
    microcode       : 0x2b000571
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
    cpu cores       : 32
    siblings        : 64
    2 physical ids (chips)
    128 processors (hardware threads)
    physical id 0: core ids 0-31
    physical id 1: core ids 0-31
    physical id 0: apicids 0-63
    physical id 1: apicids 128-191
  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 2.37.2:
  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):                    128
  On-line CPU(s) list:       0-127
  Vendor ID:                 GenuineIntel
  Model name:                Intel(R) Xeon(R) Platinum 8462Y+
  CPU family:                6
  Model:                     143
  Thread(s) per core:        2
  Core(s) per socket:        32
  Socket(s):                 2
  Stepping:                  8
  CPU max MHz:               4100.0000
  CPU min MHz:               800.0000
  BogoMIPS:                  5600.00
  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
```

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Platform Notes (Continued)

```
                                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 invpcid_single 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 split_lock_detect
                                avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts 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 avx512_fp16 amx_tile flush_l1d arch_capabilities
    L1d cache:                  3 MiB (64 instances)
    L1i cache:                  2 MiB (64 instances)
    L2 cache:                   128 MiB (64 instances)
    L3 cache:                   120 MiB (2 instances)
    NUMA node(s):               4
    NUMA node0 CPU(s):          0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,62,64,68,72,76,80,84,88,92,96
                                ,100,104,108,112,116,120,126
    NUMA node1 CPU(s):          2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,60,66,70,74,78,82,86,90,94,9
                                8,102,106,110,114,118,122,124
    NUMA node2 CPU(s):          1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97
                                ,101,105,109,113,117,121,125
    NUMA node3 CPU(s):          3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79,83,87,91,95,9
                                9,103,107,111,115,119,123,127
    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 Retbleed:            Not affected
    Vulnerability Spec rstack overflow: Not affected
    Vulnerability Spec store bypass:   Mitigation; Speculative Store Bypass disabled via prctl and seccomp
    Vulnerability Spectre v1:          Mitigation; usercopy/swapgs barriers and __user pointer sanitization
    Vulnerability Spectre v2:          Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-eIBRS
                                       SW sequence
    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      3M    12 Data             1    64       1         64
      L1i     32K      2M     8 Instruction      1    64       1         64
      L2       2M    128M    16 Unified          2  2048       1         64
      L3      60M    120M    15 Unified          3 65536       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:
    0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,62,64,68,72,76,80,84,88,92,96,100,104,108,112,116,120,126
    node 0 size: 257492 MB
    node 0 free: 249788 MB
    node 1 cpus:
    2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,60,66,70,74,78,82,86,90,94,98,102,106,110,114,118,122,124
    node 1 size: 258039 MB
    node 1 free: 251220 MB
```

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Platform Notes (Continued)

```
    node 2 cpus:
    1,5,9,13,17,21,25,29,33,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101,105,109,113,117,121,125
    node 2 size: 258039 MB
    node 2 free: 257074 MB
    node 3 cpus:
    3,7,11,15,19,23,27,31,35,39,43,47,51,55,59,63,67,71,75,79,83,87,91,95,99,103,107,111,115,119,123,127
    node 3 size: 257945 MB
    node 3 free: 256950 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:       1056273992 kB


    ------------------------------------------------------------
    10. who -r
      run-level 3 Apr 12 04:03


    ------------------------------------------------------------
    11. Systemd service manager version: systemd 249 (249.16+suse.195.gb473c02cc0)
      Default Target  Status
      multi-user      degraded


    ------------------------------------------------------------
    12. Failed units, from systemctl list-units --state=failed
        UNIT                             LOAD    ACTIVE SUB    DESCRIPTION
      * NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online
      * postfix.service                  loaded failed failed Postfix Mail Transport Agent
      * smartd.service                   loaded failed failed Self Monitoring and Reporting Technology (SMART)
      Daemon


    ------------------------------------------------------------
    13. Services, from systemctl list-unit-files
      STATE            UNIT FILES
      enabled          ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                       YaST2-Firstboot YaST2-Second-Stage auditd bluetooth cron display-manager getty@ haveged
                       irqbalance iscsi issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels
                       rollback rsyslog smartd sshd systemd-pstore tuned wpa_supplicant
      enabled-runtime  systemd-remount-fs
      disabled         accounts-daemon apparmor appstream-sync-cache autofs autoyast-initscripts blk-availability
                       bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd console-getty cups
                       cups-browsed debug-shell dmraid-activation dnsmasq ebtables exchange-bmc-os-info
                       fancontrol firewalld gpm grub2-once haveged-switch-root hwloc-dump-hwdata ipmi ipmievd
                       iscsi-init iscsid iscsiuio issue-add-ssh-keys kexec-load lm_sensors lunmask man-db-create
                       multipathd ndctl-monitor nfs nfs-blkmap nfs-server nfsserver nm-cloud-setup nmb
                       ostree-remount power-profiles-daemon rdisc rpcbind rpmconfigcheck rsyncd rtkit-daemon
                       serial-getty@ smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd svnserve
                       systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                       systemd-time-wait-sync systemd-timesyncd udisks2 upower wicked wickedd-auto4 wickedd-dhcp4
                       wickedd-dhcp6 wickedd-nanny wpa_supplicant@
      indirect         pcscd wickedd


    ------------------------------------------------------------
    14. Linux kernel boot-time arguments, from /proc/cmdline
      BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.24.81-default
```

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Platform Notes (Continued)

```
  root=UUID=1370a640-700c-4b25-a152-2c5f9290f614
  splash=silent
  mitigations=auto
  quiet
  security=apparmorpcie_aspm=force
  pcie_aspm.policy=powersave
  intel_pstate=passive


-------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 4.10 GHz and 4.10 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes


-------------------------------------------------------------
16. tuned-adm active
  Current active profile: throughput-performance


-------------------------------------------------------------
17. 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                    10
  vm.watermark_boost_factor        15000
  vm.watermark_scale_factor        10
  vm.zone_reclaim_mode             0


-------------------------------------------------------------
18. /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


-------------------------------------------------------------
19. /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
```

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Dell Inc.

PowerEdge R760 (Intel Xeon Platinum 8462Y+)

$SPECrate^{®}2017\_int\_base = 646$

$SPECrate^{®}2017\_int\_peak = 670$

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

Test Date: Apr-2024
Hardware Availability: Apr-2023
Software Availability: Dec-2023

Platform Notes (Continued)

```
   ----------------------------------------------------------
   20. OS release
     From /etc/*-release /etc/*-version
     os-release SUSE Linux Enterprise Server 15 SP4

   ----------------------------------------------------------
   21. Disk information
   SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2024.0.2
     Filesystem      Type   Size  Used Avail Use% Mounted on
     tmpfs           tmpfs  90G   5.7G   85G   7% /mnt/ramdisk

   ----------------------------------------------------------
   22. /sys/devices/virtual/dmi/id
       Vendor:         Dell Inc.
       Product:        PowerEdge R760
       Product Family: PowerEdge
       Serial:         SLR7604

   ----------------------------------------------------------
   23. 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 00CE00B300CE M321R8GA0BB0-CQKEG 64 GB 2 rank 4800
       14x 00CE069D00CE M321R8GA0BB0-CQKVG 64 GB 2 rank 4800


   ----------------------------------------------------------
   24. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:      Dell Inc.
     BIOS Version:     2.1.5
     BIOS Date:        03/14/2024
     BIOS Revision:    2.1
```

Compiler Version Notes

```
==========================================================================================================
C       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 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 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------------------


==========================================================================================================
C       | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.0.2 Build 20231213
```

(Continued on next page)

Dell Inc.

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Compiler Version Notes (Continued)

```
Copyright (C) 1985-2023 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 2024.0.2 Build 20231213
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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)
-----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------------------------

==============================================================================================
Fortran | 548.exchange2_r(base, peak)
-----------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------------------------
```

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`

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Dell Inc.

PowerEdge R760 (Intel Xeon Platinum 8462Y+)

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Software Availability: Dec-2023

Base Portability Flags (Continued)

557.xz_r: `-DSPEC_LP64`

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/2024.0/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/2024.0/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/2024.0/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`

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Dell Inc.

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Software Availability: Dec-2023

Peak Portability Flags (Continued)

531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

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/2024.0/lib -lqkmalloc`

502.gcc_r: `-m32 -L/opt/intel/oneapi/compiler/2024.0/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/2024.0/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`

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Dell Inc.

PowerEdge R760 (Intel Xeon Platinum 8462Y+)

SPECrate®2017_int_base = 646

SPECrate®2017_int_peak = 670

Peak Optimization Flags (Continued)

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-v1.6.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-v1.6.xml`

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

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