SPEC CPU®2017 Integer Speed Result

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Lenovo Global Technology

ThinkSystem SR665 V3
(2.20 GHz, AMD EPYC 9825)

SPECspeed®2017_int_base = 16.1
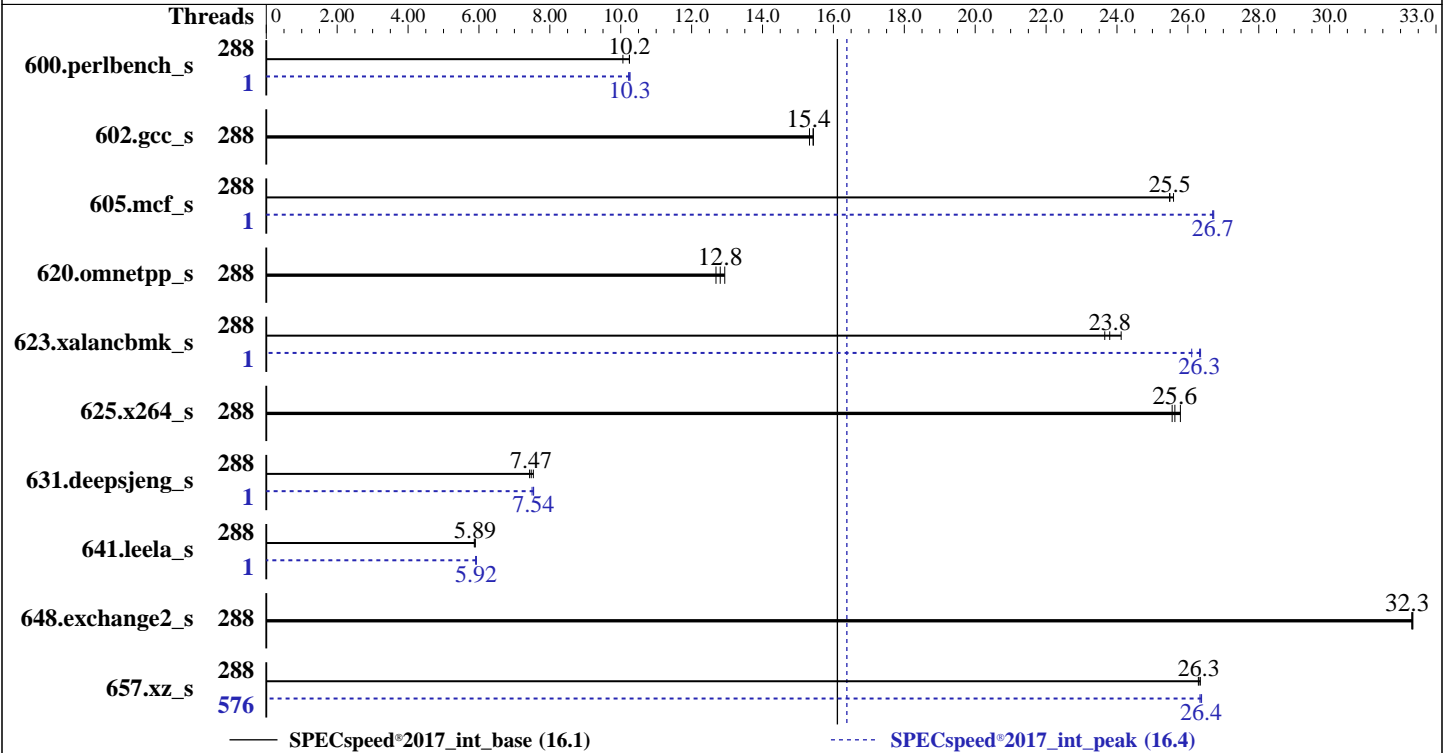
SPECspeed®2017_int_peak = 16.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2025

Hardware Availability: Feb-2025

Software Availability: Oct-2024

Threads		
600.perlbench_s	288	10.2
	1	10.3
602.gcc_s	288	15.4
605.mcf_s	288	25.5
	1	26.7
620.omnetpp_s	288	12.8
623.xalancbmk_s	288	23.8
	1	26.3
625.x264_s	288	25.6
631.deepsjeng_s	288	7.47
	1	7.54
641.leela_s	288	5.89
	1	5.92
648.exchange2_s	288	32.3
657.xz_s	288	26.3
	576	26.4

SPECspeed®2017_int_base (16.1)

SPECspeed®2017_int_peak (16.4)

Hardware

CPU Name: AMD EPYC 9825
Max MHz: 3700
Nominal: 2200
Enabled: 288 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 384 MB I+D on chip per chip,
32 MB shared / 12 cores
Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6
Kernel 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: Yes
Firmware: Lenovo BIOS Version KAE131I 5.30 released Dec-2024
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage

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CPU2017 License:	9017	**Test Date:**	Jan-2025
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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	288	**173**	**10.2**	173	10.2	176	10.1	1	174	10.2	**173**	**10.3**	173	10.3
602.gcc_s	288	258	15.4	260	15.3	**258**	**15.4**	288	258	15.4	260	15.3	**258**	**15.4**
605.mcf_s	288	184	25.6	185	25.5	**185**	**25.5**	1	177	26.7	177	26.7	**177**	**26.7**
620.omnetpp_s	288	129	12.7	126	12.9	**127**	**12.8**	288	129	12.7	126	12.9	**127**	**12.8**
623.xalancbmk_s	288	**59.6**	**23.8**	59.9	23.7	58.8	24.1	1	53.8	26.4	54.3	26.1	**53.8**	**26.3**
625.x264_s	288	68.4	25.8	**68.8**	**25.6**	69.0	25.6	288	68.4	25.8	**68.8**	**25.6**	69.0	25.6
631.deepsjeng_s	288	190	7.53	193	7.43	**192**	**7.47**	1	190	7.54	191	7.50	**190**	**7.54**
641.leela_s	288	**290**	**5.89**	291	5.87	289	5.89	1	288	5.93	**288**	**5.92**	289	5.91
648.exchange2_s	288	91.0	32.3	**90.9**	**32.3**	90.9	32.3	288	91.0	32.3	**90.9**	**32.3**	90.9	32.3
657.xz_s	288	235	26.4	235	26.3	**235**	**26.3**	576	235	26.3	**234**	**26.4**	234	26.4
SPECspeed®2017_int_base =	**16.1**													
SPECspeed®2017_int_peak =	**16.4**													

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

Compiler Notes

```
The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/
```

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-575"
LD_LIBRARY_PATH =
     "/home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/amd_speed_aocc500_znver5_A_lib/lib:/home/cpu2017-1.1.9-am
     d-aocc500_znver5_A1.2/amd_speed_aocc500_znver5_A_lib/lib32:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "576"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 641.leela_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-575"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9D64 CPU + 500GiB Memory using Ubuntu 22.04

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.
```

Platform Notes

```
BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
NUMA Nodes per Socket set to NPS4

 Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Tue Jan  7 00:50:11 2025

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

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```

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Platform Notes (Continued)

```
 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 254 (254.10+suse.84.ge8d77af424)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. BIOS
   ----------------------------------------------------------


   ----------------------------------------------------------
 1. uname -a
   Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
   x86_64 x86_64 x86_64 GNU/Linux


   ----------------------------------------------------------
 2. w
    00:50:11 up 3 min,  1 user,  load average: 0.40, 0.60, 0.30
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT


   ----------------------------------------------------------
 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) 6188722
   max locked memory       (kbytes, -l) 2097152
   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) 6188722
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


   ----------------------------------------------------------
 5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize=42
```

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Platform Notes (Continued)

```
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@notty
  /bin/bash ./02.remote_local_SPECcpu_1.01.sh
  /bin/bash ./Run035-compliant-amd-speedint.sh
  python3 ./run_amd_speed_aocc500_znver5_A1.py
  /bin/bash ./amd_speed_aocc500_znver5_A1.sh
  runcpu --config amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 intspeed
  runcpu --configfile amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
    --runmode speed --tune base:peak --size test:train:refspeed intspeed --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.059/templogs/preenv.intspeed.059.0.log --lognum 059.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2


  -----------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9825 144-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 17
    stepping        : 0
    microcode       : 0xb101025
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size        : 192 4K pages
    cpu cores       : 144
    siblings        : 288
    2 physical ids (chips)
    576 processors (hardware threads)
    physical id 0: core ids 0-11,16-27,32-43,48-59,64-75,80-91,96-107,112-123,128-139,144-155,160-171,176-187
    physical id 1: core ids 0-11,16-27,32-43,48-59,64-75,80-91,96-107,112-123,128-139,144-155,160-171,176-187
    physical id 0: apicids
    0-23,32-55,64-87,96-119,128-151,160-183,192-215,224-247,256-279,288-311,320-343,352-375
    physical id 1: apicids
    512-535,544-567,576-599,608-631,640-663,672-695,704-727,736-759,768-791,800-823,832-855,864-887
  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 2.39.3:
  Architecture:                    x86_64
  CPU op-mode(s):                  32-bit, 64-bit
  Address sizes:                   52 bits physical, 57 bits virtual
  Byte Order:                      Little Endian
  CPU(s):                          576
  On-line CPU(s) list:             0-575
  Vendor ID:                       AuthenticAMD
  BIOS Vendor ID:                  Advanced Micro Devices, Inc.
  Model name:                      AMD EPYC 9825 144-Core Processor
  BIOS Model name:                 AMD EPYC 9825 144-Core Processor               Unknown CPU @ 2.2GHz
  BIOS CPU family:                 107
  CPU family:                      26
  Model:                           17
  Thread(s) per core:              2
  Core(s) per socket:              144
  Socket(s):                       2
  Stepping:                        0
  BogoMIPS:                        4393.32
  Flags:                           fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
```

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Platform Notes (Continued)

```
                          pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb
                          rdtscp lm constant_tsc rep_good amd_lbr_v2 nopl nonstop_tsc cpuid
                          extd_apicid aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid
                          sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
                          cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
                          osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
                          perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
                          ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
                          smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                          avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                          xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                          cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                          xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                          nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                          pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                          avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                          avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                          movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                          flush_l1d debug_swap
 Virtualization:         AMD-V
 L1d cache:              13.5 MiB (288 instances)
 L1i cache:              9 MiB (288 instances)
 L2 cache:               288 MiB (288 instances)
 L3 cache:               768 MiB (24 instances)
 NUMA node(s):           8
 NUMA node0 CPU(s):      0-35,288-323
 NUMA node1 CPU(s):      36-71,324-359
 NUMA node2 CPU(s):      72-107,360-395
 NUMA node3 CPU(s):      108-143,396-431
 NUMA node4 CPU(s):      144-179,432-467
 NUMA node5 CPU(s):      180-215,468-503
 NUMA node6 CPU(s):      216-251,504-539
 NUMA node7 CPU(s):      252-287,540-575
 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 Reg file data sampling: Not affected
 Vulnerability Retbleed:              Not affected
 Vulnerability Spec rstack overflow:  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; STIBP
                                      always-on; RSB filling; PBRSB-eIBRS Not affected; BHI Not affected
 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    13.5M   12 Data            1     64       1              64
     L1i      32K       9M    8 Instruction     1     64       1              64
     L2        1M     288M   16 Unified         2   1024       1              64
     L3       32M     768M   16 Unified         3  32768       1              64

 --------------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 8 nodes (0-7)
```

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Platform Notes (Continued)

```
   node 0 cpus: 0-35,288-323
   node 0 size: 192871 MB
   node 0 free: 192099 MB
   node 1 cpus: 36-71,324-359
   node 1 size: 193517 MB
   node 1 free: 192903 MB
   node 2 cpus: 72-107,360-395
   node 2 size: 193517 MB
   node 2 free: 192952 MB
   node 3 cpus: 108-143,396-431
   node 3 size: 193517 MB
   node 3 free: 192830 MB
   node 4 cpus: 144-179,432-467
   node 4 size: 193478 MB
   node 4 free: 193272 MB
   node 5 cpus: 180-215,468-503
   node 5 size: 193517 MB
   node 5 free: 193330 MB
   node 6 cpus: 216-251,504-539
   node 6 size: 193517 MB
   node 6 free: 193332 MB
   node 7 cpus: 252-287,540-575
   node 7 size: 193271 MB
   node 7 free: 193081 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  12  12  12  32  32  32  32
     1:  12  10  12  12  32  32  32  32
     2:  12  12  10  12  32  32  32  32
     3:  12  12  12  10  32  32  32  32
     4:  32  32  32  32  10  12  12  12
     5:  32  32  32  32  12  10  12  12
     6:  32  32  32  32  12  12  10  12
     7:  32  32  32  32  12  12  12  10


   -------------------------------------------------------------
   9. /proc/meminfo
     MemTotal:      1584339696 kB


   -------------------------------------------------------------
   10. who -r
     run-level 3 Jan 7 00:47


   -------------------------------------------------------------
   11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
     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 getty@ irqbalance issue-generator
                      kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd
                      systemd-pstore 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 fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys
                      kexec-load lunmask man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd
                      serial-getty@ smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures
```

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Platform Notes (Continued)

```
                      systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
                      systemd-timesyncd
  generated           ntp_sync
  indirect            systemd-userdbd wickedd


  --------------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
    root=UUID=7b8fe170-8cd6-4f33-a048-ee31798eab65
    splash=silent
    mitigations=auto
    quiet
    security=apparmor


  --------------------------------------------------------------
  14. cpupower frequency-info
    analyzing CPU 127:
      Unable to determine current policy
      boost state support:
        Supported: yes
        Active: yes


  --------------------------------------------------------------
  15. sysctl
    kernel.numa_balancing             1
    kernel.randomize_va_space         0
    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                    8
    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                     1
    vm.watermark_boost_factor     15000
    vm.watermark_scale_factor        10
    vm.zone_reclaim_mode              1


  --------------------------------------------------------------
  16. /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


  --------------------------------------------------------------
  17. /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
```

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
(2.20 GHz, AMD EPYC 9825)

SPECspeed®2017_int_base = 16.1

SPECspeed®2017_int_peak = 16.4

CPU2017 License: 9017   **Test Date:** Jan-2025
Test Sponsor: Lenovo Global Technology   **Hardware Availability:** Feb-2025
Tested by: Lenovo Global Technology   **Software Availability:** Oct-2024

Platform Notes (Continued)

```
   ----------------------------------------------------------
   18. OS release
     From /etc/*-release /etc/*-version
     os-release SUSE Linux Enterprise Server 15 SP6

   ----------------------------------------------------------
   19. Disk information
   SPEC is set to: /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda3       btrfs  444G  126G  316G  29% /home

   ----------------------------------------------------------
   20. /sys/devices/virtual/dmi/id
       Vendor:         Lenovo
       Product:        ThinkSystem SR665 V3
       Product Family: ThinkSystem
       Serial:         1234567890

   ----------------------------------------------------------
   21. dmidecode
     Additional information from dmidecode 3.4 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 M321R8GA0PB1-CCPPC 64 GB 2 rank 6400, configured at 6000
       7x Samsung M321R8GA0PB2-CCPKC 64 GB 2 rank 6400, configured at 6000
       15x Samsung M321R8GA0PB2-CCPPC 64 GB 2 rank 6400, configured at 6000
       1x Samsung M321R8GA0PB2-CCPWC 64 GB 2 rank 6400, configured at 6000

   ----------------------------------------------------------
   22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:      Lenovo
       BIOS Version:     KAE131I-5.30
       BIOS Date:        12/17/2024
       BIOS Revision:    5.30
       Firmware Revision: 54.6
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
         | 657.xz_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
         | 641.leela_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
```

Lenovo Global Technology

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Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Compiler Version Notes (Continued)

```
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------------------


==============================================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Base Portability Flags

600.perlbench_s: `-DSPEC_LINUX_X64 -DSPEC_LP64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-DSPEC_LINUX -DSPEC_LP64`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
`-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-extra-inliner -O3`
`-march=znver5 -fveclib=AMDLIBM -ffast-math -fopenmp -DSPEC_OPENMP`

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Lenovo Global Technology

ThinkSystem SR665 V3
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Base Optimization Flags (Continued)

C benchmarks (continued):
```
-flto -fremap-arrays -fstrip-mining -fstruct-layout=7
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -zopt -fopenmp=libomp -lomp -lamdlibm
-lflang -lamdalloc
```

C++ benchmarks:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -DSPEC_OPENMP -flto
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=100 -zopt
-fvirtual-function-elimination -fvisibility=hidden -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc-ext
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-iv-split -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -O3 -march=znver5 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -mllvm -optimize-strided-mem-cost
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc
```

Base Other Flags

C benchmarks:
```
-Wno-return-type -Wno-unused-command-line-argument
```

C++ benchmarks:
```
-Wno-unused-command-line-argument
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

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Lenovo Global Technology

ThinkSystem SR665 V3
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SPECspeed®2017_int_peak = 16.4

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

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Peak Compiler Invocation (Continued)

Fortran benchmarks:
```
flang
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-DSPEC_OPENMP -fremap-arrays -fstrip-mining
-fstruct-layout=9 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -zopt -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang
```

```
602.gcc_s: basepeak = yes
```

```
605.mcf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-DSPEC_OPENMP -fremap-arrays -fstrip-mining
-fstruct-layout=9 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -zopt -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang
```

```
625.x264_s: basepeak = yes
```

```
657.xz_s: Same as 600.perlbench_s
```

C++ benchmarks:

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR665 V3
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SPECspeed®2017_int_peak = 16.4

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Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Jan-2025
Hardware Availability: Feb-2025
Software Availability: Oct-2024

Peak Optimization Flags (Continued)

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s: `-m64 -std=c++14`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-do-block-reorder=advanced -Ofast`
`-march=znver5 -fveclib=AMDLIBM -ffast-math -fopenmp`
`-flto -DSPEC_OPENMP -mllvm -reduce-array-computations=3`
`-mllvm -unroll-threshold=100 -zopt`
`-fvirtual-function-elimination -fvisibility=hidden`
`-mllvm -do-block-reorder=advanced -fopenmp=libomp -lomp`
`-lamdlibm -lamdalloc-ext -lflang`

631.deepsjeng_s: `-m64 -std=c++14`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
`-march=znver5 -fveclib=AMDLIBM -ffast-math -fopenmp`
`-flto -DSPEC_OPENMP -mllvm -reduce-array-computations=3`
`-mllvm -unroll-threshold=100 -zopt`
`-fvirtual-function-elimination -fvisibility=hidden`
`-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang`

641.leela_s: `Same as 631.deepsjeng_s`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-Wno-return-type -Wno-unused-command-line-argument`

C++ benchmarks:
`-Wno-unused-command-line-argument`

Fortran benchmarks:
`-Wno-unused-command-line-argument`

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-Turin-E.html`
`http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.html`

SPEC CPU®2017 Integer Speed Result

Lenovo Global Technology

ThinkSystem SR665 V3
(2.20 GHz, AMD EPYC 9825)

SPECspeed®2017_int_base = 16.1

SPECspeed®2017_int_peak = 16.4

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Jan-2025

Hardware Availability: Feb-2025

Software Availability: Oct-2024

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-Turin-E.xml
http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml

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

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