SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SD650 V3
(2.10 GHz, Intel Xeon Platinum 8468)

SPECrate®2017_fp_base =   874

SPECrate®2017_fp_peak = Not Run

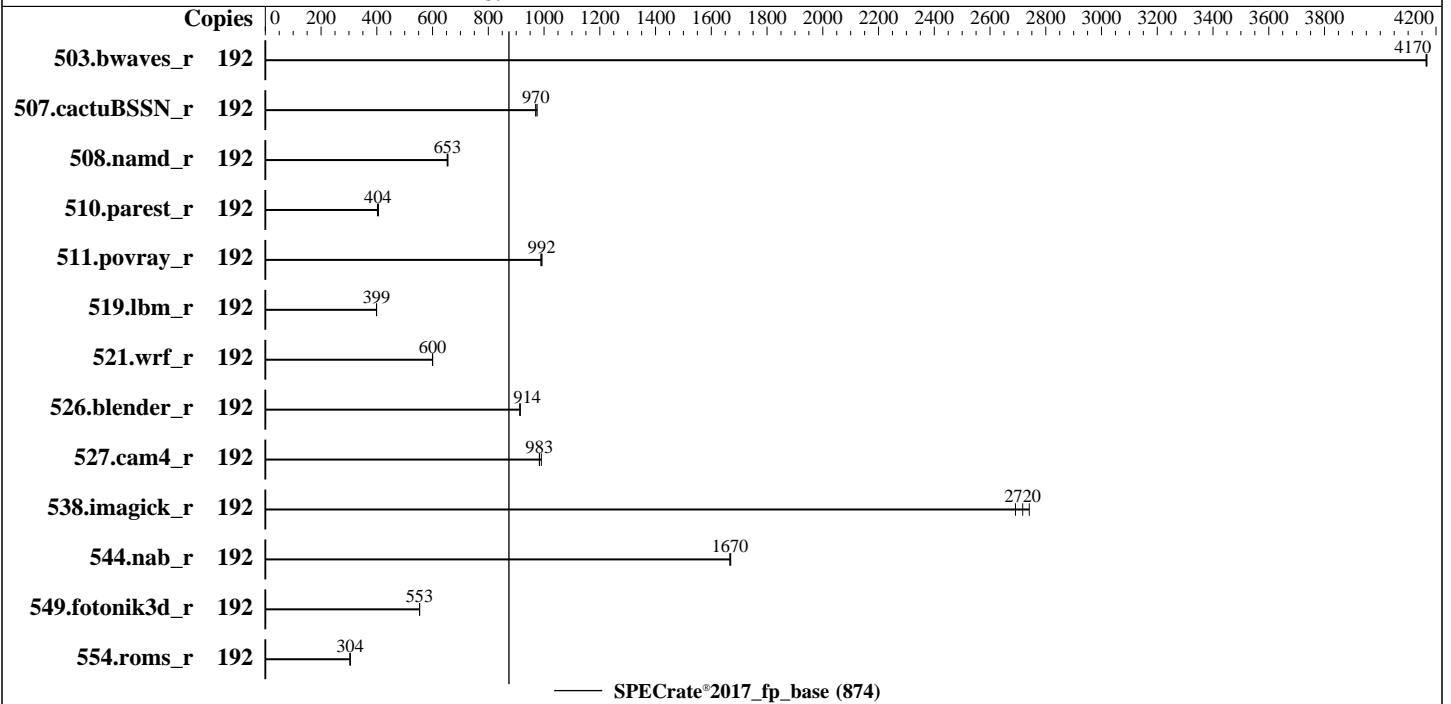|	
CPU2017 License: 9017	**Test Date:** Feb-2023
Test Sponsor: Lenovo Global Technology	**Hardware Availability:** Feb-2023
Tested by: Lenovo Global Technology	**Software Availability:** Dec-2022

Copies

- 503.bwaves_r 192 — 4170
- 507.cactuBSSN_r 192 — 970
- 508.namd_r 192 — 653
- 510.parest_r 192 — 404
- 511.povray_r 192 — 992
- 519.lbm_r 192 — 399
- 521.wrf_r 192 — 600
- 526.blender_r 192 — 914
- 527.cam4_r 192 — 983
- 538.imagick_r 192 — 2720
- 544.nab_r 192 — 1670
- 549.fotonik3d_r 192 — 553
- 554.roms_r 192 — 304

SPECrate®2017_fp_base (874)

Hardware

CPU Name: Intel Xeon Platinum 8468
 Max MHz: 3800
 Nominal: 2100
Enabled: 96 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86_64)
 Kernel 5.14.21-150400.22-default
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 USE109N 1.12 released Jan-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 Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
503.bwaves_r	192	**462**	**4170**	462	4160	462	4170							
507.cactuBSSN_r	192	**250**	**970**	251	970	249	975							
508.namd_r	192	278	655	**279**	**653**	280	652							
510.parest_r	192	1237	406	1249	402	**1243**	**404**							
511.povray_r	192	454	988	**452**	**992**	452	992							
519.lbm_r	192	507	399	507	399	**507**	**399**							
521.wrf_r	192	**717**	**600**	717	600	717	600							
526.blender_r	192	**320**	**914**	320	915	320	913							
527.cam4_r	192	339	990	342	983	**341**	**983**							
538.imagick_r	192	174	2740	**176**	**2720**	177	2690							
544.nab_r	192	**194**	**1670**	194	1670	194	1670							
549.fotonik3d_r	192	1352	553	1352	554	**1352**	**553**							
554.roms_r	192	1002	305	1005	304	**1003**	**304**							

SPECrate®2017_fp_base = 874

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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/j
     e5.0.1-64"
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

(Continued on next page)

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General Notes (Continued)

```
 Prior to runcpu invocation
 Filesystem page cache synced and cleared with:
 sync; echo 3>        /proc/sys/vm/drop_caches
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
 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
SNC set to SNC4
MONITOR/MWAIT set to Enabled
XPT Prefetcher set to Disabled
LLC Prefetch set to Disabled

 Sysinfo program /home/cpu2017-1.1.9-ic2023.0/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Thu Feb  9 07:03:14 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 249 (249.11+suse.124.g2bc0b2c447)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
```

(Continued on next page)

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Hardware Availability: Feb-2023
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Platform Notes (Continued)

```
  14. cpupower frequency-info
  15. tuned-adm active
  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 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
     x86_64 x86_64 x86_64 GNU/Linux


     ------------------------------------------------------------
  2. w
      07:03:14 up 1 min,  1 user,  load average: 2.55, 1.11, 0.41
     USER      TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1     -                07:03    9.00s  1.03s  0.01s -bash


     ------------------------------------------------------------
  3. Username
     From environment variable $USER:  root


     ------------------------------------------------------------
  4. ulimit -a
     core file size          (blocks, -c) unlimited
     data seg size           (kbytes, -d) unlimited
     scheduling priority             (-e) 0
     file size               (blocks, -f) unlimited
     pending signals                 (-i) 2062421
     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) 2062421
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited


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

(Continued on next page)

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Software Availability: Dec-2022

Platform Notes (Continued)

```
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 30
 login -- root
 -bash
 -bash
 -bash
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
   ic2023.0-lin-core-avx512-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-core-avx512-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/CPU2017.007/templogs/preenv.fprate.007.0.log --lognum 007.0 --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 8468
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 8
    microcode       : 0x2b000161
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 48
    siblings        : 96
    2 physical ids (chips)
    192 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    physical id 0: apicids 0-95
    physical id 1: apicids 128-223
  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 2.37.2:
  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
```

(Continued on next page)

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Test Date: Feb-2023

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Software Availability: Dec-2022

Platform Notes (Continued)

```
       Vendor ID:                  GenuineIntel
       Model name:                 Intel(R) Xeon(R) Platinum 8468
       CPU family:                 6
       Model:                      143
       Thread(s) per core:         2
       Core(s) per socket:         48
       Socket(s):                  2
       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 hle
                                   avx2 smep bmi2 erms invpcid rtm 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 avx512_fp16 amx_tile 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:                   210 MiB (2 instances)
       NUMA node(s):               8
       NUMA node0 CPU(s):          0-11,96-107
       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 Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
      Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user pointer sanitization
       Vulnerability Spectre v2:        Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
```

(Continued on next page)

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Platform Notes (Continued)

```
   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        105M     210M   15 Unified          3  114688        1             64


---------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0-11,96-107
   node 0 size: 64135 MB
   node 0 free: 63459 MB
   node 1 cpus: 12-23,108-119
   node 1 size: 64505 MB
   node 1 free: 64119 MB
   node 2 cpus: 24-35,120-131
   node 2 size: 64505 MB
   node 2 free: 64158 MB
   node 3 cpus: 36-47,132-143
   node 3 size: 64505 MB
   node 3 free: 63870 MB
   node 4 cpus: 48-59,144-155
   node 4 size: 64505 MB
   node 4 free: 64268 MB
   node 5 cpus: 60-71,156-167
   node 5 size: 64505 MB
   node 5 free: 64268 MB
   node 6 cpus: 72-83,168-179
   node 6 size: 64505 MB
   node 6 free: 63778 MB
   node 7 cpus: 84-95,180-191
   node 7 size: 64459 MB
   node 7 free: 64220 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  12  12  12  21  21  21  21
     1:  12  10  12  12  21  21  21  21
     2:  12  12  10  12  21  21  21  21
     3:  12  12  12  10  21  21  21  21
     4:  21  21  21  21  10  12  12  12
     5:  21  21  21  21  12  10  12  12
     6:  21  21  21  21  12  12  10  12
```

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Platform Notes (Continued)

```
    7:  21  21  21  21  12  12  12  10


  ------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       528004536 kB


  ------------------------------------------------------------
10. who -r
   run-level 3 Feb 9 07:02


  ------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
   Default Target  Status
   multi-user      running


  ------------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE             UNIT FILES
   enabled           YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged
                     irqbalance issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels
                       rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                       wickedd-nanny
   enabled-runtime   systemd-remount-fs
   disabled          autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                      chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                     firewalld gpm grub2-once haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load
                      lunmask man-db-create multipathd nfs nfs-blkmap rdisc rpcbind rpmconfigcheck rsyncd
                      serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
                     systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
   indirect          wickedd


  ------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=5f8bfd2f-a83f-41d5-8917-33e974e2f5bd
   splash=silent
   mitigations=auto
   quiet
   security=apparmor


  ------------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
     Unable to determine current policy
     boost state support:
       Supported: yes
       Active: yes
```

(Continued on next page)

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Platform Notes (Continued)

```
  ----------------------------------------------------------------
  15. tuned-adm active
    It seems that tuned daemon is not running, preset profile is not activated.
    Preset profile: powersave


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

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Platform Notes (Continued)

```
    From /etc/*-release /etc/*-version
    os-release SUSE Linux Enterprise Server 15 SP4


  ----------------------------------------------------------------
  20. Disk information
  SPEC is set to: /home/cpu2017-1.1.9-ic2023.0
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       xfs   889G   46G  843G   6% /


  ----------------------------------------------------------------
  21. /sys/devices/virtual/dmi/id
     Vendor:         Lenovo
     Product:        ThinkSystem SD650 V3
     Product Family: ThinkSystem
     Serial:         9999999999


  ----------------------------------------------------------------
  22. dmidecode
    Additional information from dmidecode 3.2 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:
      16x Samsung M321R4GA3BB0-CQKVG 32 GB 2 rank 4800



  ----------------------------------------------------------------
  23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:      Lenovo
     BIOS Version:     USE109N-1.12
     BIOS Date:        01/09/2023
     BIOS Revision:    1.12
     Firmware Revision: 0.90
```

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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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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  Version 2023.0.0 Build 20221201
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
  2023.0.0 Build 20221201
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==============================================================================
Fortran          | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
  2023.0.0 Build 20221201
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------------------------------------------------------------------------------


==============================================================================
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
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
```

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SPEC CPU®2017 Floating Point Rate Result
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Lenovo Global Technology

ThinkSystem SD650 V3
(2.10 GHz, Intel Xeon Platinum 8468)

SPECrate®2017_fp_base =   874

SPECrate®2017_fp_peak = Not Run

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

Test Date: Feb-2023
Hardware Availability: Feb-2023
Software Availability: Dec-2022

Compiler Version Notes (Continued)

```
   Version 2023.0.0 Build 20221201
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------------------------------------------------------------------------
```

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`

Lenovo Global Technology

ThinkSystem SD650 V3
(2.10 GHz, Intel Xeon Platinum 8468)

SPECrate®2017_fp_base = 874

SPECrate®2017_fp_peak = Not Run

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

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -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-AVX512 -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-AVX512 -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-AVX512 -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-AVX512 -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-AVX512 -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
```

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-N.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-N.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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