SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

$SPECrate^{®}2017\_int\_base = 395$

$SPECrate^{®}2017\_int\_peak = 406$
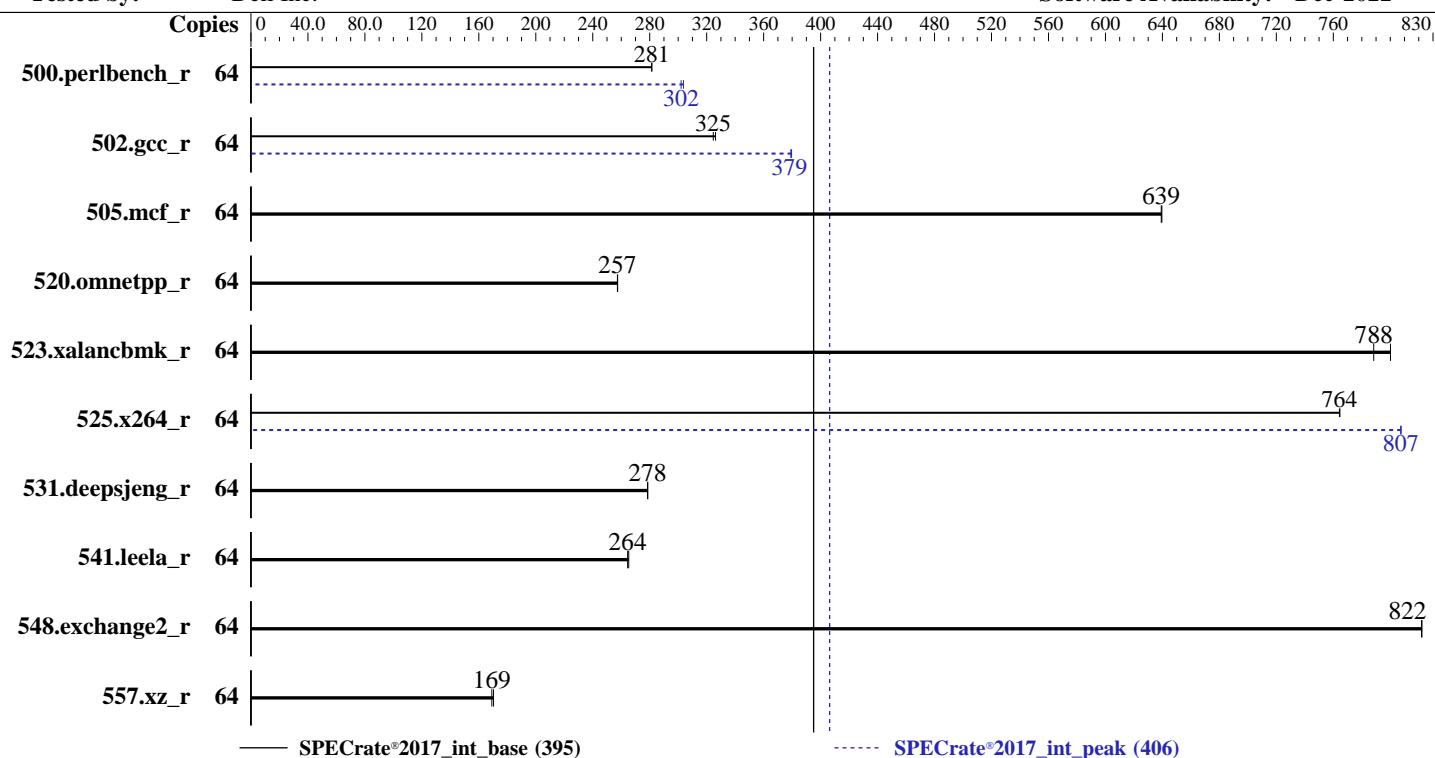
CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Benchmark	Copies	Base	Peak
500.perlbench_r	64	281	302
502.gcc_r	64	325	379
505.mcf_r	64	639	
520.omnetpp_r	64	257	
523.xalancbmk_r	64	788	
525.x264_r	64	764	807
531.deepsjeng_r	64	278	
541.leela_r	64	264	
548.exchange2_r	64	822	
557.xz_r	64	169	

SPECrate®2017_int_base (395)   SPECrate®2017_int_peak (406)

Hardware

CPU Name: Intel Xeon Gold 6434H
 Max MHz: 4100
 Nominal: 3700
Enabled: 32 cores, 4 chips, 2 threads/core
Orderable: 2,4 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 22.5 MB I+D on chip per chip
 Other: None
Memory: 2 TB (32 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 60 GB on tmpfs
Other: None

Software

OS: Red Hat Enterprise Linux 9.0 (Plow)
 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 1.4.0 released Mar-2023
File System: tmpfs
System State: Run level 5 (graphical 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.

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

$SPECrate®2017\_int\_base = 395$

$SPECrate®2017\_int\_peak = 406$

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	64	**362**	**281**	362	281			64	336	304	**337**	**302**		
502.gcc_r	64	278	326	**279**	**325**			64	**239**	**379**	239	380		
505.mcf_r	64	162	640	**162**	**639**			64	162	640	**162**	**639**		
520.omnetpp_r	64	326	257	**326**	**257**			64	326	257	**326**	**257**		
523.xalancbmk_r	64	**85.7**	**788**	84.5	800			64	**85.7**	**788**	84.5	800		
525.x264_r	64	147	765	**147**	**764**			64	139	808	**139**	**807**		
531.deepsjeng_r	64	**263**	**278**	263	279			64	**263**	**278**	263	279		
541.leela_r	64	400	265	**401**	**264**			64	400	265	**401**	**264**		
548.exchange2_r	64	204	822	**204**	**822**			64	204	822	**204**	**822**		
557.xz_r	64	**409**	**169**	406	170			64	**409**	**169**	406	170		
SPECrate®2017_int_base =		**395**												
SPECrate®2017_int_peak =		**406**												

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

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-ic2023.0/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2023.0/lib/ia32:/mnt/ram
    disk/cpu2017-1.1.9-ic2023.0/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

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

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.

Benchmark run from a 60 GB ramdisk created with the cmd: "mount -t tmpfs -o size=60G tmpfs /mnt/ramdisk"
```

Platform Notes

```
BIOS settings:
                   ADDDC Setting : Disabled
          DIMM Self Healing on
   Uncorrectable Memory Error : 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-ic2023.0/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Wed Mar 29 07:45:46 2023

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
```

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 250 (250-6.el9_0)
 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
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
    ------------------------------------------------------------

    ------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
   x86_64 x86_64 GNU/Linux

    ------------------------------------------------------------
 2. w
    07:45:46 up 3 min,  1 user,  load average: 0.47, 0.17, 0.06
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     :1         07:44   ?xdm?  56.93s  0.00s /usr/libexec/gdm-x-session --register-session --run-script
   gnome-session

    ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root

    ------------------------------------------------------------
 4. ulimit -a
   real-time non-blocking time  (microseconds, -R) unlimited
   core file size              (blocks, -c) 0
   data seg size               (kbytes, -d) unlimited
   scheduling priority              (-e) 0
   file size                   (blocks, -f) unlimited
   pending signals                  (-i) 8252286
   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) 8252286
   virtual memory              (kbytes, -v) unlimited
   file locks                       (-x) unlimited

    ------------------------------------------------------------
 5. sysinfo process ancestry
   /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
   /usr/lib/systemd/systemd --user
   /usr/libexec/gnome-terminal-server
   bash
   /bin/bash ./DELL_rate.sh
```

(Continued on next page)

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Mar-2023

Hardware Availability: May-2023

Software Availability: Dec-2022

Platform Notes (Continued)

```
  /bin/bash ./dell-run-main.sh rate
  /bin/bash ./dell-run-main.sh rate
  /bin/bash ./dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-adddcD=1
    --define DL-BIOS-SNC=2 --output_format csv,html,pdf,txt
  /bin/bash ./dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-adddcD=1
    --define DL-BIOS-SNC=2 --output_format csv,html,pdf,txt
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 -c
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=32 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 2 --define
    DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-adddcD=1 --define DL-BIOS-SNC=2 --output_format
    csv,html,pdf,txt intrate
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=64 --configfile
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=32 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 2
    --define DL-BIOSinc=Dell-BIOS_Xeon-4.inc --define DL-BIOS-adddcD=1 --define DL-BIOS-SNC=2 --output_format
    csv,html,pdf,txt --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-ic2023.0


  ----------------------------------------------------------
  6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) Gold 6434H
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 7
     microcode       : 0x2b0001b0
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 8
     siblings        : 16
     4 physical ids (chips)
     64 processors (hardware threads)
     physical id 0: core ids 0-7
     physical id 1: core ids 0-7
     physical id 2: core ids 0-7
     physical id 3: core ids 0-7
     physical id 0: apicids 0-15
     physical id 1: apicids 128-143
     physical id 2: apicids 256-271
     physical id 3: apicids 384-399
   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 2.37.4:
    Architecture:                 x86_64
    CPU op-mode(s):               32-bit, 64-bit
    Address sizes:                46 bits physical, 57 bits virtual
    Byte Order:                   Little Endian
    CPU(s):                       64
    On-line CPU(s) list:          0-63
    Vendor ID:                    GenuineIntel
    BIOS Vendor ID:               Intel
    Model name:                   Intel(R) Xeon(R) Gold 6434H
    BIOS Model name:              Intel(R) Xeon(R) Gold 6434H
    CPU family:                   6
    Model:                        143
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_int_base = 395

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
     Thread(s) per core:          2
     Core(s) per socket:          8
     Socket(s):                   4
     Stepping:                    7
     BogoMIPS:                    7400.00
     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
                                  invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                                  vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2
                                  erms invpcid 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
     Virtualization:              VT-x
     L1d cache:                   1.5 MiB (32 instances)
     L1i cache:                   1 MiB (32 instances)
     L2 cache:                    64 MiB (32 instances)
     L3 cache:                    90 MiB (4 instances)
     NUMA node(s):                8
     NUMA node0 CPU(s):           0,8,16,24,32,40,48,56
     NUMA node1 CPU(s):           4,12,20,28,36,44,52,60
     NUMA node2 CPU(s):           1,9,17,25,33,41,49,57
     NUMA node3 CPU(s):           5,13,21,29,37,45,53,61
     NUMA node4 CPU(s):           2,10,18,26,34,42,50,58
     NUMA node5 CPU(s):           6,14,22,30,38,46,54,62
     NUMA node6 CPU(s):           3,11,19,27,35,43,51,59
     NUMA node7 CPU(s):           7,15,23,31,39,47,55,63
     Vulnerability Itlb multihit: Not affected
     Vulnerability L1tf:          Not affected
     Vulnerability Mds:           Not affected
     Vulnerability Meltdown:      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 IBRS, IBPB conditional, RSB filling
     Vulnerability Srbds:         Not affected
     Vulnerability Tsx async abort:  Not affected

  From lscpu --cache:
       NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
       L1d      48K     1.5M   12 Data           1    64       1         64
       L1i      32K       1M    8 Instruction    1    64       1         64
       L2        2M      64M   16 Unified        2  2048       1         64
       L3     22.5M      90M   15 Unified        3 24576       1         64

  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 8 nodes (0-7)
    node 0 cpus: 0,8,16,24,32,40,48,56
    node 0 size: 256858 MB
    node 0 free: 250861 MB
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
   node 1 cpus: 4,12,20,28,36,44,52,60
   node 1 size: 258046 MB
   node 1 free: 255627 MB
   node 2 cpus: 1,9,17,25,33,41,49,57
   node 2 size: 258009 MB
   node 2 free: 257799 MB
   node 3 cpus: 5,13,21,29,37,45,53,61
   node 3 size: 258046 MB
   node 3 free: 257678 MB
   node 4 cpus: 2,10,18,26,34,42,50,58
   node 4 size: 258046 MB
   node 4 free: 257417 MB
   node 5 cpus: 6,14,22,30,38,46,54,62
   node 5 size: 258046 MB
   node 5 free: 257237 MB
   node 6 cpus: 3,11,19,27,35,43,51,59
   node 6 size: 258046 MB
   node 6 free: 257382 MB
   node 7 cpus: 7,15,23,31,39,47,55,63
   node 7 size: 258035 MB
   node 7 free: 256274 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  12  21  21  21  21  21  21
     1:  12  10  21  21  21  21  21  21
     2:  21  21  10  12  21  21  21  21
     3:  21  21  12  10  21  21  21  21
     4:  21  21  21  21  10  12  21  21
     5:  21  21  21  21  12  10  21  21
     6:  21  21  21  21  21  21  10  12
     7:  21  21  21  21  21  21  12  10


   ------------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       2112648448 kB


   ------------------------------------------------------------
   10. who -r
     run-level 5 Mar 29 07:42


   ------------------------------------------------------------
   11. Systemd service manager version: systemd 250 (250-6.el9_0)
     Default Target  Status
     graphical       running


   ------------------------------------------------------------
   12. Services, from systemctl list-unit-files
     STATE             UNIT FILES
     enabled           ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                       accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker gdm
                       getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors
                       low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
                       nvmefc-boot-connections ostree-remount pmcd pmie pmlogger power-profiles-daemon
                       qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon selinux-autorelabel-mark smartd
                       sshd sssd switcheroo-control sysstat systemd-network-generator udisks2 upower vgauthd
                       virtqemud vmtoolsd
     enabled-runtime   systemd-remount-fs
     disabled          arp-ethers autofs blk-availability brltty canberra-system-bootup canberra-system-shutdown
                       canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
                       dbus-daemon debug-shell dnsmasq dovecot fancontrol fcoe firewalld grafana-server gssproxy
```

(Continued on next page)

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
                httpd httpd@ ibacm iprdump iprinit iprupdate ipsec iscsid iscsiuio kpatch kvm_stat ledmon
                libvirt-guests libvirtd lldpad man-db-restart-cache-update named named-chroot nfs-blkmap
                nfs-server nftables nmb numad nvmf-autoconnect pmfind pmie_farm pmlogger_farm pmproxy
                podman podman-auto-update podman-restart postfix powertop psacct ras-mc-ctl rasdaemon
                rdisc rhcd rhsm rhsm-facts rpmdb-rebuild rrdcached saslauthd serial-getty@ smb snmpd
                snmptrapd spamassassin speech-dispatcherd srp_daemon srp_daemon_port@ sshd-keygen@
                systemd-boot-check-no-failures systemd-nspawn@ systemd-pstore systemd-sysext target
                targetclid tog-pegasus trace-cmd virtinterfaced virtnetworkd virtnodedevd virtnwfilterd
                virtproxyd virtsecretd virtstoraged vsftpd wpa_supplicant
  indirect      pcscd spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
                virtlockd virtlogd vsftpd@

----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
  root=/dev/mapper/rhel-root
  ro
  crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
  resume=/dev/mapper/rhel-swap
  rd.lvm.lv=rhel/root
  rd.lvm.lv=rhel/swap
  rhgb
  quiet

----------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 0:
    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
```

(Continued on next page)

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
  ----------------------------------------------------------------
  17. /sys/kernel/mm/transparent_hugepage/khugepaged
    alloc_sleep_millisecs   60000
    defrag                      1
    max_ptes_none             511
    max_ptes_shared           256
    max_ptes_swap              64
    pages_to_scan            4096
    scan_sleep_millisecs    10000

  ----------------------------------------------------------------
  18. OS release
    From /etc/*-release /etc/*-version
    os-release     Red Hat Enterprise Linux 9.0 (Plow)
    redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
    system-release Red Hat Enterprise Linux release 9.0 (Plow)

  ----------------------------------------------------------------
  19. Disk information
  SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2023.0
    Filesystem      Type   Size  Used Avail Use% Mounted on
    tmpfs           tmpfs  60G   4.2G  56G   7% /mnt/ramdisk

  ----------------------------------------------------------------
  20. /sys/devices/virtual/dmi/id
      Vendor:         Dell Inc.
      Product:        PowerEdge R860
      Product Family: PowerEdge
      Serial:         1234567

  ----------------------------------------------------------------
  21. dmidecode
    Additional information from dmidecode 3.3 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:
      32x 00AD00B300AD HMCG94MEBRA123N 64 GB 2 rank 4800


  ----------------------------------------------------------------
  22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:     Dell Inc.
    BIOS Version:    1.4.0
    BIOS Date:       03/15/2023
    BIOS Revision:   1.4
```

Compiler Version Notes

```
==================================================================================================
C       | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------


==================================================================================================
```

(Continued on next page)

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

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)
-------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------------------------


=================================================================================================
C        | 502.gcc_r(peak)
-------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------------------------


=================================================================================================
Fortran | 548.exchange2_r(base, peak)
-------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

SPEC CPU®2017 Integer Rate Result

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

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`

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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

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

Fortran benchmarks:
```
ifx
```

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

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`

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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin`
`-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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

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

Dell Inc.

PowerEdge R860 (Intel Xeon Gold 6434H)

SPECrate®2017_int_base = 395

SPECrate®2017_int_peak = 406

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

Test Date: Mar-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Peak Optimization Flags (Continued)

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-ic2023-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.3.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml`
`http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.3.xml`

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2023-03-29 07:45:45-0400.
Report generated on 2024-01-29 17:46:31 by CPU2017 PDF formatter v6716.
Originally published on 2023-05-23.