SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

$SPECrate^{®}2017\_int\_base = 628$

PowerEdge R760 (Intel Xeon Gold 6548Y+)
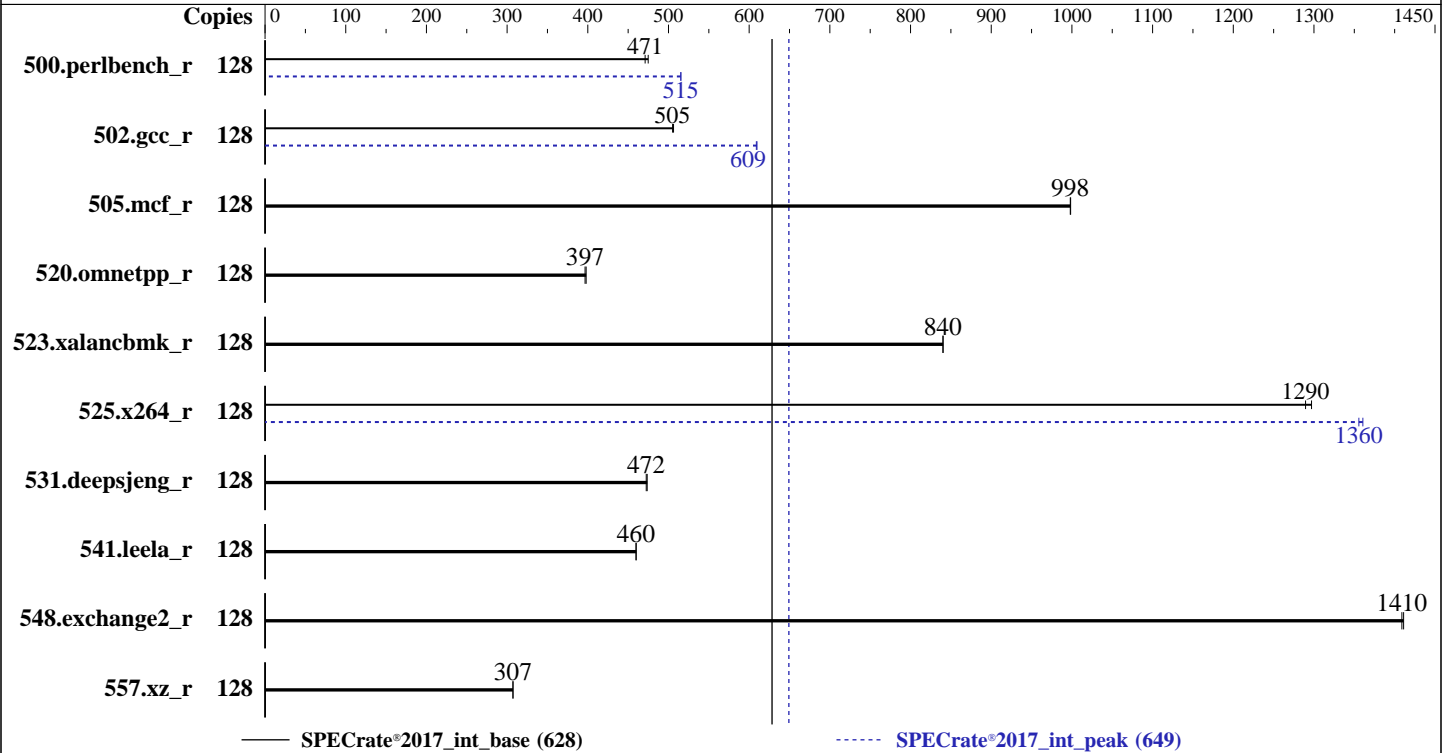
$SPECrate^{®}2017\_int\_peak = 649$

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

Copies

Benchmark	Copies	base	peak
500.perlbench_r	128	471	515
502.gcc_r	128	505	609
505.mcf_r	128	998	
520.omnetpp_r	128	397	
523.xalancbmk_r	128	840	
525.x264_r	128	1290	1360
531.deepsjeng_r	128	472	
541.leela_r	128	460	
548.exchange2_r	128	1410	
557.xz_r	128	307	

SPECrate®2017_int_base (628)   SPECrate®2017_int_peak (649)

Hardware

CPU Name: Intel Xeon Gold 6548Y+
 Max MHz: 4100
 Nominal: 2500
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 60 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R, running at 5200)
Storage: 80 GB on tmpfs
Other: CPU Cooling: Air

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 1.9.12 released Nov-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	128	429	475	**433**	**471**			128	**395**	**515**	395	515		
502.gcc_r	128	**359**	**505**	358	506			128	**298**	**609**	297	610		
505.mcf_r	128	**207**	**998**	207	998			128	**207**	**998**	207	998		
520.omnetpp_r	128	422	398	**423**	**397**			128	422	398	**423**	**397**		
523.xalancbmk_r	128	161	840	**161**	**840**			128	161	840	**161**	**840**		
525.x264_r	128	173	1300	**174**	**1290**			128	165	1360	**165**	**1360**		
531.deepsjeng_r	128	**311**	**472**	310	474			128	**311**	**472**	310	474		
541.leela_r	128	**461**	**460**	461	460			128	**461**	**460**	461	460		
548.exchange2_r	128	**238**	**1410**	238	1410			128	**238**	**1410**	238	1410		
557.xz_r	128	**450**	**307**	450	307			128	**450**	**307**	450	307		
SPECrate®2017_int_base =		628												
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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
```

(Continued on next page)

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General Notes (Continued)

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

Benchmark run from a 80 GB ramdisk created with the cmd: "mount -t tmpfs -o size=80G 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

                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
                Optimizer Mode : Enabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Mon Apr  1 07:26:33 2024

SUT (System Under Test) info as seen by some common utilities.

-----------------------------------------------------------
Table of contents
-----------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. sysctl
 15. /sys/kernel/mm/transparent_hugepage
 16. /sys/kernel/mm/transparent_hugepage/khugepaged
 17. OS release
```

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Platform Notes (Continued)

```
  18. Disk information
  19. /sys/devices/virtual/dmi/id
  20. dmidecode
  21. 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
     07:26:33 up 1 min,  1 user,  load average: 0.32, 0.15, 0.06
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                07:26   25.00s  0.84s  0.00s /bin/bash
    /home/DellFiles/bin/Intel/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=5.1 --output_format html,pdf,txt


  ----------------------------------------------------------
  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) 2059846
    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) 2059846
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited


  ----------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 29
   login -- root
   -bash
   /bin/bash ./DELL_rate.sh
   /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
   /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
   /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc
     --define DL-BIOS-LogProc=1 --define DL-BIOS-adddcD=1 --define DL-VERS=5.1 --output_format html,pdf,txt
   /bin/bash /home/DellFiles/bin/Intel/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=5.1 --output_format html,pdf,txt
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
     ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=64 --define physicalfirst
     --define invoke_with_interleave --define drop_caches --tune base,peak -o all --define DL-BIOS-SNC=2
     --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-LogProc=1 --define
     DL-BIOS-adddcD=1 --define DL-VERS=5.1 --output_format html,pdf,txt intrate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --configfile
```

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Platform Notes (Continued)

```
     ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=64 --define physicalfirst
     --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --define
     DL-BIOS-SNC=2 --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-LogProc=1 --define
     DL-BIOS-adddcD=1 --define DL-VERS=5.1 --output_format 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-ic2023.2.3


   ----------------------------------------------------------------
6. /proc/cpuinfo
     model name       : INTEL(R) XEON(R) GOLD 6548Y+
     vendor_id        : GenuineIntel
     cpu family       : 6
     model            : 207
     stepping         : 2
     microcode        : 0x210001b0
     bugs             : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
     cpu cores        : 32
     siblings         : 64
     2 physical ids (chips)
     128 processors (hardware threads)
     physical id 0: core ids 0-31
     physical id 1: core ids 0-31
     physical id 0: apicids 0-63
     physical id 1: apicids 128-191
   Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
   virtualized systems.  Use the above data carefully.


   ----------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.37.4:
  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):                128
  On-line CPU(s) list:   0-127
  Vendor ID:             GenuineIntel
  Model name:            INTEL(R) XEON(R) GOLD 6548Y+
  CPU family:            6
  Model:                 207
  Thread(s) per core:    2
  Core(s) per socket:    32
  Socket(s):             2
  Stepping:              2
  BogoMIPS:              5000.00
  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
                         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
```

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Platform Notes (Continued)

```
                         avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq
                         avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect
                         cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig
                         arch_lbr avx512_fp16 amx_tile flush_l1d arch_capabilities
  L1d cache:             3 MiB (64 instances)
  L1i cache:             2 MiB (64 instances)
  L2 cache:              128 MiB (64 instances)
  L3 cache:              120 MiB (2 instances)
  NUMA node(s):          4
  NUMA node0 CPU(s):     0,4,10,14,18,22,26,30,34,38,42,46,50,54,58,60,64,68,74,78,82,86,90,94,98,1
                         02,106,110,114,118,122,124
  NUMA node1 CPU(s):     2,6,8,12,16,20,24,28,32,36,40,44,48,52,56,62,66,70,72,76,80,84,88,92,96,10
                         0,104,108,112,116,120,126
  NUMA node2 CPU(s):     1,7,11,15,19,23,27,31,35,39,43,47,51,55,59,61,65,71,75,79,83,87,91,95,99,1
                         03,107,111,115,119,123,125
  NUMA node3 CPU(s):     3,5,9,13,17,21,25,29,33,37,41,45,49,53,57,63,67,69,73,77,81,85,89,93,97,10
                         1,105,109,113,117,121,127
  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       3M   12 Data             1     64        1             64
      L1i       32K       2M    8 Instruction      1     64        1             64
      L2         2M     128M   16 Unified          2   2048        1             64
      L3        60M     120M   15 Unified          3  65536        1             64

  -----------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 4 nodes (0-3)
    node 0 cpus:
    0,4,10,14,18,22,26,30,34,38,42,46,50,54,58,60,64,68,74,78,82,86,90,94,98,102,106,110,114,118,122,124
    node 0 size: 128396 MB
    node 0 free: 119606 MB
    node 1 cpus:
    2,6,8,12,16,20,24,28,32,36,40,44,48,52,56,62,66,70,72,76,80,84,88,92,96,100,104,108,112,116,120,126
    node 1 size: 129015 MB
    node 1 free: 128452 MB
    node 2 cpus:
    1,7,11,15,19,23,27,31,35,39,43,47,51,55,59,61,65,71,75,79,83,87,91,95,99,103,107,111,115,119,123,125
    node 2 size: 128981 MB
    node 2 free: 128523 MB
    node 3 cpus:
    3,5,9,13,17,21,25,29,33,37,41,45,49,53,57,63,67,69,73,77,81,85,89,93,97,101,105,109,113,117,121,127
    node 3 size: 128591 MB
    node 3 free: 128168 MB
    node distances:
    node   0   1   2   3
      0:  10  12  21  21
```

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Platform Notes (Continued)

```
     1:  12  10  21  21
     2:  21  21  10  12
     3:  21  21  12  10


   ------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       527344484 kB


   ------------------------------------------------------------
10. who -r
   run-level 3 Apr 1 07:25


   ------------------------------------------------------------
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         apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings kdump
                   kdump-early nvmefc-boot-connections postfix purge-kernels rollback sshd systemd-pstore
                   wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
   enabled-runtime systemd-remount-fs
   disabled        boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell ebtables
                   grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load lunmask nfs
                   nfs-blkmap nvmf-autoconnect rpcbind rpmconfigcheck rsyncd serial-getty@
                   systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                   systemd-time-wait-sync systemd-timesyncd
   indirect        wickedd


   ------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
   root=UUID=b8c6d51c-250a-4d03-852b-82b1db828fe3
   splash=silent
   mitigations=auto
   quiet
   security=apparmor
   crashkernel=386M,high
   crashkernel=72M,low


   ------------------------------------------------------------
14. 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
```

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Platform Notes (Continued)

```
  vm.watermark_boost_factor      15000
  vm.watermark_scale_factor         10
  vm.zone_reclaim_mode               0


  ----------------------------------------------------------
15. /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


  ----------------------------------------------------------
16. /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


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


  ----------------------------------------------------------
18. 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   80G  4.1G   76G   6% /mnt/ramdisk


  ----------------------------------------------------------
19. /sys/devices/virtual/dmi/id
    Vendor:         Dell Inc.
    Product:        PowerEdge R760
    Product Family: PowerEdge
    Serial:         SLR7601


  ----------------------------------------------------------
20. 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 00AD063200AD HMCG88AGBRA188N 32 GB 2 rank 5600, configured at 5200


  ----------------------------------------------------------
21. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:     Dell Inc.
  BIOS Version:    1.9.12
  BIOS Date:       11/10/2023
  BIOS Revision:   1.9
```

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Dell Inc.

PowerEdge R760 (Intel Xeon Gold 6548Y+)

SPECrate®2017_int_base = 628

SPECrate®2017_int_peak = 649

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Apr-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

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.
------------------------------------------------------------------------------


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

SPEC CPU®2017 Integer Rate Result

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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
-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
```

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

Dell Inc.

PowerEdge R760 (Intel Xeon Gold 6548Y+)

$SPECrate^{®}2017\_int\_base = 628$

$SPECrate^{®}2017\_int\_peak = 649$

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

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/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:

(Continued on next page)

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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-ic2023p2-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.6.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-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.

Tested with SPEC CPU®2017 v1.1.9 on 2024-04-01 07:26:32-0400.
Report generated on 2024-05-07 22:15:45 by CPU2017 PDF formatter v6716.
Originally published on 2024-05-07.