SPEC CPU®2017 Floating Point Rate Result

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Lenovo Global Technology

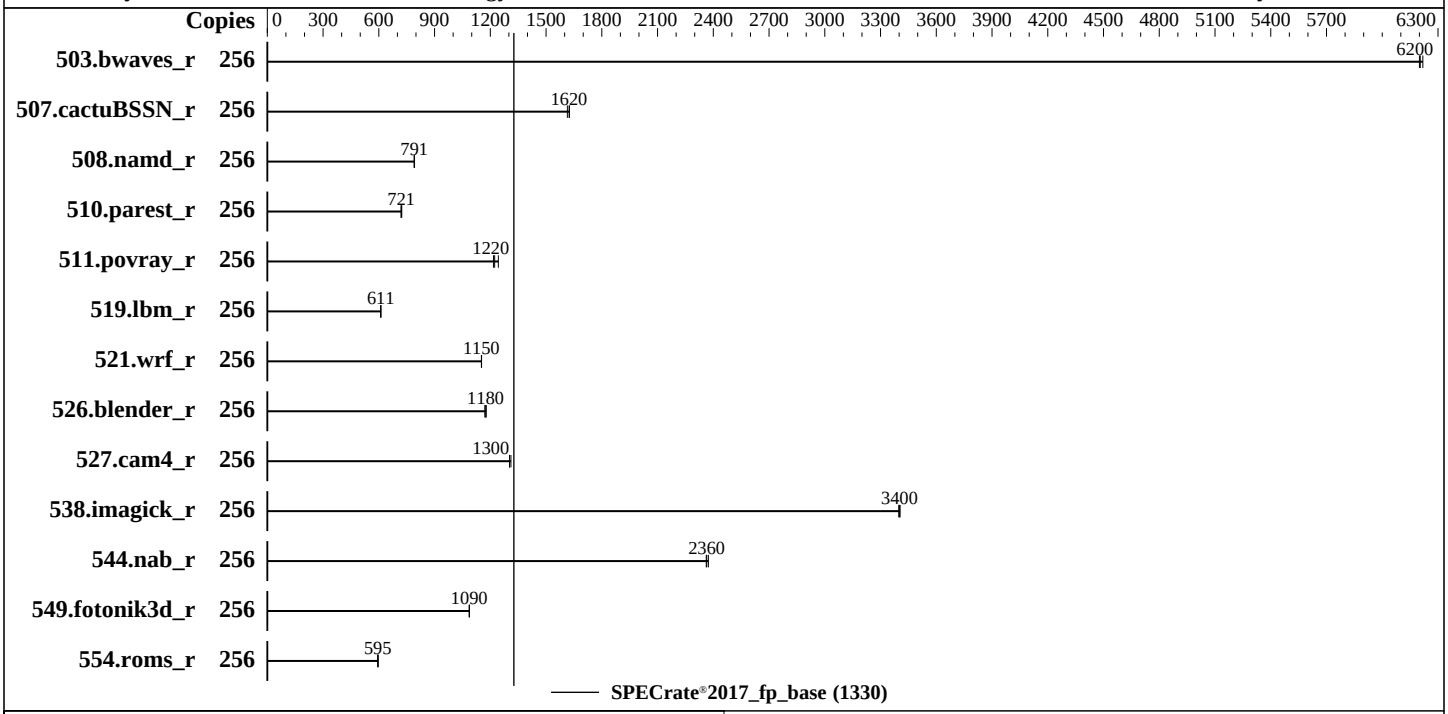
ThinkSystem SR850 V3
(2.10 GHz, Intel Xeon Platinum 8454H)

SPECrate®2017_fp_base = 1330

SPECrate®2017_fp_peak = Not Run

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

Test Date: Aug-2023
Hardware Availability: Jun-2023
Software Availability: Dec-2022



Hardware

CPU Name:	Intel Xeon Platinum 8454H
Max MHz:	3400
Nominal:	2100
Enabled:	128 cores, 4 chips, 2 threads/core
Orderable:	2,4 chips
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	82.5 MB I+D on chip per chip
Other:	None
Memory:	2 TB (32 x 64 GB 2Rx4 PC5-4800B-R)
Storage:	1 x 960 GB M.2 NVME SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux 9.1 (Plow) (x86_64) Kernel 5.14.0-162.6.1.el9_1.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 RSE105E 1.10 released May-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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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	256	413	6220	414	6200	**414**	**6200**							
507.cactuBSSN_r	256	199	1630	**200**	**1620**	201	1610							
508.namd_r	256	307	792	308	790	**307**	**791**							
510.parest_r	256	931	719	926	724	**928**	**721**							
511.povray_r	256	481	1240	491	1220	**489**	**1220**							
519.lbm_r	256	**442**	**611**	442	611	442	610							
521.wrf_r	256	497	1150	**498**	**1150**	498	1150							
526.blender_r	256	**332**	**1180**	333	1170	331	1180							
527.cam4_r	256	342	1310	344	1300	**344**	**1300**							
538.imagick_r	256	**187**	**3400**	187	3410	187	3400							
544.nab_r	256	182	2370	**182**	**2360**	182	2360							
549.fotonik3d_r	256	917	1090	918	1090	**918**	**1090**							
554.roms_r	256	684	595	682	596	**684**	**595**							

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SPECrate®2017_fp_peak = Not Run

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 = "/home/cpu2017-1.1.9-ic2023.0/lib/intel64:/home/cpu2017-1.1.9-ic2023.0/je5.0.1-64"
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>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
```

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General Notes (Continued)

```
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
```

Platform Notes

```
BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
C-States set to Legacy
DCU Streamer Prefetcher set to Disabled
LLC Prefetch set to Disabled
AMP Prefetch set to Enable
SNC set to SNC4

 Sysinfo program /home/cpu2017-1.1.9-ic2023.0/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Thu Aug 24 15:02:01 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 250 (250-12.el9_1)
 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 5.14.0-162.6.1.el9_1.x86_64 #1 SMP PREEMPT_DYNAMIC Fri Sep 30 07:36:03 EDT 2022
   x86_64 x86_64 x86_64 GNU/Linux

 ------------------------------------------------------------
 2. w
```

(Continued on next page)

Platform Notes (Continued)

```
   15:02:01 up 2 min,  1 user,  load average: 0.10, 0.09, 0.03
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1      15:00    7.00s  1.03s  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) 8255547
  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) 8255547
  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
 -bash
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=128 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base -o all fprate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=256 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=128 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base --output_format all --nopower --runmode
   rate --tune base --size refrate fprate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.108/templogs/preenv.fprate.108.0.log --lognum 108.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-ic2023.0

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8454H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 8
    microcode       : 0x2b0001b0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
    cpu cores       : 32
    siblings        : 64
    4 physical ids (chips)
    256 processors (hardware threads)
    physical id 0: core ids 0-31
    physical id 1: core ids 0-31
```

(Continued on next page)

Platform Notes (Continued)

```
     physical id 2: core ids 0-31
     physical id 3: core ids 0-31
     physical id 0: apicids 0-63
     physical id 1: apicids 128-191
     physical id 2: apicids 256-319
     physical id 3: apicids 384-447
   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 8454H
   BIOS Model name:                 Intel(R) Xeon(R) Platinum 8454H
   CPU family:                      6
   Model:                           143
   Thread(s) per core:              2
   Core(s) per socket:              32
   Socket(s):                       4
   Stepping:                        8
   BogoMIPS:                        4200.00
   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 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:                        330 MiB (4 instances)
   NUMA node(s):                    16
   NUMA node0 CPU(s):               0-7,128-135
   NUMA node1 CPU(s):               8-15,136-143
   NUMA node2 CPU(s):               16-23,144-151
   NUMA node3 CPU(s):               24-31,152-159
   NUMA node4 CPU(s):               32-39,160-167
   NUMA node5 CPU(s):               40-47,168-175
```

(Continued on next page)

Platform Notes (Continued)

```
  NUMA node6 CPU(s):                48-55,176-183
  NUMA node7 CPU(s):                56-63,184-191
  NUMA node8 CPU(s):                64-71,192-199
  NUMA node9 CPU(s):                72-79,200-207
  NUMA node10 CPU(s):               80-87,208-215
  NUMA node11 CPU(s):               88-95,216-223
  NUMA node12 CPU(s):               96-103,224-231
  NUMA node13 CPU(s):               104-111,232-239
  NUMA node14 CPU(s):               112-119,240-247
  NUMA node15 CPU(s):               120-127,248-255
  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       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      82.5M     330M   15 Unified         3 90112        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 16 nodes (0-15)
  node 0 cpus: 0-7,128-135
  node 0 size: 128681 MB
  node 0 free: 128249 MB
  node 1 cpus: 8-15,136-143
  node 1 size: 129020 MB
  node 1 free: 128721 MB
  node 2 cpus: 16-23,144-151
  node 2 size: 128981 MB
  node 2 free: 128600 MB
  node 3 cpus: 24-31,152-159
  node 3 size: 129020 MB
  node 3 free: 128692 MB
  node 4 cpus: 32-39,160-167
  node 4 size: 129020 MB
  node 4 free: 128396 MB
  node 5 cpus: 40-47,168-175
  node 5 size: 129020 MB
  node 5 free: 128642 MB
  node 6 cpus: 48-55,176-183
  node 6 size: 129020 MB
  node 6 free: 128645 MB
  node 7 cpus: 56-63,184-191
  node 7 size: 129020 MB
  node 7 free: 128635 MB
  node 8 cpus: 64-71,192-199
  node 8 size: 129020 MB
```

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Platform Notes (Continued)

```
  node 8 free: 128625 MB
  node 9 cpus: 72-79,200-207
  node 9 size: 129020 MB
  node 9 free: 128708 MB
  node 10 cpus: 80-87,208-215
  node 10 size: 129020 MB
  node 10 free: 128667 MB
  node 11 cpus: 88-95,216-223
  node 11 size: 129020 MB
  node 11 free: 128598 MB
  node 12 cpus: 96-103,224-231
  node 12 size: 129020 MB
  node 12 free: 128715 MB
  node 13 cpus: 104-111,232-239
  node 13 size: 129020 MB
  node 13 free: 128708 MB
  node 14 cpus: 112-119,240-247
  node 14 size: 129020 MB
  node 14 free: 128740 MB
  node 15 cpus: 120-127,248-255
  node 15 size: 128998 MB
  node 15 free: 128650 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
    0:  10  12  12  12  21  21  21  21  21  21  21  21  21  21  21  21
    1:  12  10  12  12  21  21  21  21  21  21  21  21  21  21  21  21
    2:  12  12  10  12  21  21  21  21  21  21  21  21  21  21  21  21
    3:  12  12  12  10  21  21  21  21  21  21  21  21  21  21  21  21
    4:  21  21  21  21  10  12  12  12  21  21  21  21  21  21  21  21
    5:  21  21  21  21  12  10  12  12  21  21  21  21  21  21  21  21
    6:  21  21  21  21  12  12  10  12  21  21  21  21  21  21  21  21
    7:  21  21  21  21  12  12  12  10  21  21  21  21  21  21  21  21
    8:  21  21  21  21  21  21  21  21  10  12  12  12  21  21  21  21
    9:  21  21  21  21  21  21  21  21  12  10  12  12  21  21  21  21
   10:  21  21  21  21  21  21  21  21  12  12  10  12  21  21  21  21
   11:  21  21  21  21  21  21  21  21  12  12  12  10  21  21  21  21
   12:  21  21  21  21  21  21  21  21  21  21  21  21  10  12  12  12
   13:  21  21  21  21  21  21  21  21  21  21  21  21  12  10  12  12
   14:  21  21  21  21  21  21  21  21  21  21  21  21  12  12  10  12
   15:  21  21  21  21  21  21  21  21  21  21  21  21  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       2113460432 kB

------------------------------------------------------------
10. who -r
  run-level 3 Aug 24 15:00

------------------------------------------------------------
11. Systemd service manager version: systemd 250 (250-12.el9_1)
  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
  * systemd-sysctl.service             loaded failed failed Apply Kernel Variables
```

(Continued on next page)

Platform Notes (Continued)

```
------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE             UNIT FILES
  enabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond
                    dbus-broker getty@ irqbalance kdump low-memory-monitor mdmonitor microcode nis-domainname
                    rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark sshd sssd
                    systemd-network-generator udisks2 upower
  enabled-runtime   systemd-remount-fs
  disabled          canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                    console-getty cpupower debug-shell firewalld kvm_stat man-db-restart-cache-update nftables
                    pesign rdisc rhsm rhsm-facts rpmdb-rebuild 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

------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd0,gpt3)/boot/vmlinuz-5.14.0-162.6.1.el9_1.x86_64
  root=UUID=43a7f1b1-66b0-456a-8c3f-451305a00281
  ro
  resume=UUID=58de1c40-542f-453b-bb6a-6bbd3510660a

------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    Unable to determine current policy
    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
  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
```

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Platform Notes (Continued)

```
  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 9.1 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.1 (Plow)
  system-release Red Hat Enterprise Linux release 9.1 (Plow)

------------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017-1.1.9-ic2023.0
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p4 xfs   819G   16G  804G   2% /home

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Lenovo
    Product:        ThinkSystem SR850 V3
    Product Family: ThinkSystem
    Serial:         None

------------------------------------------------------------
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:
    21x SK Hynix HMCG94AEBRA102N 64 GB 2 rank 4800
    4x SK Hynix HMCG94AEBRA109N 64 GB 2 rank 4800
    7x SK Hynix HMCG94AEBRA123N 64 GB 2 rank 4800


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Lenovo
   BIOS Version:      RSE105E-1.10
   BIOS Date:         05/12/2023
   BIOS Revision:     1.10
   Firmware Revision: 1.10
```

Compiler Version Notes

```
==============================================================================================================
C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
--------------------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------------------

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

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Compiler Version Notes (Continued)

```
C++             | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_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++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
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==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
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Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Benchmarks using both Fortran and C:
ifx icx

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Base Compiler Invocation (Continued)

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifx

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc

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Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

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-X.html
http://www.spec.org/cpu2017/flags/Intel-ic2023-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-X.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.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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