SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

$SPECrate®2017\_fp\_base = 64.7$

$SPECrate®2017\_fp\_peak = 65.2$
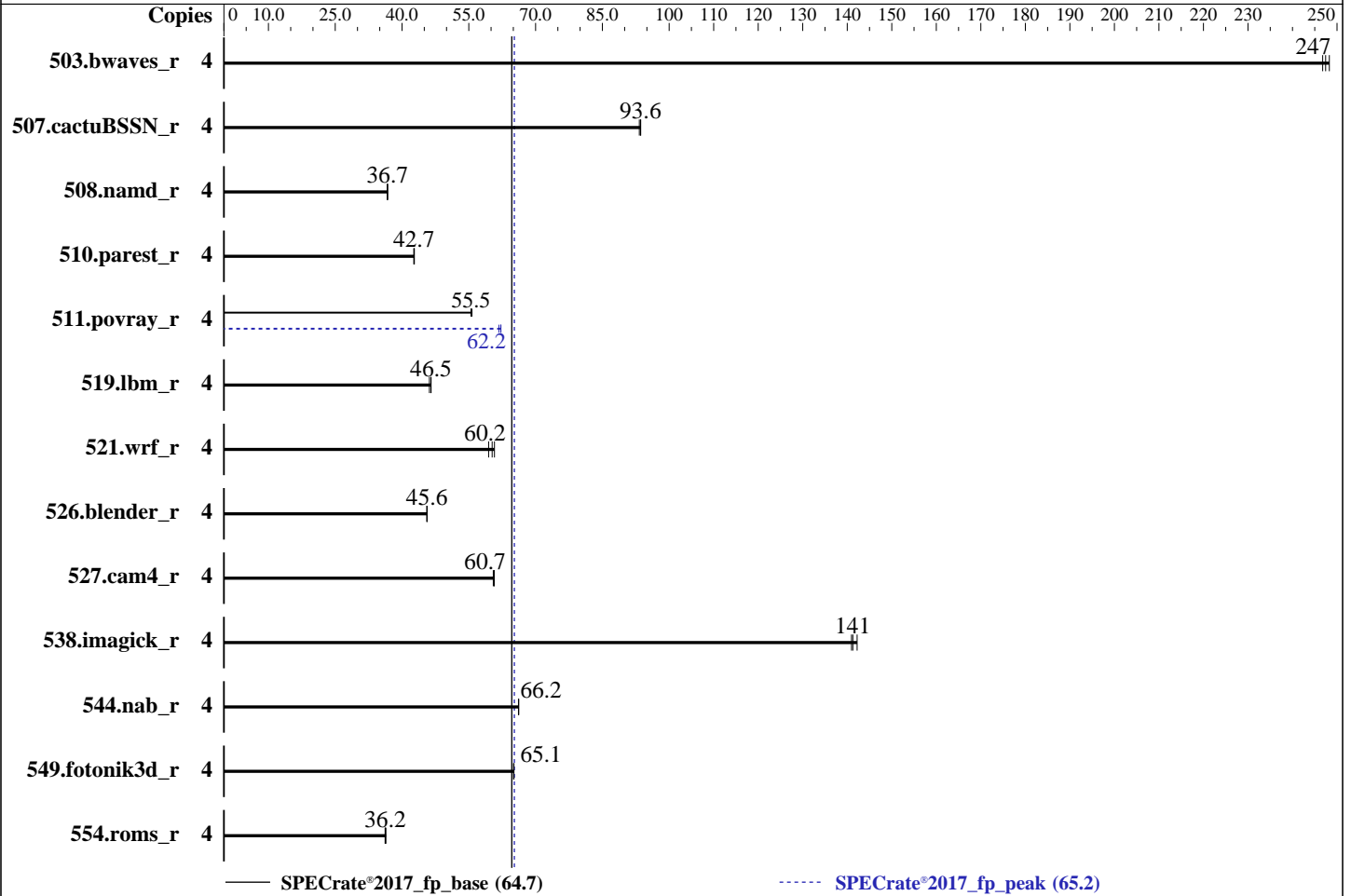
CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

Copies	Value
503.bwaves_r 4	247
507.cactuBSSN_r 4	93.6
508.namd_r 4	36.7
510.parest_r 4	42.7
511.povray_r 4	55.5 / 62.2
519.lbm_r 4	46.5
521.wrf_r 4	60.2
526.blender_r 4	45.6
527.cam4_r 4	60.7
538.imagick_r 4	141
544.nab_r 4	66.2
549.fotonik3d_r 4	65.1
554.roms_r 4	36.2

SPECrate®2017_fp_base (64.7)

SPECrate®2017_fp_peak (65.2)

Hardware

CPU Name: Intel Xeon E-2414

Max MHz: 4500

Nominal: 2600

Enabled: 4 cores, 1 chip

Orderable: 1 chip

Cache L1: 32 KB I + 48 KB D on chip per core

L2: 2 MB I+D on chip per core

L3: 12 MB I+D on chip per chip

Other: None

Memory: 64 GB (2 x 32 GB 2Rx8 PC5-4800B-E, running at 4400)

Storage: 1 x 480 GB SATA SSD

Other: None

Software

OS: Red Hat Enterprise Linux 9.3 (Plow)
Kernel 5.14.0-362.8.1.el9_3.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: No

Firmware: Lenovo BIOS Version CTE101Z 1.10 released Dec-2023

File System: xfs

System State: Run level 3 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 64-bit

Other: jemalloc memory allocator V5.0.1

Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017	**Test Date:** Jan-2024
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Feb-2024
Tested by: Lenovo Global Technology	**Software Availability:** Dec-2023

Results Table

Benchmark	Base						Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	4	162	248	163	247	**162**	**247**	4	162	248	163	247	**162**	**247**
507.cactuBSSN_r	4	54.3	93.3	54.1	93.6	**54.1**	**93.6**	4	54.3	93.3	54.1	93.6	**54.1**	**93.6**
508.namd_r	4	103	36.8	**103**	**36.7**	104	36.7	4	103	36.8	**103**	**36.7**	104	36.7
510.parest_r	4	245	42.8	**245**	**42.7**	245	42.7	4	245	42.8	**245**	**42.7**	245	42.7
511.povray_r	4	168	55.7	**168**	**55.5**	168	55.5	4	**150**	**62.2**	150	62.2	151	61.8
519.lbm_r	4	**90.7**	**46.5**	90.6	46.5	91.3	46.2	4	**90.7**	**46.5**	90.6	46.5	91.3	46.2
521.wrf_r	4	**149**	**60.2**	151	59.5	147	60.8	4	**149**	**60.2**	151	59.5	147	60.8
526.blender_r	4	134	45.6	134	45.6	**134**	**45.6**	4	134	45.6	134	45.6	**134**	**45.6**
527.cam4_r	4	116	60.5	**115**	**60.7**	115	60.7	4	116	60.5	**115**	**60.7**	115	60.7
538.imagick_r	4	70.6	141	70.0	142	**70.4**	**141**	4	70.6	141	70.0	142	**70.4**	**141**
544.nab_r	4	102	66.2	**102**	**66.2**	102	66.2	4	102	66.2	**102**	**66.2**	102	66.2
549.fotonik3d_r	4	240	65.1	**239**	**65.1**	239	65.1	4	240	65.1	**239**	**65.1**	239	65.1
554.roms_r	4	175	36.4	176	36.2	**175**	**36.2**	4	175	36.4	176	36.2	**175**	**36.2**
SPECrate®2017_fp_base =		**64.7**										
SPECrate®2017_fp_peak =		**65.2**										

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate taskset 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-ic2023.2.3/lib/intel64:/home/cpu2017-1.1.9-ic2023.2.3/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
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)

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

General Notes (Continued)

```
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
Turbo Limit for 95W CPU set to Disabled

 Sysinfo program /home/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Sun Jan 21 17:48:46 2024

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

 ---------------------------------------------------------------
 Table of contents
 ---------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 252 (252-18.el9)
 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
 ---------------------------------------------------------------

 ---------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-362.8.1.el9_3.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Oct 3 11:12:36 EDT 2023
   x86_64 x86_64 x86_64 GNU/Linux

 ---------------------------------------------------------------
 2. w
    17:48:46 up  2:55,  1 user,  load average: 3.27, 3.84, 3.95
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       14:54    2:54m  0.72s  0.00s -bash

 ---------------------------------------------------------------
 3. Username
```

SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017		**Test Date:**	Jan-2024
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Feb-2024
Tested by:	Lenovo Global Technology	**Software Availability:**	Dec-2023

Platform Notes (Continued)

```
  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) 256661
   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) 256661
   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=4 -c
   ic2023.2.3-lin-core-avx2-rate-20231121.cfg --define cores=4 --define physicalfirst --define no-numa --tune
   base,peak -o all --define drop_caches fprate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=4 --configfile
   ic2023.2.3-lin-core-avx2-rate-20231121.cfg --define cores=4 --define physicalfirst --define no-numa --tune
   base,peak --output_format all --define drop_caches --nopower --runmode rate --tune base:peak --size
   refrate fprate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.060/templogs/preenv.fprate.060.0.log
   --lognum 060.0 --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) E E-2414
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 183
    stepping        : 1
    microcode       : 0x11f
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
    cpu cores       : 4
    siblings        : 4
    1 physical ids (chips)
    4 processors (hardware threads)
    physical id 0: core ids 0-3
    physical id 0: apicids 0,2,4,6
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.


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

(Continued on next page)

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

Lenovo Global Technology

SPECrate®2017_fp_base = 64.7

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Platform Notes (Continued)

```
From lscpu from util-linux 2.37.4:
  Architecture:                    x86_64
  CPU op-mode(s):                  32-bit, 64-bit
  Address sizes:                   42 bits physical, 48 bits virtual
  Byte Order:                      Little Endian
  CPU(s):                          4
  On-line CPU(s) list:             0-3
  Vendor ID:                       GenuineIntel
  BIOS Vendor ID:                  Intel(R) Corporation
  Model name:                      Intel(R) Xeon(R) E E-2414
  BIOS Model name:                 Intel(R) Xeon(R) E E-2414
  CPU family:                      6
  Model:                           183
  Thread(s) per core:              1
  Core(s) per socket:              4
  Socket(s):                       1
  Stepping:                        1
  BogoMIPS:                        5222.40
  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
                                   sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c
                                   rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb ssbd ibrs ibpb stibp
                                   ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase
                                   tsc_adjust bmi1 avx2 smep bmi2 erms invpcid rdseed adx smap clflushopt
                                   clwb intel_pt sha_ni xsaveopt xsavec xgetbv1 xsaves split_lock_detect
                                   avx_vnni dtherm ida arat pln pts hfi vnmi umip pku ospke waitpkg gfni
                                   vaes vpclmulqdq tme rdpid movdiri movdir64b fsrm md_clear serialize
                                   pconfig arch_lbr ibt flush_l1d arch_capabilities
  Virtualization:                  VT-x
  L1d cache:                       192 KiB (4 instances)
  L1i cache:                       128 KiB (4 instances)
  L2 cache:                        8 MiB (4 instances)
  L3 cache:                        12 MiB (1 instance)
  NUMA node(s):                    1
  NUMA node0 CPU(s):               0-3
  Vulnerability Gather data sampling: Not affected
  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 / Automatic 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     192K   12 Data            1    64        1             64
      L1i       32K     128K    8 Instruction     1    64        1             64
      L2         2M       8M   16 Unified         2  2048        1             64
      L3        12M      12M    6 Unified         3 32768        1             64

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

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

Platform Notes (Continued)

```
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 1 nodes (0)
  node 0 cpus: 0-3
  node 0 size: 64208 MB
  node 0 free: 62806 MB
  node distances:
  node   0
    0:  10


-------------------------------------------------------------
9. /proc/meminfo
  MemTotal:       65749252 kB


-------------------------------------------------------------
10. who -r
  run-level 3 Jan 21 14:53


-------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-18.el9)
  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 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=(hd0,gpt2)/vmlinuz-5.14.0-362.8.1.el9_3.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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

Platform Notes (Continued)

```
    analyzing CPU 0:
      Unable to determine current policy
      boost state support:
        Supported: yes
        Active: yes


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


    ----------------------------------------------------------------
    17. sysctl
      kernel.numa_balancing            0
      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 9.3 (Plow)
      redhat-release Red Hat Enterprise Linux release 9.3 (Plow)
      system-release Red Hat Enterprise Linux release 9.3 (Plow)


    ----------------------------------------------------------------
    21. Disk information
    SPEC is set to: /home/cpu2017-1.1.9-ic2023.2.3
      Filesystem              Type  Size  Used Avail Use% Mounted on
```

(Continued on next page)

Lenovo Global Technology

SPECrate®2017_fp_base = 64.7

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Platform Notes (Continued)

```
   /dev/mapper/rhel-home xfs   344G  14G  330G   5% /home


    ----------------------------------------------------------
 22. /sys/devices/virtual/dmi/id
      Vendor:         Lenovo
      Product:        ThinkSystem SR250 V3
      Product Family: ThinkSystem
      Serial:         1234567890


    ----------------------------------------------------------
 23. dmidecode
    Additional information from dmidecode 3.5 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:
      1x Samsung M324R4GA3BB0-CQKOD 32 GB 2 rank 4800, configured at 4400
      1x Samsung M324R4GA3BB0-CQKOL 32 GB 2 rank 4800, configured at 4400


    ----------------------------------------------------------
 24. BIOS
 (This section combines info from /sys/devices and dmidecode.)
      BIOS Vendor:       Lenovo
      BIOS Version:      CTE101Z-1.10
      BIOS Date:         12/27/2023
      BIOS Revision:     1.10
      Firmware Revision: 1.10
```

Compiler Version Notes

```
==============================================================================
C            | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++          | 508.namd_r(base, peak) 510.parest_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C       | 511.povray_r(base, peak) 526.blender_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
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++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
 Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
 Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Compiler Version Notes (Continued)

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


==============================================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
------------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------------------------------


==============================================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
------------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
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.
------------------------------------------------------------------------------------------------------
```

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`

(Continued on next page)

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

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

Base Portability Flags (Continued)

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 -xCORE-AVX2 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xCORE-AVX2 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX2 -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 -xCORE-AVX2 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -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 -xCORE-AVX2 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using Fortran, C, and C++:
```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-qopt-mem-layout-trans=4 -Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Peak 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
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

519.lbm_r: `basepeak = yes`

538.imagick_r: `basepeak = yes`

544.nab_r: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

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

Test Date: Jan-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Peak Optimization Flags (Continued)

508.namd_r: `basepeak = yes`

510.parest_r: `basepeak = yes`

Fortran benchmarks:

503.bwaves_r: `basepeak = yes`

549.fotonik3d_r: `basepeak = yes`

554.roms_r: `basepeak = yes`

Benchmarks using both Fortran and C:

521.wrf_r: `basepeak = yes`

527.cam4_r: `basepeak = yes`

Benchmarks using both C and C++:

511.povray_r: `-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs`
`-fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2 -flto`
`-Ofast -ffast-math -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -Wno-implicit-int -ljemalloc`
`-L/usr/local/jemalloc64-5.0.1/lib`

526.blender_r: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: `basepeak = yes`

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-Catlow-A.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-Catlow-A.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR250 V3
(2.60 GHz, Intel Xeon E-2414)

SPECrate®2017_fp_base = 64.7

SPECrate®2017_fp_peak = 65.2

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

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

Tested with SPEC CPU®2017 v1.1.9 on 2024-01-21 04:48:46-0500.
Report generated on 2024-02-20 14:11:51 by CPU2017 PDF formatter v6716.
Originally published on 2024-02-20.