SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

$SPECrate®2017_fp_base = $ **1860**

$SPECrate®2017_fp_peak = $ Not Run
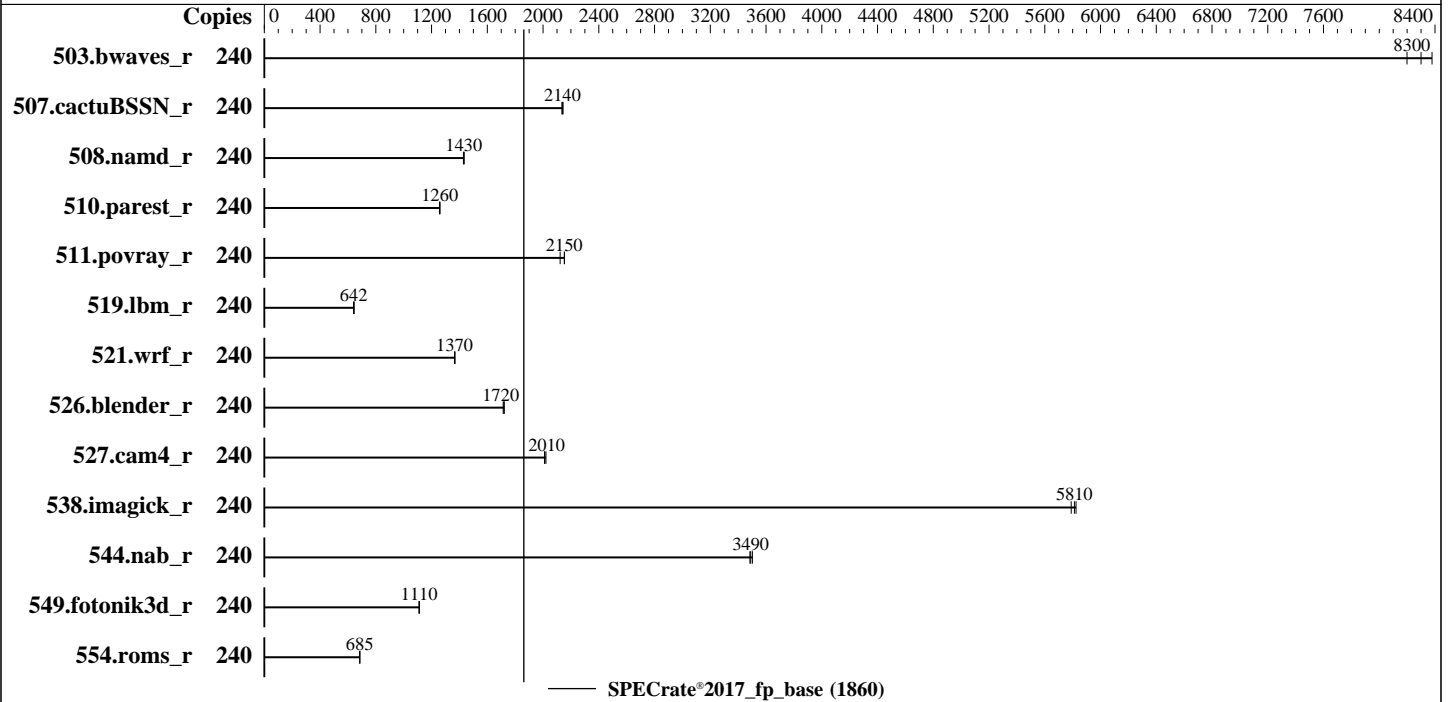
CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

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

Benchmark	Copies	Result
503.bwaves_r	240	8300
507.cactuBSSN_r	240	2140
508.namd_r	240	1430
510.parest_r	240	1260
511.povray_r	240	2150
519.lbm_r	240	642
521.wrf_r	240	1370
526.blender_r	240	1720
527.cam4_r	240	2010
538.imagick_r	240	5810
544.nab_r	240	3490
549.fotonik3d_r	240	1110
554.roms_r	240	685

SPECrate®2017_fp_base (1860)

Hardware

CPU Name: Intel Xeon Platinum 8490H
 Max MHz: 3500
 Nominal: 1900
Enabled: 240 cores, 4 chips
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: 112.5 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

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

SPECrate®2017_fp_peak = Not Run

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	240	294	8200	**290**	**8300**	287	8380							
507.cactuBSSN_r	240	**142**	**2140**	142	2140	142	2140							
508.namd_r	240	160	1430	**159**	**1430**	159	1430							
510.parest_r	240	499	1260	**499**	**1260**	498	1260							
511.povray_r	240	**260**	**2150**	264	2120	260	2150							
519.lbm_r	240	393	644	394	641	**394**	**642**							
521.wrf_r	240	393	1370	**394**	**1370**	394	1370							
526.blender_r	240	**212**	**1720**	213	1710	212	1720							
527.cam4_r	240	208	2020	209	2010	**209**	**2010**							
538.imagick_r	240	103	5790	102	5820	**103**	**5810**							
544.nab_r	240	**116**	**3490**	116	3480	115	3500							
549.fotonik3d_r	240	842	1110	841	1110	**841**	**1110**							
554.roms_r	240	558	684	**557**	**685**	557	685							

SPECrate®2017_fp_base =	**1860**
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.
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base = 1860

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

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
Hyper-Threading set to Disabled
DCU Streamer Prefetcher set to Disabled
LLC Prefetch set to Disabled
AMP Prefetch set to Enabled
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  3 00:28:00 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

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

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

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

Platform Notes (Continued)

```
 2. w
    00:28:00 up  1:16,  1 user,  load average: 121.51, 208.07, 222.52
    USER      TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
    root      tty1        23:12    1:11m  0.96s  0.02s -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) 8255561
    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) 8255561
    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=240 -c
     ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define cores=240 --define physicalfirst --define
     invoke_with_interleave --define drop_caches --tune base -o all fprate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=240 --configfile
     ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define cores=240 --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/CPU2017.033/templogs/preenv.fprate.033.0.log --lognum 033.0 --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 8490H
    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       : 60
    siblings        : 60
    4 physical ids (chips)
    240 processors (hardware threads)
    physical id 0: core ids 0-59
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base = 1860

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

Platform Notes (Continued)

```
    physical id 1: core ids 0-59
    physical id 2: core ids 0-59
    physical id 3: core ids 0-59
    physical id 0: apicids
    0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
    ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118
    physical id 1: apicids
    128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,1
    80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230,23
    2,234,236,238,240,242,244,246
    physical id 2: apicids
    256,258,260,262,264,266,268,270,272,274,276,278,280,282,284,286,288,290,292,294,296,298,300,302,304,306,3
    08,310,312,314,316,318,320,322,324,326,328,330,332,334,336,338,340,342,344,346,348,350,352,354,356,358,36
    0,362,364,366,368,370,372,374
    physical id 3: apicids
    384,386,388,390,392,394,396,398,400,402,404,406,408,410,412,414,416,418,420,422,424,426,428,430,432,434,4
    36,438,440,442,444,446,448,450,452,454,456,458,460,462,464,466,468,470,472,474,476,478,480,482,484,486,48
    8,490,492,494,496,498,500,502
  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):                    240
    On-line CPU(s) list:       0-239
    Vendor ID:                 GenuineIntel
    BIOS Vendor ID:            Intel(R) Corporation
    Model name:                Intel(R) Xeon(R) Platinum 8490H
    BIOS Model name:           Intel(R) Xeon(R) Platinum 8490H
    CPU family:                6
    Model:                     143
    Thread(s) per core:        1
    Core(s) per socket:        60
    Socket(s):                 4
    Stepping:                  8
    BogoMIPS:                  3800.00
    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
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

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

Platform Notes (Continued)

```
  Virtualization:               VT-x
  L1d cache:                    11.3 MiB (240 instances)
  L1i cache:                    7.5 MiB (240 instances)
  L2 cache:                     480 MiB (240 instances)
  L3 cache:                     450 MiB (4 instances)
  NUMA node(s):                 16
  NUMA node0 CPU(s):            0-14
  NUMA node1 CPU(s):            15-29
  NUMA node2 CPU(s):            30-44
  NUMA node3 CPU(s):            45-59
  NUMA node4 CPU(s):            60-74
  NUMA node5 CPU(s):            75-89
  NUMA node6 CPU(s):            90-104
  NUMA node7 CPU(s):            105-119
  NUMA node8 CPU(s):            120-134
  NUMA node9 CPU(s):            135-149
  NUMA node10 CPU(s):           150-164
  NUMA node11 CPU(s):           165-179
  NUMA node12 CPU(s):           180-194
  NUMA node13 CPU(s):           195-209
  NUMA node14 CPU(s):           210-224
  NUMA node15 CPU(s):           225-239
  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    11.3M   12 Data           1     64      1          64
      L1i      32K     7.5M    8 Instruction    1     64      1          64
      L2        2M     480M   16 Unified        2   2048      1          64
      L3    112.5M     450M   15 Unified        3 122880      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: 0-14
  node 0 size: 128681 MB
  node 0 free: 127928 MB
  node 1 cpus: 15-29
  node 1 size: 129020 MB
  node 1 free: 128360 MB
  node 2 cpus: 30-44
  node 2 size: 129020 MB
  node 2 free: 128364 MB
  node 3 cpus: 45-59
  node 3 size: 129020 MB
  node 3 free: 128339 MB
  node 4 cpus: 60-74
  node 4 size: 129020 MB
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

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

Platform Notes (Continued)

```
  node 4 free: 128164 MB
  node 5 cpus: 75-89
  node 5 size: 129020 MB
  node 5 free: 128339 MB
  node 6 cpus: 90-104
  node 6 size: 129020 MB
  node 6 free: 128344 MB
  node 7 cpus: 105-119
  node 7 size: 129020 MB
  node 7 free: 128333 MB
  node 8 cpus: 120-134
  node 8 size: 129020 MB
  node 8 free: 128356 MB
  node 9 cpus: 135-149
  node 9 size: 128982 MB
  node 9 free: 128302 MB
  node 10 cpus: 150-164
  node 10 size: 129020 MB
  node 10 free: 128358 MB
  node 11 cpus: 165-179
  node 11 size: 129020 MB
  node 11 free: 128358 MB
  node 12 cpus: 180-194
  node 12 size: 129020 MB
  node 12 free: 128184 MB
  node 13 cpus: 195-209
  node 13 size: 129020 MB
  node 13 free: 128331 MB
  node 14 cpus: 210-224
  node 14 size: 129020 MB
  node 14 free: 128351 MB
  node 15 cpus: 225-239
  node 15 size: 128998 MB
  node 15 free: 128308 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:       2113463960 kB


  ------------------------------------------------------------
  10. who -r
    run-level 3 Aug 2 23:12
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base = 1860

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

Platform Notes (Continued)

```
    --------------------------------------------------------------
    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
      * dnf-makecache.service               loaded failed failed dnf makecache
      * NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online
      * 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:
        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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

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

Platform Notes (Continued)

```
   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   15G  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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base =   1860

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

Platform Notes (Continued)

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


==============================================================================================
C++, C, Fortran | 507.cactuBSSN_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.
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.
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.
----------------------------------------------------------------------------------------------


==============================================================================================
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
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
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.
----------------------------------------------------------------------------------------------
```

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base = 1860

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

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`

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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR850 V3
(1.90 GHz, Intel Xeon Platinum 8490H)

SPECrate®2017_fp_base = 1860

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

Base Optimization Flags (Continued)

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

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

Tested with SPEC CPU®2017 v1.1.9 on 2023-08-02 12:27:59-0400.
Report generated on 2023-08-30 09:44:50 by CPU2017 PDF formatter v6716.
Originally published on 2023-08-29.