SPEC CPU®2017 Floating Point Rate Result

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Lenovo Global Technology

SPECrate®2017_fp_base = 1080

ThinkSystem SR850 V3
(2.10 GHz, Intel Xeon Gold 6418H)

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

Benchmark	Copies	Result
503.bwaves_r	192	4720
507.cactuBSSN_r	192	1280
508.namd_r	192	608
510.parest_r	192	579
511.povray_r	192	952
519.lbm_r	192	578
521.wrf_r	192	1020
526.blender_r	192	900
527.cam4_r	192	999
538.imagick_r	192	2640
544.nab_r	192	1830
549.fotonik3d_r	192	1020
554.roms_r	192	519

SPECrate®2017_fp_base (1080)

Hardware

CPU Name: Intel Xeon Gold 6418H
 Max MHz: 4000
 Nominal: 2100
Enabled: 96 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: 60 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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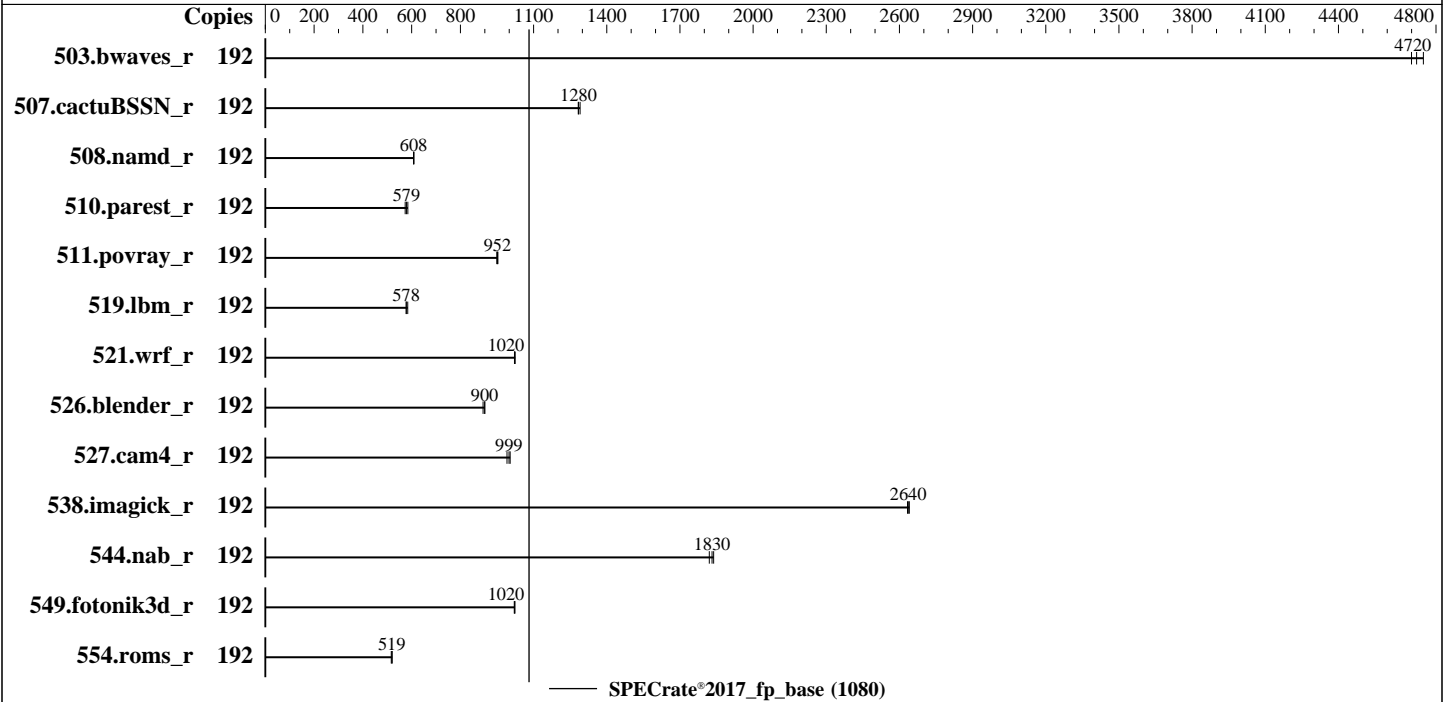|		
CPU2017 License: 9017	**Test Date:**	Aug-2023
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	192	410	4700	405	4750	**408**	**4720**							
507.cactuBSSN_r	192	188	1290	**189**	**1280**	189	1280							
508.namd_r	192	299	609	300	608	**300**	**608**							
510.parest_r	192	860	584	876	573	**868**	**579**							
511.povray_r	192	**471**	**952**	470	954	472	949							
519.lbm_r	192	**350**	**578**	350	578	347	584							
521.wrf_r	192	420	1020	**421**	**1020**	421	1020							
526.blender_r	192	325	900	**325**	**900**	328	893							
527.cam4_r	192	**336**	**999**	339	991	335	1000							
538.imagick_r	192	**181**	**2640**	181	2640	181	2630							
544.nab_r	192	**176**	**1830**	178	1820	176	1840							
549.fotonik3d_r	192	732	1020	**732**	**1020**	733	1020							
554.roms_r	192	591	516	**588**	**519**	587	520							

SPECrate®2017_fp_base =	**1080**
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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 = "/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.

(Continued on next page)

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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
CPU P-state Control set to Legacy
DCU Streamer Prefetcher set to Disabled
LLC Prefetch set to Disabled
AMP Prefetch set to Enabled
SNC set to SNC2

 Sysinfo program /home/cpu2017-1.1.9-ic2023.0/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Mon Aug  7 12:26:09 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

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

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Platform Notes (Continued)

```
 2. w
   12:26:09 up  1:44,  2 users,  load average: 10.46, 106.14, 156.00
   USER     TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1        10:41    7.00s  0.81s  0.01s -bash
   root     pts/0       10:42    1:33m  0.03s  0.03s -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) 8255607
   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) 8255607
   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=192 -c
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base -o all fprate
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 --configfile
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --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/CPU2017.055/templogs/preenv.fprate.055.0.log --lognum 055.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017-1.1.9-ic2023.0

  ------------------------------------------------------------
 6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Gold 6418H
    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       : 24
    siblings        : 48
    4 physical ids (chips)
    192 processors (hardware threads)
```

(Continued on next page)

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Platform Notes (Continued)

```
     physical id 0: core ids 0-23
     physical id 1: core ids 0-23
     physical id 2: core ids 0-23
     physical id 3: core ids 0-23
     physical id 0: apicids 0-47
     physical id 1: apicids 128-175
     physical id 2: apicids 256-303
     physical id 3: apicids 384-431
   Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
   virtualized systems.  Use the above data carefully.


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

   From lscpu from util-linux 2.37.4:
     Architecture:               x86_64
     CPU op-mode(s):             32-bit, 64-bit
     Address sizes:              46 bits physical, 57 bits virtual
     Byte Order:                 Little Endian
     CPU(s):                     192
     On-line CPU(s) list:        0-191
     Vendor ID:                  GenuineIntel
     BIOS Vendor ID:             Intel(R) Corporation
     Model name:                 Intel(R) Xeon(R) Gold 6418H
     BIOS Model name:            Intel(R) Xeon(R) Gold 6418H
     CPU family:                 6
     Model:                      143
     Thread(s) per core:         2
     Core(s) per socket:         24
     Socket(s):                  4
     Stepping:                   8
     Frequency boost:            enabled
     CPU max MHz:                2101.0000
     CPU min MHz:                800.0000
     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 hfi 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:                  4.5 MiB (96 instances)
     L1i cache:                  3 MiB (96 instances)
     L2 cache:                   192 MiB (96 instances)
     L3 cache:                   240 MiB (4 instances)
     NUMA node(s):               8
     NUMA node0 CPU(s):          0-11,96-107
```

(Continued on next page)

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Platform Notes (Continued)

```
   NUMA node1 CPU(s):            12-23,108-119
   NUMA node2 CPU(s):            24-35,120-131
   NUMA node3 CPU(s):            36-47,132-143
   NUMA node4 CPU(s):            48-59,144-155
   NUMA node5 CPU(s):            60-71,156-167
   NUMA node6 CPU(s):            72-83,168-179
   NUMA node7 CPU(s):            84-95,180-191
   Vulnerability Itlb multihit:     Not affected
   Vulnerability L1tf:              Not affected
   Vulnerability Mds:               Not affected
   Vulnerability Meltdown:          Not affected
   Vulnerability Mmio stale data:   Not affected
   Vulnerability Retbleed:          Not affected
   Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
   Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user pointer sanitization
   Vulnerability Spectre v2:        Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-eIBRS SW
                                    sequence
   Vulnerability Srbds:             Not affected
   Vulnerability Tsx async abort:   Not affected

   From lscpu --cache:
       NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
       L1d      48K     4.5M   12 Data            1     64     1              64
       L1i      32K       3M    8 Instruction     1     64     1              64
       L2        2M     192M   16 Unified         2   2048     1              64
       L3       60M     240M   15 Unified         3  65536     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: 0-11,96-107
     node 0 size: 257703 MB
     node 0 free: 256599 MB
     node 1 cpus: 12-23,108-119
     node 1 size: 258042 MB
     node 1 free: 256914 MB
     node 2 cpus: 24-35,120-131
     node 2 size: 258042 MB
     node 2 free: 256720 MB
     node 3 cpus: 36-47,132-143
     node 3 size: 258042 MB
     node 3 free: 257002 MB
     node 4 cpus: 48-59,144-155
     node 4 size: 258042 MB
     node 4 free: 257053 MB
     node 5 cpus: 60-71,156-167
     node 5 size: 258042 MB
     node 5 free: 257047 MB
     node 6 cpus: 72-83,168-179
     node 6 size: 258042 MB
     node 6 free: 257046 MB
     node 7 cpus: 84-95,180-191
     node 7 size: 257982 MB
     node 7 free: 256987 MB
     node distances:
     node   0   1   2   3   4   5   6   7
       0:  10  12  21  21  21  21  21  21
       1:  12  10  21  21  21  21  21  21
       2:  21  21  10  12  21  21  21  21
```

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Platform Notes (Continued)

```
    3:  21  21  12  10  21  21  21  21
    4:  21  21  21  21  10  12  21  21
    5:  21  21  21  21  12  10  21  21
    6:  21  21  21  21  21  21  10  12
    7:  21  21  21  21  21  21  12  10


  --------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       2113475912 kB


  --------------------------------------------------------------
  10. who -r
     run-level 3 Aug 7 10:41


  --------------------------------------------------------------
  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
     * systemd-sysctl.service loaded failed failed Apply Kernel Variables


  --------------------------------------------------------------
  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:
       current policy: frequency should be within 800 MHz and 2.10 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
```

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Platform Notes (Continued)

```
   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
   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.
```

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Platform Notes (Continued)

```
   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.
------------------------------------------------------------------------------


==============================================================================
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
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------------------------------------------------------------------------------


==============================================================================
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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------------------------------------------------------------------------------


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

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(2.10 GHz, Intel Xeon Gold 6418H)

SPECrate®2017_fp_base =   1080

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

Compiler Version Notes (Continued)

```
Fortran, C    | 521.wrf_r(base) 527.cam4_r(base)
-------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
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.
-------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Benchmarks using both Fortran and C:
`ifx icx`

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`

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(2.10 GHz, Intel Xeon Gold 6418H)

SPECrate®2017_fp_base = 1080

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CPU2017 License: 9017
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Test Date: Aug-2023
Hardware Availability: Jun-2023
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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
-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-W.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-W.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml

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

Lenovo Global Technology

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SPECrate®2017_fp_base =   1080

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CPU2017 License: 9017		**Test Date:**	Aug-2023
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Jun-2023
Tested by:	Lenovo Global Technology	**Software Availability:**	Dec-2022

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

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