SPEC CPU®2017 Integer Speed Result

Dell Inc.

$SPECspeed®2017\_int\_base = 14.3$

PowerEdge C6620 (Intel Xeon Platinum 8468V)

$SPECspeed®2017\_int\_peak = 14.6$

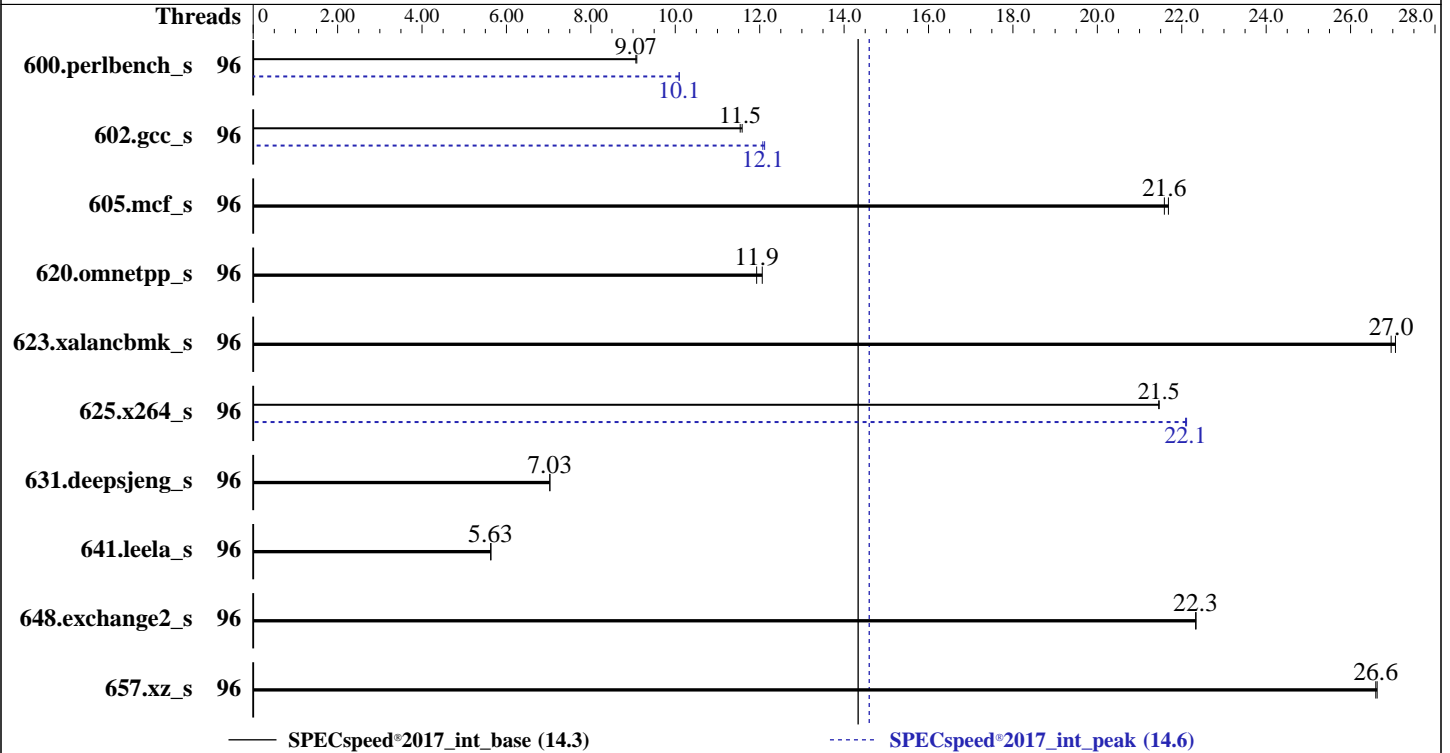|		
CPU2017 License: 6573	**Test Date:**	Jan-2023
Test Sponsor: Dell Inc.	**Hardware Availability:**	Feb-2023
Tested by: Dell Inc.	**Software Availability:**	May-2022

Threads

Benchmark	Threads	base	peak
600.perlbench_s	96	9.07	10.1
602.gcc_s	96	11.5	12.1
605.mcf_s	96	21.6	
620.omnetpp_s	96	11.9	
623.xalancbmk_s	96	27.0	
625.x264_s	96	21.5	22.1
631.deepsjeng_s	96	7.03	
641.leela_s	96	5.63	
648.exchange2_s	96	22.3	
657.xz_s	96	26.6	

SPECspeed®2017_int_base (14.3)   SPECspeed®2017_int_peak (14.6)

Hardware

CPU Name: Intel Xeon Platinum 8468V
 Max MHz: 3800
 Nominal: 2400
Enabled: 96 cores, 2 chips
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: 97.5 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 125 GB on tmpfs
Other: None

Software

OS: Red Hat Enterprise Linux 8.6 (Ootpa)
                       4.18.0-372.9.1.el8.x86_64
Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++
                       Compiler for Linux;
                       Fortran: Version 2022.1 of Intel Fortran Compiler
                       for Linux;
Parallel: Yes
Firmware: Version 0.3.1 released Nov-2022
File System: tmpfs
System State: Run level 5 (graphical multi-user)
Base Pointers: 64-bit
Peak Pointers: 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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CPU2017 License: 6573	**Test Date:** Jan-2023
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Results Table

Benchmark	Base Threads	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Threads	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
600.perlbench_s	96	**196**	**9.07**	195	9.09			96	**176**	**10.1**	176	10.1		
602.gcc_s	96	**345**	**11.5**	344	11.6			96	**330**	**12.1**	329	12.1		
605.mcf_s	96	**219**	**21.6**	218	21.7			96	**219**	**21.6**	218	21.7		
620.omnetpp_s	96	**137**	**11.9**	135	12.1			96	**137**	**11.9**	135	12.1		
623.xalancbmk_s	96	**52.6**	**27.0**	52.4	27.1			96	**52.6**	**27.0**	52.4	27.1		
625.x264_s	96	**82.2**	**21.5**	82.2	21.5			96	**79.9**	**22.1**	79.8	22.1		
631.deepsjeng_s	96	**204**	**7.03**	204	7.03			96	**204**	**7.03**	204	7.03		
641.leela_s	96	303	5.63	**303**	**5.63**			96	303	5.63	**303**	**5.63**		
648.exchange2_s	96	132	22.3	**132**	**22.3**			96	132	22.3	**132**	**22.3**		
657.xz_s	96	232	26.6	**232**	**26.6**			96	232	26.6	**232**	**26.6**		

SPECspeed®2017_int_base =	**14.3**
SPECspeed®2017_int_peak =	**14.6**

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.
```

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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH =
    "/mnt/ramdisk/cpu2017-1.1.9-ic2022.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2022.1/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
 Transparent Huge Pages enabled by default
```

(Continued on next page)

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SPECspeed®2017_int_base = 14.3

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General Notes (Continued)

```
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>         /proc/sys/vm/drop_caches
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 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"
```

Platform Notes

```
BIOS settings:
                   ADDDC Setting : Disabled
         DIMM Self Healing on
   Uncorrectable Memory Error : Disabled
    Virtualization Technology : Disabled
            Logical Processor : Disabled
             Sub NUMA Cluster : 2-way Clustering
               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-ic2022.1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on l Tue Jan 24 23:17:06 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
 8. numactl --hardware
 9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 239 (239-58.el8)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
```

(Continued on next page)

Dell Inc.

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CPU2017 License: 6573
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Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
 21. Disk information
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. BIOS
    -----------------------------------------------------------


    -----------------------------------------------------------
 1. uname -a
    Linux l 4.18.0-372.9.1.el8.x86_64 #1 SMP Fri Apr 15 22:12:19 EDT 2022 x86_64 x86_64 x86_64 GNU/Linux


    -----------------------------------------------------------
 2. w
     23:17:06 up 8 min,  1 user,  load average: 0.51, 1.05, 0.89
    USER      TTY        FROM              LOGIN@   IDLE   JCPU   PCPU WHAT
    donald   :1         :1                23:15   ?xdm?  13.43s  0.00s /usr/libexec/gdm-x-session
    --register-session --run-script gnome-session


    -----------------------------------------------------------
 3. Username
    From environment variable $USER:  root
    From the command 'logname':       donald


    -----------------------------------------------------------
 4. ulimit -a
    core file size          (blocks, -c) 0
    data seg size           (kbytes, -d) unlimited
    scheduling priority             (-e) 0
    file size               (blocks, -f) unlimited
    pending signals                 (-i) 4125049
    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) 4125049
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited

    -----------------------------------------------------------
 5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 18
    /usr/lib/systemd/systemd --user
    /usr/libexec/gnome-terminal-server
    bash
    sudo su
    su
    bash
    /bin/bash ./DELL_speed.sh
    /bin/bash ./dell-norun-main.sh speed
    /bin/bash ./dell-norun-main.sh speed
```

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Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```
  /bin/bash ./dell-norun-specspeed.sh --iterations 2 --output_format csv,html,pdf,txt --define
    Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc
  /bin/bash ./dell-norun-specspeed.sh --iterations 2 --output_format csv,html,pdf,txt --define
    Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2022.1-lin-core-avx512-speed-20220316.cfg --define cores=96 --tune base,peak -o all --define
    intspeedaffinity --define drop_caches --iterations 2 --output_format csv,html,pdf,txt --define
    Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc intspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
    ic2022.1-lin-core-avx512-speed-20220316.cfg --define cores=96 --tune base,peak --output_format all
    --define intspeedaffinity --define drop_caches --iterations 2 --output_format csv,html,pdf,txt --define
    Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --nopower --runmode speed --tune base:peak --size refspeed intspeed
    --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.intspeed.001.0.log --lognum 001.0
    --from_runcpu 2
  specperl $SPEC/bin/sysinfo
  $SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2022.1

    ------------------------------------------------------------
6. /proc/cpuinfo
    model name        : Intel(R) Xeon(R) Platinum 8468V
    vendor_id         : GenuineIntel
    cpu family        : 6
    model             : 143
    stepping          : 8
    microcode         : 0x2b000111
    bugs              : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores         : 48
    siblings          : 48
    2 physical ids (chips)
    96 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    physical id 0: apicids
    0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
    ,74,76,78,80,82,84,86,88,90,92,94
    physical id 1: apicids
    128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,1
    80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222
   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 2.32.1:
   Architecture:       x86_64
   CPU op-mode(s):     32-bit, 64-bit
   Byte Order:         Little Endian
   CPU(s):             96
   On-line CPU(s) list: 0-95
   Thread(s) per core: 1
   Core(s) per socket: 48
   Socket(s):          2
   NUMA node(s):       4
   Vendor ID:          GenuineIntel
   BIOS Vendor ID:     Intel
   CPU family:         6
   Model:              143
   Model name:         Intel(R) Xeon(R) Platinum 8468V
   BIOS Model name:    Intel(R) Xeon(R) Platinum 8468V
```

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CPU2017 License: 6573		**Test Date:**	Jan-2023
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Feb-2023
Tested by:	Dell Inc.	**Software Availability:**	May-2022

Platform Notes (Continued)

```
   Stepping:            8
   CPU MHz:             2400.000
   BogoMIPS:            4800.00
   L1d cache:           48K
   L1i cache:           32K
   L2 cache:            2048K
   L3 cache:            99840K
   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
   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 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
                        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


   -----------------------------------------------------------
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: 257238 MB
   node 0 free: 255166 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: 258042 MB
   node 1 free: 256580 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: 258000 MB
   node 2 free: 254610 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: 258039 MB
   node 3 free: 254576 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:       1056073492 kB


   -----------------------------------------------------------
10. who -r
   run-level 5 Jan 24 23:11


   -----------------------------------------------------------
11. Systemd service manager version: systemd 239 (239-58.el8)
   Default Target  Status
```

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Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```
    graphical       running


    -----------------------------------------------------------
12. Services, from systemctl list-unit-files
    STATE      UNIT FILES
    enabled    ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon
               atd auditd autovt@ avahi-daemon bluetooth chronyd crond cups display-manager firewalld gdm getty@
               import-state insights-client-boot irqbalance iscsi iscsi-onboot kdump ksm ksmtuned libstoragemgmt
               libvirtd loadmodules lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
               nvmefc-boot-connections ostree-remount qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon
               selinux-autorelabel-mark smartd sshd sssd syslog timedatex tuned udisks2 vdo vgauthd vmtoolsd
    disabled   arp-ethers blk-availability brltty canberra-system-bootup canberra-system-shutdown
               canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
               debug-shell dnsmasq ebtables gssproxy hwloc-dump-hwdata initial-setup
               initial-setup-reconfiguration iprdump iprinit iprupdate iscsid iscsiuio kpatch kvm_stat ledmon
               libvirt-guests man-db-restart-cache-update ndctl-monitor netcf-transaction nfs-blkmap nfs-convert
               nfs-server nftables numad nvmf-autoconnect oddjobd podman podman-auto-update podman-restart
               psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts saslauthd serial-getty@ speech-dispatcherd
               sshd-keygen@ switcheroo-control systemd-nspawn@ systemd-resolved tcsd upower virtinterfaced
               virtnetworkd virtnodedevd virtnwfilterd virtproxyd virtqemud virtsecretd virtstoraged
               wpa_supplicant
    indirect   spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo virtlockd
               virtlogd
    masked     systemd-timedated


    -----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=(hd0,gpt2)/vmlinuz-4.18.0-372.9.1.el8.x86_64
    root=/dev/mapper/rhel-root
    ro
    crashkernel=auto
    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. tuned-adm active
    Current active profile: throughput-performance


    -----------------------------------------------------------
16. sysctl
    kernel.numa_balancing              1
    kernel.randomize_va_space          2
    vm.compaction_proactiveness        0
    vm.dirty_background_bytes          0
    vm.dirty_background_ratio          10
    vm.dirty_bytes                     0
    vm.dirty_expire_centisecs          3000
    vm.dirty_ratio                     40
    vm.dirty_writeback_centisecs       500
```

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Test Date: Jan-2023
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Software Availability: May-2022

Platform Notes (Continued)

```
  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


  ------------------------------------------------------------
17. /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


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


  ------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 8.6 (Ootpa)
  redhat-release Red Hat Enterprise Linux release 8.6 (Ootpa)
  system-release Red Hat Enterprise Linux release 8.6 (Ootpa)


  ------------------------------------------------------------
20. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
  itlb_multihit       Not affected
  l1tf                Not affected
  mds                 Not affected
  meltdown            Not affected
  spec_store_bypass   Mitigation: Speculative Store Bypass disabled via prctl and seccomp
  spectre_v1          Mitigation: usercopy/swapgs barriers and __user pointer sanitization
  spectre_v2          Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
  srbds               Not affected
  tsx_async_abort     Not affected
For more information, see the Linux documentation on hardware vulnerabilities, for example
    https://www.kernel.org/doc/html/latest/admin-guide/hw-vuln/index.html


  ------------------------------------------------------------
21. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2022.1
  Filesystem     Type   Size  Used Avail Use% Mounted on
  tmpfs          tmpfs  125G  3.7G  122G   3% /mnt/ramdisk


  ------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
     Vendor:         Dell Inc.
     Product:        PowerEdge C6620
     Product Family: PowerEdge
     Serial:         SL6C201
```

(Continued on next page)

Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8468V)

$SPECspeed^{®}2017\_int\_base = 14.3$

$SPECspeed^{®}2017\_int\_peak = 14.6$

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```
     ------------------------------------------------------------
  23. 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:
      15x 002C00B3002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800
      1x 002C0632002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800


     ------------------------------------------------------------
  24. BIOS
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:        Dell Inc.
    BIOS Version:       0.3.1
    BIOS Date:          11/24/2022
    BIOS Revision:      0.3
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
         | 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
         | 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8468V)

SPECspeed®2017_int_base = 14.3

SPECspeed®2017_int_peak = 14.6

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: May-2022

Base Compiler Invocation (Continued)

Fortran benchmarks:
`ifx`

Base Portability Flags

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-DSPEC_LP64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
`icx`

(Continued on next page)

Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8468V)

SPECspeed®2017_int_base = 14.3

SPECspeed®2017_int_peak = 14.6

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: May-2022

Peak Compiler Invocation (Continued)

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Peak Portability Flags

`Same as Base Portability Flags`

Peak Optimization Flags

C benchmarks:

600.perlbench_s: `-m64 -std=c11 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX512 -O3`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP`
`-fno-strict-overflow -L/usr/local/jemalloc64-5.0.1/lib`
`-ljemalloc`

602.gcc_s: `-m64 -std=c11 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX512 -O3`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

605.mcf_s: `basepeak = yes`

625.x264_s: `-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP`
`-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s: `basepeak = yes`

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

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Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8468V)

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CPU2017 License: 6573
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Test Date: Jan-2023
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Software Availability: May-2022

Peak Optimization Flags (Continued)

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64-revB.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-ic2022-official-linux64-revB.xml`
`http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.3.xml`

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

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