SPEC CPU®2017 Integer Rate Result

Dell Inc.

$SPECrate^{®}2017\_int\_base = 473$

PowerEdge R760 (Intel Xeon Gold 6442Y)

$SPECrate^{®}2017\_int\_peak = 489$
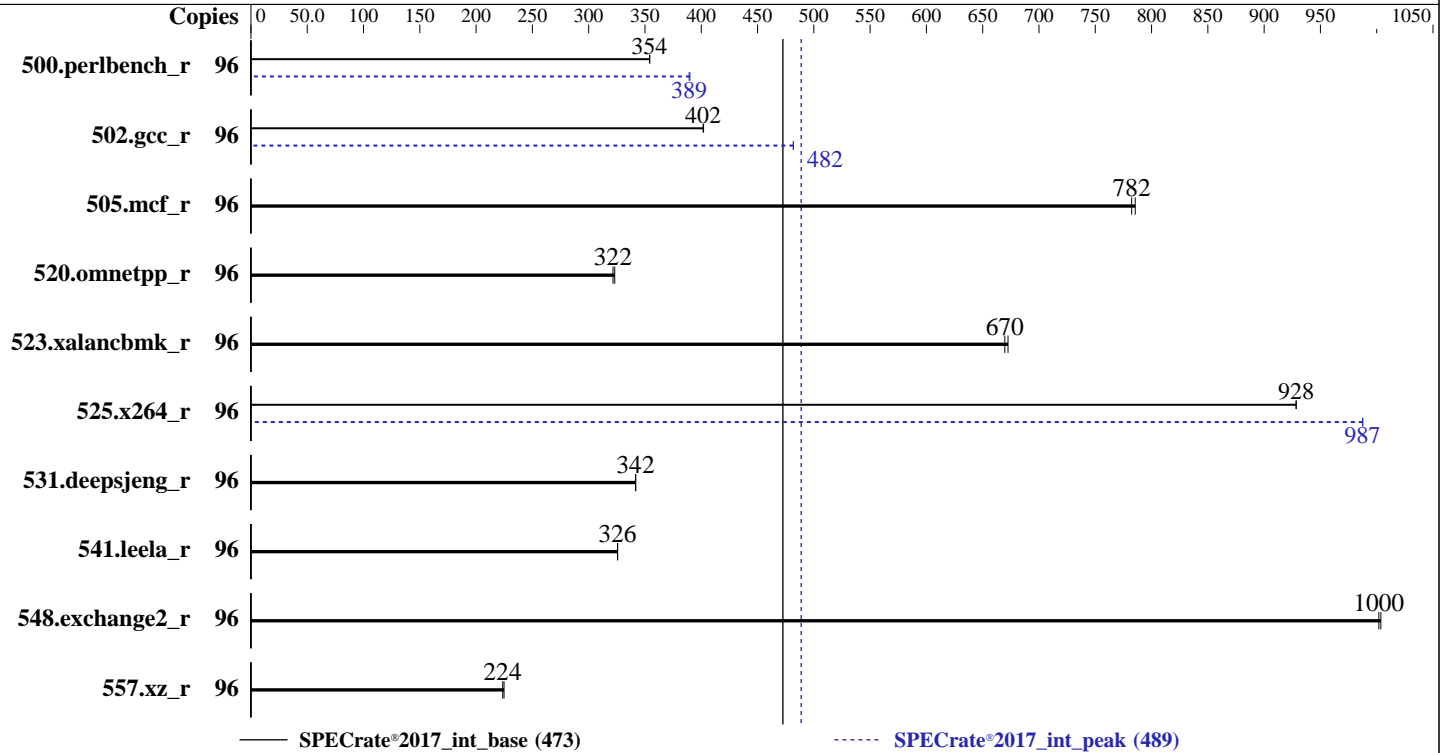
CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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

Copies		
500.perlbench_r	96	354 / 389
502.gcc_r	96	402 / 482
505.mcf_r	96	782
520.omnetpp_r	96	322
523.xalancbmk_r	96	670
525.x264_r	96	928 / 987
531.deepsjeng_r	96	342
541.leela_r	96	326
548.exchange2_r	96	1000
557.xz_r	96	224

SPECrate®2017_int_base (473) ———
SPECrate®2017_int_peak (489) - - - -

Hardware

CPU Name: Intel Xeon Gold 6442Y
 Max MHz: 4000
 Nominal: 2600
Enabled: 48 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: 70 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.

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	96	**432**	**354**	431	354			96	**393**	**389**	392	390		
502.gcc_r	96	**338**	**402**	338	402			96	**282**	**482**	282	482		
505.mcf_r	96	198	785	**198**	**782**			96	198	785	**198**	**782**		
520.omnetpp_r	96	**392**	**322**	390	323			96	**392**	**322**	390	323		
523.xalancbmk_r	96	151	673	**151**	**670**			96	151	673	**151**	**670**		
525.x264_r	96	**181**	**928**	181	929			96	**170**	**987**	170	988		
531.deepsjeng_r	96	322	342	**322**	**342**			96	322	342	**322**	**342**		
541.leela_r	96	488	326	**488**	**326**			96	488	326	**488**	**326**		
548.exchange2_r	96	251	1000	**251**	**1000**			96	251	1000	**251**	**1000**		
557.xz_r	96	**464**	**224**	461	225			96	**464**	**224**	461	225		
SPECrate®2017_int_base =	**473**													
SPECrate®2017_int_peak =	**489**													

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
```

(Continued on next page)

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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 70 GB ramdisk created with the cmd: "mount -t tmpfs -o size=70G 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 Thu Apr 11 07:56:50 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
```

(Continued on next page)

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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
    07:56:50 up  3:20,  1 user,  load average: 0.20, 1.72, 26.00
   USER      TTY       FROM              LOGIN@   IDLE   JCPU   PCPU WHAT
   root      tty1      -                 04:40   26.00s  1.10s  0.01s /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) 4126057
   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) 4126057
   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
```

(Continued on next page)

Dell Inc.

PowerEdge R760 (Intel Xeon Gold 6442Y)

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Platform Notes (Continued)

```
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=96 -c
    ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=48 --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=96 --configfile
    ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=48 --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) Gold 6442Y
    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       : 24
    siblings        : 48
    2 physical ids (chips)
    96 processors (hardware threads)
    physical id 0: core ids 0-23
    physical id 1: core ids 0-23
    physical id 0: apicids 0-47
    physical id 1: apicids 128-175
  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):                   96
  On-line CPU(s) list:      0-95
  Vendor ID:                GenuineIntel
  Model name:               Intel(R) Xeon(R) Gold 6442Y
  CPU family:               6
  Model:                    143
  Thread(s) per core:       2
  Core(s) per socket:       24
  Socket(s):                2
  Stepping:                 8
  CPU max MHz:              4000.0000
  CPU min MHz:              800.0000
  BogoMIPS:                 5200.00
  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
```

(Continued on next page)

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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:                  2.3 MiB (48 instances)
  L1i cache:                  1.5 MiB (48 instances)
  L2 cache:                   96 MiB (48 instances)
  L3 cache:                   120 MiB (2 instances)
  NUMA node(s):               4
  NUMA node0 CPU(s):          0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76,80,84,88,92
  NUMA node1 CPU(s):          2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90,94
  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
  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
  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     2.3M   12 Data             1     64       1             64
    L1i      32K     1.5M    8 Instruction      1     64       1             64
    L2        2M      96M   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: 0,4,8,12,16,20,24,28,32,36,40,44,48,52,56,60,64,68,72,76,80,84,88,92
  node 0 size: 257447 MB
  node 0 free: 252489 MB
  node 1 cpus: 2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90,94
  node 1 size: 258041 MB
  node 1 free: 249503 MB
  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
  node 2 size: 258041 MB
  node 2 free: 256412 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
  node 3 size: 258012 MB
  node 3 free: 256993 MB
```

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Platform Notes (Continued)

```
  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:       1056300720 kB

  --------------------------------------------------------
10. who -r
   run-level 3 Apr 11 04:37

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

(Continued on next page)

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Platform Notes (Continued)

```
----------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 800 MHz and 4.00 GHz.
                    The governor "ondemand" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes


----------------------------------------------------------------
16. tuned-adm active
  It seems that tuned daemon is not running, preset profile is not activated.
  Preset 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                    60
  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


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


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

(Continued on next page)

Dell Inc.

PowerEdge R760 (Intel Xeon Gold 6442Y)

SPECrate®2017_int_base = 473

SPECrate®2017_int_peak = 489

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)

```
 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   70G  5.7G   65G   9% /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)
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----------------------------------------------------------------------------------------------


==============================================================================================
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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Compiler Version Notes (Continued)

```
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Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------------------------

==================================================================================================
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`
557.xz_r: `-DSPEC_LP64`

SPEC CPU®2017 Integer Rate Result

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PowerEdge R760 (Intel Xeon Gold 6442Y)

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

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

SPEC CPU®2017 Integer Rate Result

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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/2024.0/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`

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

SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge R760 (Intel Xeon Gold 6442Y)

$SPECrate^{®}2017\_int\_base = 473$

$SPECrate^{®}2017\_int\_peak = 489$

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2024

Hardware Availability: Apr-2023

Software Availability: Dec-2023

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

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Tested with SPEC CPU®2017 v1.1.9 on 2024-04-11 08:56:49-0400.
Report generated on 2024-05-21 19:24:13 by CPU2017 PDF formatter v6716.
Originally published on 2024-05-21.