SPEC CPU®2017 Integer Rate Result

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Lenovo Global Technology

SPECrate®2017_int_base =   882

ThinkSystem SR650 V3
(2.00 GHz, Intel Xeon Platinum 8480CL)

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9017	**Test Date:** Oct-2023
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Nov-2023
Tested by: Lenovo Global Technology	**Software Availability:** May-2023

Copies

Benchmark	Copies	Result
500.perlbench_r	224	651
502.gcc_r	224	650
505.mcf_r	224	1290
520.omnetpp_r	224	522
523.xalancbmk_r	224	1530
525.x264_r	224	1780
531.deepsjeng_r	224	668
541.leela_r	224	649
548.exchange2_r	224	1960
557.xz_r	224	433

—— SPECrate®2017_int_base (882)

Hardware

CPU Name: Intel Xeon Platinum 8480CL
 Max MHz: 3800
 Nominal: 2000
Enabled: 112 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: 105 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.2 (Plow) (x86_64)
 Kernel 5.14.0-284.11.1.el9_2.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: Lenovo BIOS Version ESE117F 2.22 released Aug-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS set to prefer performance at the cost
 of additional power usage

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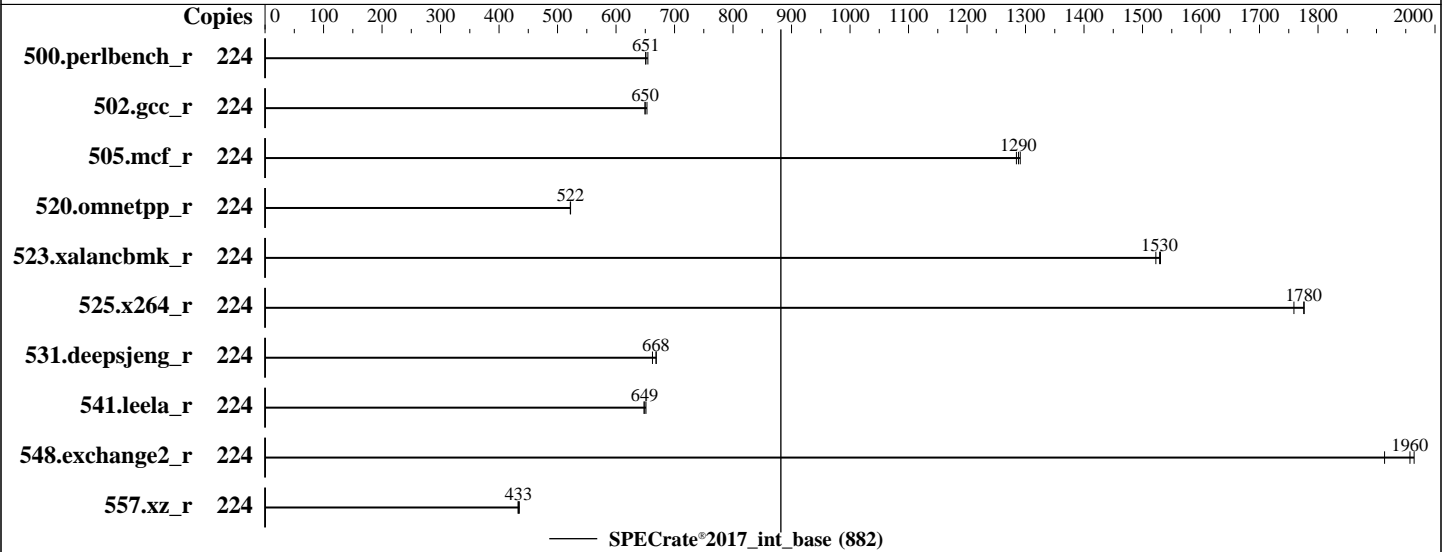
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	224	548	651	**548**	**651**	545	654							
502.gcc_r	224	**488**	**650**	488	650	486	653							
505.mcf_r	224	282	1280	280	1290	**281**	**1290**							
520.omnetpp_r	224	**563**	**522**	563	522	563	522							
523.xalancbmk_r	224	**155**	**1530**	155	1530	155	1520							
525.x264_r	224	221	1780	**221**	**1780**	223	1760							
531.deepsjeng_r	224	384	669	**384**	**668**	388	662							
541.leela_r	224	**572**	**649**	573	648	570	651							
548.exchange2_r	224	299	1960	**300**	**1960**	307	1910							
557.xz_r	224	559	432	557	435	**558**	**433**							
SPECrate®2017_int_base =	**882**													
SPECrate®2017_int_peak =	**Not Run**													

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 =
    "/home/cpu2017-1.1.9-ic2023.0-2/lib/intel64:/home/cpu2017-1.1.9-ic2023.0-2/lib/ia32:/home/cpu2017-1.1.
    9-ic2023.0-2/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

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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>
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.
```

Platform Notes

```
BIOS configuration:
Operating Mode set to Maximum Performance and then set it to Custom Mode
MONITOR/MWAIT set to Enabled
SNC set to SNC4
LLC Prefetch set to Disabled
DCU Streamer Prefetcher set to Disabled
UPI Link Disable set to Disabled 1 Link

 Sysinfo program /home/cpu2017-1.1.9-ic2023.0-2/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Thu Oct  5 21:41:21 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 252 (252-13.el9_2)
 12. Failed units, from systemctl list-units --state=failed
 13. Services, from systemctl list-unit-files
 14. Linux kernel boot-time arguments, from /proc/cmdline
 15. cpupower frequency-info
 16. tuned-adm active
 17. sysctl
 18. /sys/kernel/mm/transparent_hugepage
 19. /sys/kernel/mm/transparent_hugepage/khugepaged
 20. OS release
 21. Disk information
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. BIOS
 ----------------------------------------------------------
```

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

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Platform Notes (Continued)

```
    ----------------------------------------------------------
    1. uname -a
      Linux localhost.localdomain 5.14.0-284.11.1.el9_2.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Apr 12 10:45:03 EDT
      2023 x86_64 x86_64 x86_64 GNU/Linux

    ----------------------------------------------------------
    2. w
       21:41:21 up 3 min,  1 user,  load average: 0.33, 0.86, 0.43
      USER     TTY          LOGIN@   IDLE   JCPU   PCPU WHAT
      root     tty1         21:40    7.00s  1.13s  0.01s -bash

    ----------------------------------------------------------
    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) 2062459
      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) 2062459
      virtual memory              (kbytes, -v) unlimited
      file locks                        (-x) unlimited

    ----------------------------------------------------------
    5. sysinfo process ancestry
     /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
     login -- root
     -bash
     -bash
     runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 -c
       ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --define physicalfirst
       --define invoke_with_interleave --define drop_caches --tune base -o all intrate
     runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 --configfile
       ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --define physicalfirst
       --define invoke_with_interleave --define drop_caches --tune base --output_format all --nopower --runmode
       rate --tune base --size refrate intrate --nopreenv --note-preenv --logfile
       $SPEC/tmp/CPU2017.020/templogs/preenv.intrate.020.0.log --lognum 020.0 --from_runcpu 2
     specperl $SPEC/bin/sysinfo
     $SPEC = /home/cpu2017-1.1.9-ic2023.0-2

    ----------------------------------------------------------
    6. /proc/cpuinfo
        model name      : Intel(R) Xeon(R) Platinum 8480CL
        vendor_id       : GenuineIntel
        cpu family      : 6
        model           : 143
        stepping        : 7
```

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Platform Notes (Continued)

```
      microcode       : 0x2b0004b1
      bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
      cpu cores       : 56
      siblings        : 112
      2 physical ids (chips)
      224 processors (hardware threads)
      physical id 0: core ids 0-55
      physical id 1: core ids 0-55
      physical id 0: apicids 0-111
      physical id 1: apicids 128-239
   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):                    224
      On-line CPU(s) list:       0-223
      Vendor ID:                 GenuineIntel
      BIOS Vendor ID:            Intel(R) Corporation
      Model name:                Intel(R) Xeon(R) Platinum 8480CL
      BIOS Model name:           Intel(R) Xeon(R) Platinum 8480CL
      CPU family:                6
      Model:                     143
      Thread(s) per core:        2
      Core(s) per socket:        56
      Socket(s):                 2
      Stepping:                  7
      CPU max MHz:               3800.0000
      CPU min MHz:               800.0000
      BogoMIPS:                  4000.00
      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
                                 intel_ppin 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 ibt amx_bf16
                                 avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities
      L1d cache:                 5.3 MiB (112 instances)
      L1i cache:                 3.5 MiB (112 instances)
      L2 cache:                  224 MiB (112 instances)
      L3 cache:                  210 MiB (2 instances)
      NUMA node(s):              8
      NUMA node0 CPU(s):         0-13,112-125
      NUMA node1 CPU(s):         14-27,126-139
```

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Platform Notes (Continued)

```
  NUMA node2 CPU(s):           28-41,140-153
  NUMA node3 CPU(s):           42-55,154-167
  NUMA node4 CPU(s):           56-69,168-181
  NUMA node5 CPU(s):           70-83,182-195
  NUMA node6 CPU(s):           84-97,196-209
  NUMA node7 CPU(s):           98-111,210-223
  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
  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     5.3M   12 Data          1     64       1           64
      L1i      32K     3.5M    8 Instruction   1     64       1           64
      L2        2M     224M   16 Unified       2   2048       1           64
      L3      105M     210M   15 Unified       3 114688       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: 0-13,112-125
  node 0 size: 64169 MB
  node 0 free: 63651 MB
  node 1 cpus: 14-27,126-139
  node 1 size: 64505 MB
  node 1 free: 64178 MB
  node 2 cpus: 28-41,140-153
  node 2 size: 64505 MB
  node 2 free: 64214 MB
  node 3 cpus: 42-55,154-167
  node 3 size: 64505 MB
  node 3 free: 64002 MB
  node 4 cpus: 56-69,168-181
  node 4 size: 64505 MB
  node 4 free: 64183 MB
  node 5 cpus: 70-83,182-195
  node 5 size: 64505 MB
  node 5 free: 64148 MB
  node 6 cpus: 84-97,196-209
  node 6 size: 64466 MB
  node 6 free: 64008 MB
  node 7 cpus: 98-111,210-223
  node 7 size: 64491 MB
  node 7 free: 64161 MB
  node distances:
  node    0    1    2    3    4    5    6    7
    0:   10   12   12   12   21   21   21   21
    1:   12   10   12   12   21   21   21   21
    2:   12   12   10   12   21   21   21   21
    3:   12   12   12   10   21   21   21   21
```

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Platform Notes (Continued)

```
    4:  21  21  21  21  10  12  12  12
    5:  21  21  21  21  12  10  12  12
    6:  21  21  21  21  12  12  10  12
    7:  21  21  21  21  12  12  12  10


  -------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       528033004 kB


  -------------------------------------------------------------
10. who -r
  run-level 3 Oct 5 21:39


  -------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-13.el9_2)
  Default Target  Status
  multi-user      degraded


  -------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT                             LOAD   ACTIVE SUB    DESCRIPTION
  * NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online


  -------------------------------------------------------------
13. Services, from systemctl list-unit-files
   STATE           UNIT FILES
   enabled         NetworkManager NetworkManager-dispatcher NetworkManager-wait-online atd auditd bluetooth
                   chronyd crond dbus-broker firewalld getty@ insights-client-boot irqbalance iscsi
                   iscsi-onboot kdump libstoragemgmt low-memory-monitor lvm2-monitor mcelog mdmonitor
                   microcode multipathd nis-domainname nvmefc-boot-connections rhsmcertd rsyslog rtkit-daemon
                   selinux-autorelabel-mark smartd sshd sssd systemd-boot-update systemd-network-generator
                   tuned udisks2 upower
   enabled-runtime systemd-remount-fs
   disabled        arp-ethers blk-availability canberra-system-bootup canberra-system-shutdown
                   canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell
                   dnf-system-upgrade iprdump iprinit iprupdate iscsid iscsiuio kpatch kvm_stat ledmon
                   man-db-restart-cache-update nftables nvmf-autoconnect pesign psacct rdisc rhcd rhsm
                   rhsm-facts rpmdb-rebuild selinux-check-proper-disable serial-getty@ sshd-keygen@
                   systemd-boot-check-no-failures systemd-pstore systemd-sysext
   indirect        sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo systemd-sysupdate
                   systemd-sysupdate-reboot

  -------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=(hd3,gpt2)/vmlinuz-5.14.0-284.11.1.el9_2.x86_64
   root=/dev/mapper/rhel-root
   ro
   resume=/dev/mapper/rhel-swap
   rd.lvm.lv=rhel/root
   rd.lvm.lv=rhel/swap
   rhgb
   quiet

  -------------------------------------------------------------
15. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 3.80 GHz and 3.80 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
     boost state support:
```

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Platform Notes (Continued)

```
      Supported: yes
      Active: yes


   ----------------------------------------------------------
16. tuned-adm active
  Current active profile: throughput-performance


   ----------------------------------------------------------
17. sysctl
  kernel.numa_balancing            1
  kernel.randomize_va_space        2
  vm.compaction_proactiveness     20
  vm.dirty_background_bytes        0
  vm.dirty_background_ratio       10
  vm.dirty_bytes                   0
  vm.dirty_expire_centisecs     3000
  vm.dirty_ratio                  40
  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


   ----------------------------------------------------------
18. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force


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


   ----------------------------------------------------------
20. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 9.2 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.2 (Plow)
  system-release Red Hat Enterprise Linux release 9.2 (Plow)


   ----------------------------------------------------------
21. Disk information
SPEC is set to: /home/cpu2017-1.1.9-ic2023.0-2
  Filesystem            Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   819G   22G  797G   3% /home

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

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Platform Notes (Continued)

```
 22. /sys/devices/virtual/dmi/id
       Vendor:          Lenovo
       Product:         ThinkSystem SR650 V3 MB,EGS,DDR5,SH,2U
       Product Family:  ThinkSystem
       Serial:          1234567890


     ----------------------------------------------------------------
 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:
       8x Samsung M321R4GA3BB0-CQKEG 32 GB 2 rank 4800
       8x Samsung M321R4GA3BB0-CQKVG 32 GB 2 rank 4800


     ----------------------------------------------------------------
 24. BIOS
 (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:      Lenovo
       BIOS Version:     ESE117F-2.22
       BIOS Date:        08/29/2023
       BIOS Revision:    2.22
       Firmware Revision: 3.13
```

Compiler Version Notes

```
==============================================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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----------------------------------------------------------------------------------------------


==============================================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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----------------------------------------------------------------------------------------------


==============================================================================================
Fortran | 548.exchange2_r(base)
----------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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----------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
icx
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR650 V3
(2.00 GHz, Intel Xeon Platinum 8480CL)

SPECrate®2017_int_base = 882

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9017		**Test Date:**	Oct-2023
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Nov-2023
Tested by:	Lenovo Global Technology	**Software Availability:**	May-2023

Base Compiler Invocation (Continued)

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/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
```

SPEC CPU®2017 Integer Rate Result

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Lenovo Global Technology

ThinkSystem SR650 V3
(2.00 GHz, Intel Xeon Platinum 8480CL)

SPECrate®2017_int_base =   882

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Oct-2023
Hardware Availability: Nov-2023
Software Availability: May-2023

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-Z.html
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64_revB.2023-10-11.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-Z.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64_revB.2023-10-11.xml

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

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