SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8568Y+)

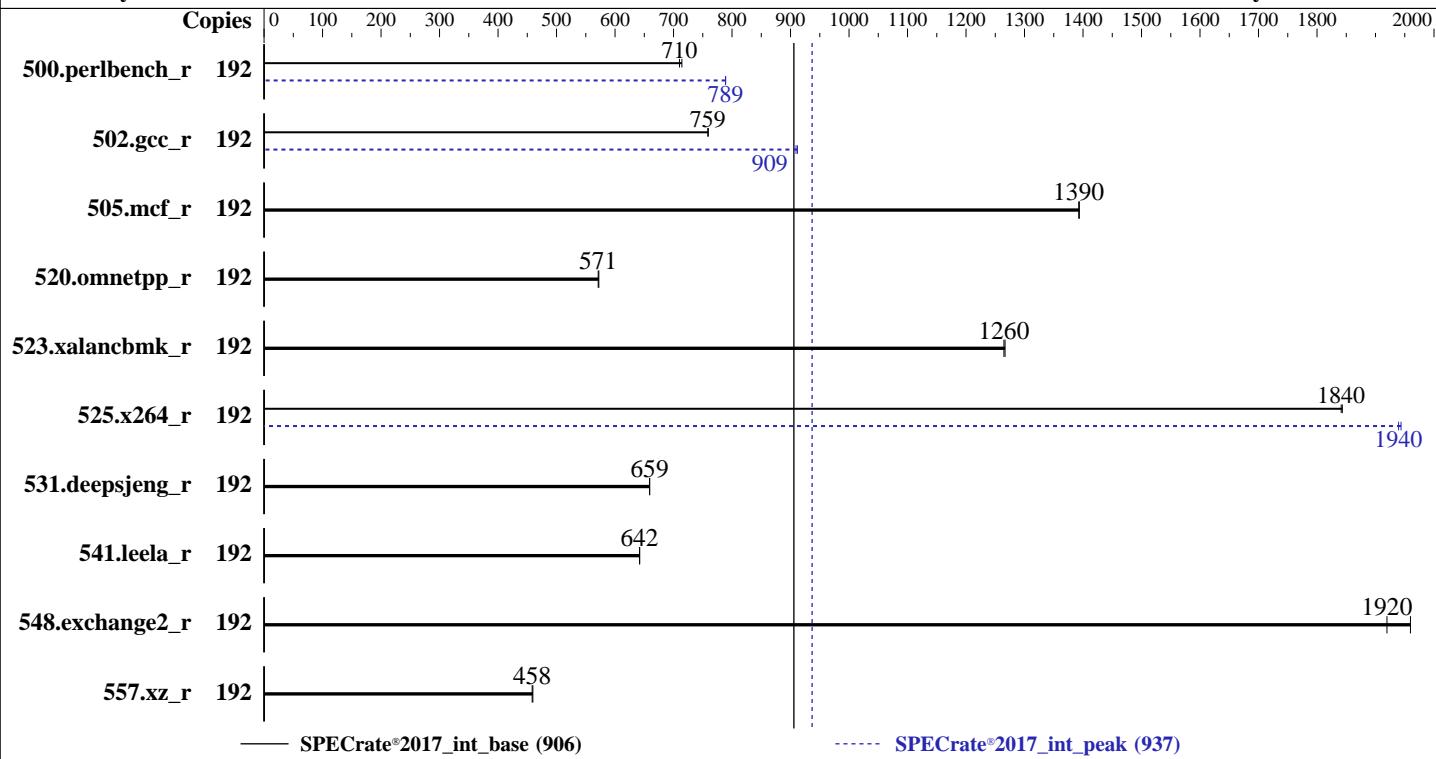$SPECrate^{®}2017\_int\_base = 906$

$SPECrate^{®}2017\_int\_peak = 937$

CPU2017 License: 6573	**Test Date:** Nov-2023
Test Sponsor: Dell Inc.	**Hardware Availability:** Feb-2024
Tested by: Dell Inc.	**Software Availability:** Dec-2023

Copies

Benchmark	Copies	Base	Peak
500.perlbench_r	192	710	789
502.gcc_r	192	759	909
505.mcf_r	192	1390	
520.omnetpp_r	192	571	
523.xalancbmk_r	192	1260	
525.x264_r	192	1840	1940
531.deepsjeng_r	192	659	
541.leela_r	192	642	
548.exchange2_r	192	1920	
557.xz_r	192	458	

SPECrate®2017_int_base (906)   SPECrate®2017_int_peak (937)

Hardware

CPU Name: Intel Xeon Platinum 8568Y+
 Max MHz: 4000
 Nominal: 2300
Enabled: 96 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: 300 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R)
Storage: 110 GB on tmpfs
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP5
5.14.21-150500.53-default
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 1.9.11 released Oct-2023
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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Results Table

Benchmark	Base						Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	192	**430**	**710**	428	714			192	387	789	**388**	**789**		
502.gcc_r	192	358	759	**358**	**759**			192	**299**	**909**	298	912		
505.mcf_r	192	**223**	**1390**	223	1390			192	**223**	**1390**	223	1390		
520.omnetpp_r	192	440	572	**441**	**571**			192	440	572	**441**	**571**		
523.xalancbmk_r	192	160	1270	**160**	**1260**			192	160	1270	**160**	**1260**		
525.x264_r	192	**183**	**1840**	182	1840			192	173	1940	**173**	**1940**		
531.deepsjeng_r	192	334	659	**334**	**659**			192	334	659	**334**	**659**		
541.leela_r	192	495	642	**495**	**642**			192	495	642	**495**	**642**		
548.exchange2_r	192	257	1960	**262**	**1920**			192	257	1960	**262**	**1920**		
557.xz_r	192	451	460	**452**	**458**			192	451	460	**452**	**458**		

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
    "/mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/lib/ia32:/mnt
    /ramdisk/cpu2017-1.1.9-ic2023.2.3/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>          /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

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Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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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 110 GB ramdisk created with the cmd: "mount -t tmpfs -o size=110G 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-ic2023.2.3/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Tue Nov 28 21:38:08 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 249 (249.16+suse.171.gdad0071f15)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
```

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Platform Notes (Continued)

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

-----------------------------------------------------------
1. uname -a
   Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)
   x86_64 x86_64 x86_64 GNU/Linux

-----------------------------------------------------------
2. w
   21:38:08 up 1 min,  1 user,  load average: 0.27, 0.12, 0.04
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                21:36   24.00s  0.88s  0.00s /bin/bash ./dell-run-speccpu.sh rate
   --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define
   DL-VERS=v4.8.4 --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) 4125971
   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) 4125971
   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 ./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-5.inc --define DL-BIOS-LogProc=1
     --define DL-BIOS-adddcD=1 --define DL-VERS=v4.8.4 --output_format html,pdf,txt --define DL-LQC=1
   /bin/bash ./dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-LogProc=1
     --define DL-BIOS-adddcD=1 --define DL-VERS=v4.8.4 --output_format html,pdf,txt --define DL-LQC=1
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
     ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=96 --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-5.inc --define DL-BIOS-LogProc=1 --define
```

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Platform Notes (Continued)

```
    DL-BIOS-adddcD=1 --define DL-VERS=v4.8.4 --output_format html,pdf,txt --define DL-LQC=1 intrate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 --configfile
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=96 --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-5.inc --define DL-BIOS-LogProc=1 --define
   DL-BIOS-adddcD=1 --define DL-VERS=v4.8.4 --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-ic2023.2.3

   ------------------------------------------------------------
6. /proc/cpuinfo
    model name      : INTEL(R) XEON(R) PLATINUM 8568Y+
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 207
    stepping        : 2
    microcode       : 0x210001a0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
    cpu cores       : 48
    siblings        : 96
    2 physical ids (chips)
    192 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    physical id 0: apicids 0-95
    physical id 1: apicids 128-223
  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):                  192
  On-line CPU(s) list:     0-191
  Vendor ID:               GenuineIntel
  Model name:              INTEL(R) XEON(R) PLATINUM 8568Y+
  CPU family:              6
  Model:                   207
  Thread(s) per core:      2
  Core(s) per socket:      48
  Socket(s):               2
  Stepping:                2
  BogoMIPS:                4600.00
  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 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
```

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Platform Notes (Continued)

```
                              xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                              cqm_mbm_local avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hfi
                              avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq
                              avx512_vnni avx512_bitalg 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:               4.5 MiB (96 instances)
     L1i cache:               3 MiB (96 instances)
     L2 cache:                192 MiB (96 instances)
     L3 cache:                600 MiB (2 instances)
     NUMA node(s):            4
     NUMA node0 CPU(s):       0,2,4,12,20,24,28,32,34,38,42,46,50,54,56,60,64,68,72,76,80,84,88,92,96,98
                              ,100,108,116,120,124,128,130,134,138,142,146,150,152,156,160,164,168,172,1
                              76,180,184,188
     NUMA node1 CPU(s):       6,8,10,14,16,18,22,26,30,36,40,44,48,52,58,62,66,70,74,78,82,86,90,94,102,
                              104,106,110,112,114,118,122,126,132,136,140,144,148,154,158,162,166,170,17
                              4,178,182,186,190
     NUMA node2 CPU(s):       1,3,13,17,21,27,29,33,37,39,43,47,49,53,57,59,63,67,71,77,83,87,89,93,97,9
                              9,109,113,117,123,125,129,133,135,139,143,145,149,153,155,159,163,167,173,
                              179,183,185,189
     NUMA node3 CPU(s):       5,7,9,11,15,19,23,25,31,35,41,45,51,55,61,65,69,73,75,79,81,85,91,95,101,1
                              03,105,107,111,115,119,121,127,131,137,141,147,151,157,161,165,169,171,175
                              ,177,181,187,191
     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 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     4.5M   12 Data          1      64     1           64
     L1i      32K       3M    8 Instruction   1      64     1           64
     L2        2M     192M   16 Unified       2    2048     1           64
     L3      300M     600M   20 Unified       3  245760     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:
     0,2,4,12,20,24,28,32,34,38,42,46,50,54,56,60,64,68,72,76,80,84,88,92,96,98,100,108,116,120,124,128,130,134,
     138,142,146,150,152,156,160,164,168,172,176,180,184,188
     node 0 size: 257488 MB
     node 0 free: 246329 MB
     node 1 cpus:
     6,8,10,14,16,18,22,26,30,36,40,44,48,52,58,62,66,70,74,78,82,86,90,94,102,104,106,110,112,114,118,122,126,1
     32,136,140,144,148,154,158,162,166,170,174,178,182,186,190
     node 1 size: 258001 MB
     node 1 free: 257506 MB
     node 2 cpus:
     1,3,13,17,21,27,29,33,37,39,43,47,49,53,57,59,63,67,71,77,83,87,89,93,97,99,109,113,117,123,125,129,133,135
     ,139,143,145,149,153,155,159,163,167,173,179,183,185,189
```

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Platform Notes (Continued)

```
     node 2 size: 258035 MB
     node 2 free: 257551 MB
     node 3 cpus:
     5,7,9,11,15,19,23,25,31,35,41,45,51,55,61,65,69,73,75,79,81,85,91,95,101,103,105,107,111,115,119,121,127,13
     1,137,141,147,151,157,161,165,169,171,175,177,181,187,191
     node 3 size: 257996 MB
     node 3 free: 257214 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:       1056279500 kB


    ----------------------------------------------------------
    10. who -r
       run-level 3 Nov 28 21:36


    ----------------------------------------------------------
    11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
       Default Target  Status
       multi-user      running


    ----------------------------------------------------------
    12. Services, from systemctl list-unit-files
       STATE            UNIT FILES
       enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager firewalld getty@
                        irqbalance issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections
                        postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore tuned wicked
                        wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
       enabled-runtime  systemd-remount-fs
       disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                        chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info gpm
                        grub2-once haveged haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load lunmask
                        man-db-create multipathd nfs nfs-blkmap nvmf-autoconnect rpcbind rpmconfigcheck rsyncd
                        serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
                        systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2
                        vncserver@
       indirect         wickedd


    ----------------------------------------------------------
    13. Linux kernel boot-time arguments, from /proc/cmdline
       BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
       root=UUID=a980d06c-c41f-4c9d-8603-80e11879418a
       splash=silent
       mitigations=auto
       quiet
       security=apparmor


    ----------------------------------------------------------
    14. cpupower frequency-info
       analyzing CPU 0:
         Unable to determine current policy
         boost state support:
           Supported: yes
           Active: yes
```

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Platform Notes (Continued)

```
----------------------------------------------------------------
15. tuned-adm active
  Current active profile: throughput-performance


----------------------------------------------------------------
16. sysctl
  kernel.numa_balancing              1
  kernel.randomize_va_space          2
  vm.compaction_proactiveness        20
  vm.dirty_background_bytes          0
  vm.dirty_background_ratio          10
  vm.dirty_bytes                     0
  vm.dirty_expire_centisecs          3000
  vm.dirty_ratio                     20
  vm.dirty_writeback_centisecs       500
  vm.dirtytime_expire_seconds        43200
  vm.extfrag_threshold               500
  vm.min_unmapped_ratio              1
  vm.nr_hugepages                    0
  vm.nr_hugepages_mempolicy          0
  vm.nr_overcommit_hugepages         0
  vm.swappiness                      10
  vm.watermark_boost_factor          15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode               0


----------------------------------------------------------------
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_shared         256
  max_ptes_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


----------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP5


----------------------------------------------------------------
20. Disk information
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3
  Filesystem      Type   Size  Used Avail Use% Mounted on
  tmpfs           tmpfs  110G  5.1G  105G   5% /mnt/ramdisk


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

(Continued on next page)

Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8568Y+)

SPECrate®2017_int_base = 906

SPECrate®2017_int_peak = 937

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

Test Date: Nov-2023
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Platform Notes (Continued)

```
     Serial:         SC662L1

  ------------------------------------------------------------
  22. 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:
     16x 00CE042300CE M321R8GA0PB0-CWMCH 64 GB 2 rank 5600


  ------------------------------------------------------------
  23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:        Dell Inc.
   BIOS Version:       1.9.11
   BIOS Date:          10/26/2023
   BIOS Revision:      1.9
```

Compiler Version Notes

```
==============================================================================
C       | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x
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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C       | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x
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 2023.2.3 Build x
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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

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Software Availability: Dec-2023

Compiler Version Notes (Continued)

```
==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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

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/home/specdev/new_compilers/ic2023.2.3/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

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Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-L/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-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`

Peak Optimization Flags

C benchmarks:

(Continued on next page)

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Peak Optimization Flags (Continued)

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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin`
`-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-ic2023p2-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.6.html`

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Test Sponsor: Dell Inc.		**Hardware Availability:**	Feb-2024
Tested by: Dell Inc.		**Software Availability:**	Dec-2023

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.6.xml

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

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