SPEC CPU®2017 Integer Speed Result

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Lenovo Global Technology

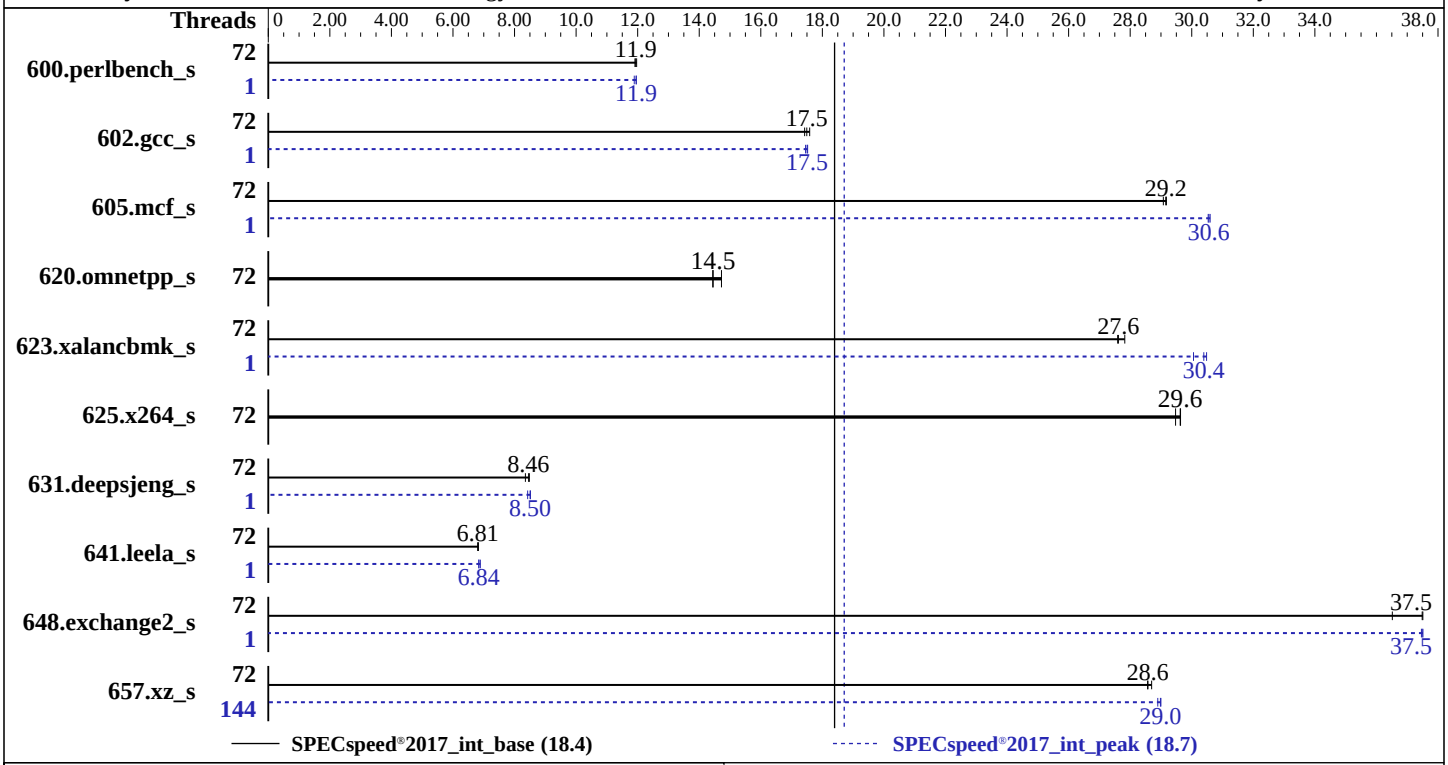
ThinkSystem SD535 V3
(3.15 GHz, AMD EPYC 9565)

SPECspeed®2017_int_base = 18.4

SPECspeed®2017_int_peak = 18.7

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

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



Hardware

CPU Name:	AMD EPYC 9565
Max MHz:	4300
Nominal:	3150
Enabled:	72 cores, 1 chip, 2 threads/core
Orderable:	1 chip
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 / 6 cores
Other:	None
Memory:	384 GB (12 x 32 GB 2Rx8 PC5-6400B-R, running at 6000)
Storage:	1 x 960 GB M.2 SATA SSD
Other:	CPU Cooling: Air

Software

OS:	Red Hat Enterprise Linux 9.4 (Plow) Kernel 5.14.0-427.13.1.el9_4.x86_64
Compiler:	C/C++/Fortran: Version 5.0.0 of AOCC
Parallel:	Yes
Firmware:	Lenovo BIOS Version GPE113I 4.10 released Dec-2024
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	None
Power Management:	BIOS and OS set to prefer performance at the cost of additional power usage

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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	72	**149**	**11.9**	148	12.0	149	11.9	1	148	12.0	**149**	**11.9**	149	11.9
602.gcc_s	72	229	17.4	226	17.6	**228**	**17.5**	1	228	17.5	227	17.5	**227**	**17.5**
605.mcf_s	72	162	29.2	**162**	**29.2**	162	29.1	1	**154**	**30.6**	155	30.5	154	30.6
620.omnetpp_s	72	**113**	**14.5**	111	14.7	113	14.4	72	**113**	**14.5**	111	14.7	113	14.4
623.xalancbmk_s	72	**51.3**	**27.6**	50.9	27.8	51.4	27.6	1	47.1	30.1	**46.6**	**30.4**	46.5	30.5
625.x264_s	72	59.8	29.5	59.5	29.6	**59.5**	**29.6**	72	59.8	29.5	59.5	29.6	**59.5**	**29.6**
631.deepsjeng_s	72	169	8.48	172	8.35	**169**	**8.46**	1	168	8.52	**168**	**8.50**	170	8.43
641.leela_s	72	251	6.81	250	6.82	**251**	**6.81**	1	**249**	**6.84**	249	6.84	248	6.89
648.exchange2_s	72	80.5	36.5	**78.4**	**37.5**	78.4	37.5	1	**78.4**	**37.5**	78.4	37.5	78.5	37.5
657.xz_s	72	215	28.7	**216**	**28.6**	216	28.6	144	**213**	**29.0**	214	28.9	213	29.0

SPECspeed®2017_int_base = 18.4

SPECspeed®2017_int_peak = 18.7

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.

cpupower set to performance mode
cpupower frequency-set -r -g performance
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.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-143"
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 = "144"

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

Environment variables set by runcpu during the 602.gcc_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 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-143"
```

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
P-State set to Enabled

 Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
```

(Continued on next page)

Platform Notes (Continued)

```
running on localhost.localdomain Sun Mar  2 10:16:50 2025

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

------------------------------------------------------------
Table of contents
------------------------------------------------------------
 1. uname -a
 2. w
 3. Username
 4. ulimit -a
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 252 (252-32.el9_4)
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.localdomain 5.14.0-427.13.1.el9_4.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Apr 10 10:29:16 EDT
  2024 x86_64 x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   10:16:50 up 3 min,  0 users,  load average: 0.01, 0.03, 0.01
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT

------------------------------------------------------------
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) 1545874
  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
```

(Continued on next page)

Platform Notes (Continued)

```
   cpu time                    (seconds, -t) unlimited
   max user processes                 (-u) 1545874
   virtual memory              (kbytes, -v) unlimited
   file locks                         (-x) unlimited

------------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 31
 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/CPU2017.157/templogs/preenv.intspeed.157.0.log --lognum 157.0 --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 9565 72-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 2
    stepping        : 1
    microcode       : 0xb00211a
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size        : 192 4K pages
    cpu cores       : 72
    siblings        : 144
    1 physical ids (chips)
    144 processors (hardware threads)
    physical id 0: core ids 0-5,8-13,16-21,24-29,32-37,40-45,48-53,56-61,64-69,72-77,80-85,88-93
    physical id 0: apicids 0-11,16-27,32-43,48-59,64-75,80-91,96-107,112-123,128-139,144-155,160-171,176-187
  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:                      52 bits physical, 57 bits virtual
  Byte Order:                         Little Endian
  CPU(s):                             144
  On-line CPU(s) list:                0-143
  Vendor ID:                          AuthenticAMD
  BIOS Vendor ID:                     Advanced Micro Devices, Inc.
  Model name:                         AMD EPYC 9565 72-Core Processor
  BIOS Model name:                    AMD EPYC 9565 72-Core Processor
  CPU family:                         26
  Model:                              2
  Thread(s) per core:                 2
  Core(s) per socket:                 72
  Socket(s):                          1
```

(Continued on next page)

Platform Notes (Continued)

```
  Stepping:                            1
  Frequency boost:                     enabled
  CPU(s) scaling MHz:                  100%
  CPU max MHz:                         3150.0000
  CPU min MHz:                         1500.0000
  BogoMIPS:                            6289.97
  Flags:                               fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat 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
                                       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:                           3.4 MiB (72 instances)
  L1i cache:                           2.3 MiB (72 instances)
  L2 cache:                            72 MiB (72 instances)
  L3 cache:                            384 MiB (12 instances)
  NUMA node(s):                        4
  NUMA node0 CPU(s):                   0-17,72-89
  NUMA node1 CPU(s):                   18-35,90-107
  NUMA node2 CPU(s):                   36-53,108-125
  NUMA node3 CPU(s):                   54-71,126-143
  Vulnerability Gather data sampling: Not affected
  Vulnerability Itlb multihit:         Not affected
  Vulnerability L1tf:                  Not affected
  Vulnerability Mds:                   Not affected
  Vulnerability Meltdown:              Not affected
  Vulnerability Mmio stale data:       Not affected
  Vulnerability Retbleed:              Not affected
  Vulnerability Spec 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
  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     3.4M   12 Data            1    64        1             64
     L1i       32K     2.3M    8 Instruction     1    64        1             64
     L2         1M      72M   16 Unified         2  1024        1             64
     L3        32M     384M   16 Unified         3 32768        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
```


(Continued on next page)

Platform Notes (Continued)

```
  available: 4 nodes (0-3)
  node 0 cpus: 0-17,72-89
  node 0 size: 96341 MB
  node 0 free: 95416 MB
  node 1 cpus: 18-35,90-107
  node 1 size: 96758 MB
  node 1 free: 96196 MB
  node 2 cpus: 36-53,108-125
  node 2 size: 96717 MB
  node 2 free: 96207 MB
  node 3 cpus: 54-71,126-143
  node 3 size: 96689 MB
  node 3 free: 96138 MB
  node distances:
  node   0   1   2   3
    0:  10  12  12  12
    1:  12  10  12  12
    2:  12  12  10  12
    3:  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       395783748 kB

------------------------------------------------------------
10. who -r
  run-level 3 Mar 2 10:13

------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-32.el9_4)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
                   dbus-broker getty@ insights-client-boot irqbalance kdump low-memory-monitor mdmonitor
                   microcode nis-domainname nvmefc-boot-connections rhsmcertd rsyslog rtkit-daemon
                   selinux-autorelabel-mark sshd sssd systemd-boot-update systemd-network-generator udisks2
                   upower
  enabled-runtime  systemd-remount-fs
  disabled         canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                   chrony-wait chronyd-restricted console-getty cpupower debug-shell dnf-system-upgrade
                   firewalld kvm_stat man-db-restart-cache-update nftables nvmf-autoconnect pesign rdisc rhcd
                   rhsm rhsm-facts rpmdb-rebuild selinux-check-proper-disable serial-getty@ sshd-keygen@
                   systemd-boot-check-no-failures systemd-pstore systemd-sysext
  generated        ntp_sync
  indirect         sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo systemd-sysupdate
                   systemd-sysupdate-reboot

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd3,gpt2)/boot/vmlinuz-5.14.0-427.13.1.el9_4.x86_64
  root=UUID=609e1264-f568-475c-b502-9e0795850886
  ro
  resume=UUID=7f8ee8bf-b24d-4aea-9bd8-e670d4778be8

------------------------------------------------------------
14. cpupower frequency-info
```

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Platform Notes (Continued)

```
  analyzing CPU 56:
    current policy: frequency should be within 1.50 GHz and 3.15 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes
      Boost States: 0
      Total States: 3
      Pstate-P0:  11800MHz

------------------------------------------------------------
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

------------------------------------------------------------
18. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 9.4 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.4 (Plow)
  system-release Red Hat Enterprise Linux release 9.4 (Plow)

------------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017-1.1.9-amd-aocc500_znver5_A1.2
```

(Continued on next page)

Platform Notes (Continued)

```
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p4 xfs   820G   39G  781G   5% /home

------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         Lenovo
    Product:        ThinkSystem SD535 V3
    Product Family: ThinkSystem
    Serial:         1234567890

------------------------------------------------------------
21. dmidecode
  Additional information from dmidecode 3.5 follows.  WARNING: Use caution when you interpret this section.
  The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
  determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
  "DMTF SMBIOS" standard.
  Memory:
    12x Samsung M321R4GA3PB2-CCPEC 32 GB 2 rank 6400, configured at 6000


------------------------------------------------------------
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Lenovo
   BIOS Version:      GPE113I-4.10
   BIOS Date:         12/12/2024
   BIOS Revision:     4.10
   Firmware Revision: 5.10
```

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
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
-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

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Base Optimization Flags (Continued)

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++

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: `Same as 600.perlbench_s`

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:

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`

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Peak Optimization Flags (Continued)

631.deepsjeng_s (continued):
-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:
-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 -lamdalloc -lflang

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

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

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