SPEC CPU®2017 Integer Speed Result

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Lenovo Global Technology

$SPECspeed®2017\_int\_base = 14.1$

ThinkSystem SR950 V3
(2.90 GHz, Intel Xeon Platinum 8444H)

$SPECspeed®2017\_int\_peak = Not Run$

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

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

Threads — scale 0 to 30.0

Benchmark	Threads	Result
600.perlbench_s	256	9.47
602.gcc_s	256	11.9
605.mcf_s	256	22.7
620.omnetpp_s	256	11.3
623.xalancbmk_s	256	14.9
625.x264_s	256	22.1
631.deepsjeng_s	256	7.14
641.leela_s	256	6.02
648.exchange2_s	256	26.6
657.xz_s	256	29.5

——— SPECspeed®2017_int_base (14.1)

Hardware

CPU Name: Intel Xeon Platinum 8444H
 Max MHz: 4000
 Nominal: 2900
Enabled: 128 cores, 8 chips, 2 threads/core
Orderable: 8 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 45 MB I+D on chip per chip
 Other: None
Memory: 4 TB (64 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 480 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.2 (Plow)
 Kernel 5.14.0-284.11.1.el9_2.x86_64
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: Yes
Firmware: Lenovo BIOS Version EBE103M 1.10 released Oct-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
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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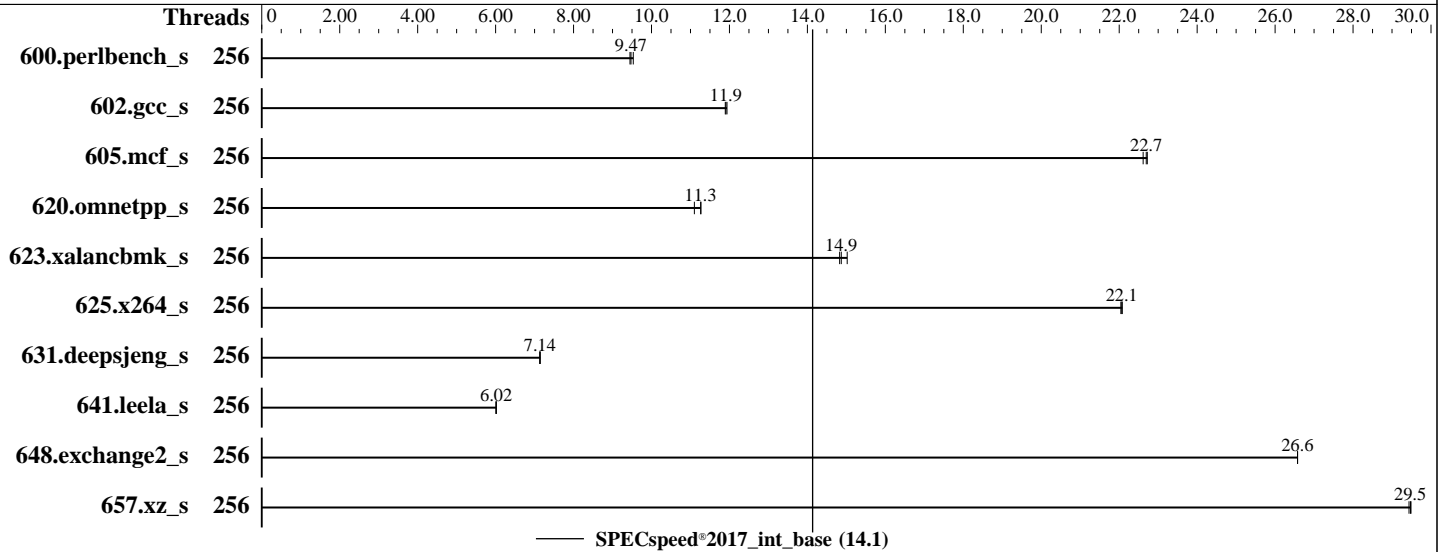$SPECspeed®2017_int_peak = $ Not Run

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	256	186	9.53	**187**	**9.47**	188	9.45							
602.gcc_s	256	334	11.9	335	11.9	**334**	**11.9**							
605.mcf_s	256	**208**	**22.7**	209	22.6	208	22.7							
620.omnetpp_s	256	**145**	**11.3**	147	11.1	145	11.3							
623.xalancbmk_s	256	94.3	15.0	**95.3**	**14.9**	95.6	14.8							
625.x264_s	256	**79.9**	**22.1**	79.9	22.1	80.0	22.0							
631.deepsjeng_s	256	**201**	**7.14**	201	7.14	201	7.13							
641.leela_s	256	284	6.01	**284**	**6.02**	284	6.02							
648.exchange2_s	256	111	26.6	111	26.6	**111**	**26.6**							
657.xz_s	256	210	29.5	210	29.4	**210**	**29.5**							
SPECspeed®2017_int_base =	**14.1**													
SPECspeed®2017_int_peak =	**Not Run**													

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

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 =
     "/home/cpu2017-1.1.9-ic2023.2.3/lib/intel64:/home/cpu2017-1.1.9-ic2023.2.3/lib/ia32:/home/cpu2017-1.1.
     9-ic2023.2.3/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
  Prior to runcpu invocation
  Filesystem page cache synced and cleared with:
  sync; echo 3>        /proc/sys/vm/drop_caches
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.
  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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Platform Notes

```
BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
C-States set to Legacy

 Sysinfo program /home/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Thu Nov 30 10:10:35 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. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 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.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
   10:10:36 up  8:19,  1 user,  load average: 6.23, 5.85, 3.44
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       01:52    8:16m  0.83s  0.00s /bin/bash ./speccpu_rock.sh


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

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Platform Notes (Continued)

```
  pending signals                      (-i) 16512580
  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) 16512580
  virtual memory            (kbytes, -v) unlimited
  file locks                           (-x) unlimited

    ----------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 31
 login -- root
 -bash
 /bin/bash ./speccpu_rock.sh
 /bin/bash ./speccpu_rock.sh
 runcpu --nobuild --action validate --define default-platform-flags -c
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base -o all --define
   intspeedaffinity --define smt-on --define drop_caches intspeed
 runcpu --nobuild --action validate --define default-platform-flags --configfile
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base --output_format all
   --define intspeedaffinity --define smt-on --define drop_caches --nopower --runmode speed --tune base
   --size refspeed intspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.029/templogs/preenv.intspeed.029.0.log --lognum 029.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017-1.1.9-ic2023.2.3

    ----------------------------------------------------------
6. /proc/cpuinfo
  model name         : Intel(R) Xeon(R) Platinum 8444H
  vendor_id          : GenuineIntel
  cpu family         : 6
  model              : 143
  stepping           : 8
  microcode          : 0x2b0004b1
  bugs               : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
  cpu cores          : 16
  siblings           : 32
  8 physical ids (chips)
  256 processors (hardware threads)
  physical id 0: core ids 0-15
  physical id 1: core ids 0-15
  physical id 2: core ids 0-15
  physical id 3: core ids 0-15
  physical id 4: core ids 0-15
  physical id 5: core ids 0-15
  physical id 6: core ids 0-15
  physical id 7: core ids 0-15
  physical id 0: apicids 0-31
  physical id 1: apicids 128-159
  physical id 2: apicids 256-287
  physical id 3: apicids 384-415
  physical id 4: apicids 512-543
  physical id 5: apicids 640-671
  physical id 6: apicids 768-799
  physical id 7: apicids 896-927
```

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Platform Notes (Continued)

```
    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):                      256
    On-line CPU(s) list:         0-255
    Vendor ID:                   GenuineIntel
    BIOS Vendor ID:              Intel(R) Corporation
    Model name:                  Intel(R) Xeon(R) Platinum 8444H
    BIOS Model name:             Intel(R) Xeon(R) Platinum 8444H
    CPU family:                  6
    Model:                       143
    Thread(s) per core:          2
    Core(s) per socket:          16
    Socket(s):                   8
    Stepping:                    8
    CPU max MHz:                 4000.0000
    CPU min MHz:                 800.0000
    BogoMIPS:                    5800.00
    Flags:                       fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                                 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                                 lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                                 nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                                 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1
                                 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
                                 lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3
                                 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced
                                 tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2
                                 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                                 avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                                 xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                 cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
                                 arat pln pts avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes
                                 vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid
                                 bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear serialize
                                 tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile amx_int8
                                 flush_l1d arch_capabilities
    Virtualization:              VT-x
    L1d cache:                   6 MiB (128 instances)
    L1i cache:                   4 MiB (128 instances)
    L2 cache:                    256 MiB (128 instances)
    L3 cache:                    360 MiB (8 instances)
    NUMA node(s):                8
    NUMA node0 CPU(s):           0-15,128-143
    NUMA node1 CPU(s):           16-31,144-159
    NUMA node2 CPU(s):           32-47,160-175
    NUMA node3 CPU(s):           48-63,176-191
    NUMA node4 CPU(s):           64-79,192-207
    NUMA node5 CPU(s):           80-95,208-223
    NUMA node6 CPU(s):           96-111,224-239
    NUMA node7 CPU(s):           112-127,240-255
    Vulnerability Itlb multihit: Not affected
    Vulnerability L1tf:          Not affected
```

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Platform Notes (Continued)

```
  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       6M  12 Data             1     64        1             64
      L1i       32K       4M   8 Instruction      1     64        1             64
      L2         2M     256M  16 Unified          2   2048        1             64
      L3        45M     360M  15 Unified          3  49152        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: 0-15,128-143
    node 0 size: 515578 MB
    node 0 free: 513480 MB
    node 1 cpus: 16-31,144-159
    node 1 size: 516088 MB
    node 1 free: 513728 MB
    node 2 cpus: 32-47,160-175
    node 2 size: 516088 MB
    node 2 free: 515594 MB
    node 3 cpus: 48-63,176-191
    node 3 size: 516088 MB
    node 3 free: 515623 MB
    node 4 cpus: 64-79,192-207
    node 4 size: 516088 MB
    node 4 free: 515654 MB
    node 5 cpus: 80-95,208-223
    node 5 size: 516088 MB
    node 5 free: 515632 MB
    node 6 cpus: 96-111,224-239
    node 6 size: 516088 MB
    node 6 free: 515154 MB
    node 7 cpus: 112-127,240-255
    node 7 size: 516074 MB
    node 7 free: 515625 MB
    node distances:
    node   0   1   2   3   4   5   6   7
      0:  10  21  21  31  31  21  21  31
      1:  21  10  31  21  21  31  31  21
      2:  21  31  10  21  21  31  31  21
      3:  31  21  21  10  31  21  21  31
      4:  31  21  21  31  10  21  21  31
      5:  21  31  31  21  21  10  31  21
      6:  21  31  31  21  21  31  10  21
      7:  31  21  21  31  31  21  21  10

  -------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:       4227261336 kB
```

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Platform Notes (Continued)

```
           ----------------------------------------------------------
           10. who -r
             run-level 3 Nov 30 01:51


           ----------------------------------------------------------
           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
             * dnf-makecache.service loaded failed failed dnf makecache


           ----------------------------------------------------------
           13. Services, from systemctl list-unit-files
             STATE             UNIT FILES
             enabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
                               dbus-broker firewalld getty@ insights-client-boot irqbalance kdump low-memory-monitor
                               mdmonitor microcode nis-domainname rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark
                               sshd sssd systemd-boot-update systemd-network-generator udisks2 upower
             enabled-runtime   systemd-remount-fs
             disabled          canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                               chrony-wait console-getty cpupower debug-shell dnf-system-upgrade kvm_stat
                               man-db-restart-cache-update nftables pesign 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=(hd1,gpt2)/boot/vmlinuz-5.14.0-284.11.1.el9_2.x86_64
             root=UUID=116409c2-57ac-4857-ace6-bb315b1769ff
             ro
             resume=UUID=075e4fda-52f2-4584-8323-c813820fb1bd


           ----------------------------------------------------------
           15. cpupower frequency-info
             analyzing CPU 0:
               current policy: frequency should be within 800 MHz and 4.00 GHz.
                               The governor "performance" may decide which speed to use
                               within this range.
             boost state support:
               Supported: yes
               Active: yes


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

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Platform Notes (Continued)

```
      vm.extfrag_threshold              500
      vm.min_unmapped_ratio               1
      vm.nr_hugepages                     0
      vm.nr_hugepages_mempolicy           0
      vm.nr_overcommit_hugepages          0
      vm.swappiness                      60
      vm.watermark_boost_factor       15000
      vm.watermark_scale_factor          10
      vm.zone_reclaim_mode                0


    ----------------------------------------------------------
    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     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)


    ----------------------------------------------------------
    20. Disk information
    SPEC is set to: /home/cpu2017-1.1.9-ic2023.2.3
      Filesystem      Type  Size  Used Avail Use% Mounted on
      /dev/sdb4       xfs   371G  235G  137G  64% /home


    ----------------------------------------------------------
    21. /sys/devices/virtual/dmi/id
        Vendor:         Lenovo
        Product:        ThinkSystem SR950 V3
        Product Family: ThinkSystem
        Serial:         BLRSDV044


    ----------------------------------------------------------
    22. 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:
        41x SK Hynix HMCG94AEBRA102N 64 GB 2 rank 4800
        14x SK Hynix HMCG94AEBRA109N 64 GB 2 rank 4800
         9x SK Hynix HMCG94AEBRA123N 64 GB 2 rank 4800


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

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Platform Notes (Continued)

```
   23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       Lenovo
     BIOS Version:      EBE103M-1.10
     BIOS Date:         10/10/2023
     BIOS Revision:     1.10
     Firmware Revision: 1.10
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)
------------------------------------------------------------------------------
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++      | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base)
------------------------------------------------------------------------------
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

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`

(Continued on next page)

https://www.spec.org/

Lenovo Global Technology

ThinkSystem SR950 V3
(2.90 GHz, Intel Xeon Platinum 8444H)

SPECspeed®2017_int_base = 14.1

SPECspeed®2017_int_peak = Not Run

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

Base Portability Flags (Continued)

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:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -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:
```
-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/jemalloc64-5.0.1/lib -ljemalloc
```

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
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

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-AA.html
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.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-AA.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.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 2023-11-29 21:10:35-0500.
Report generated on 2023-12-20 13:12:38 by CPU2017 PDF formatter v6716.
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