



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR675 V3  
(3.15 GHz, AMD EPYC 9455)

SPECspeed®2017\_int\_base = 18.9

SPECspeed®2017\_int\_peak = 19.2

CPU2017 License: 9017

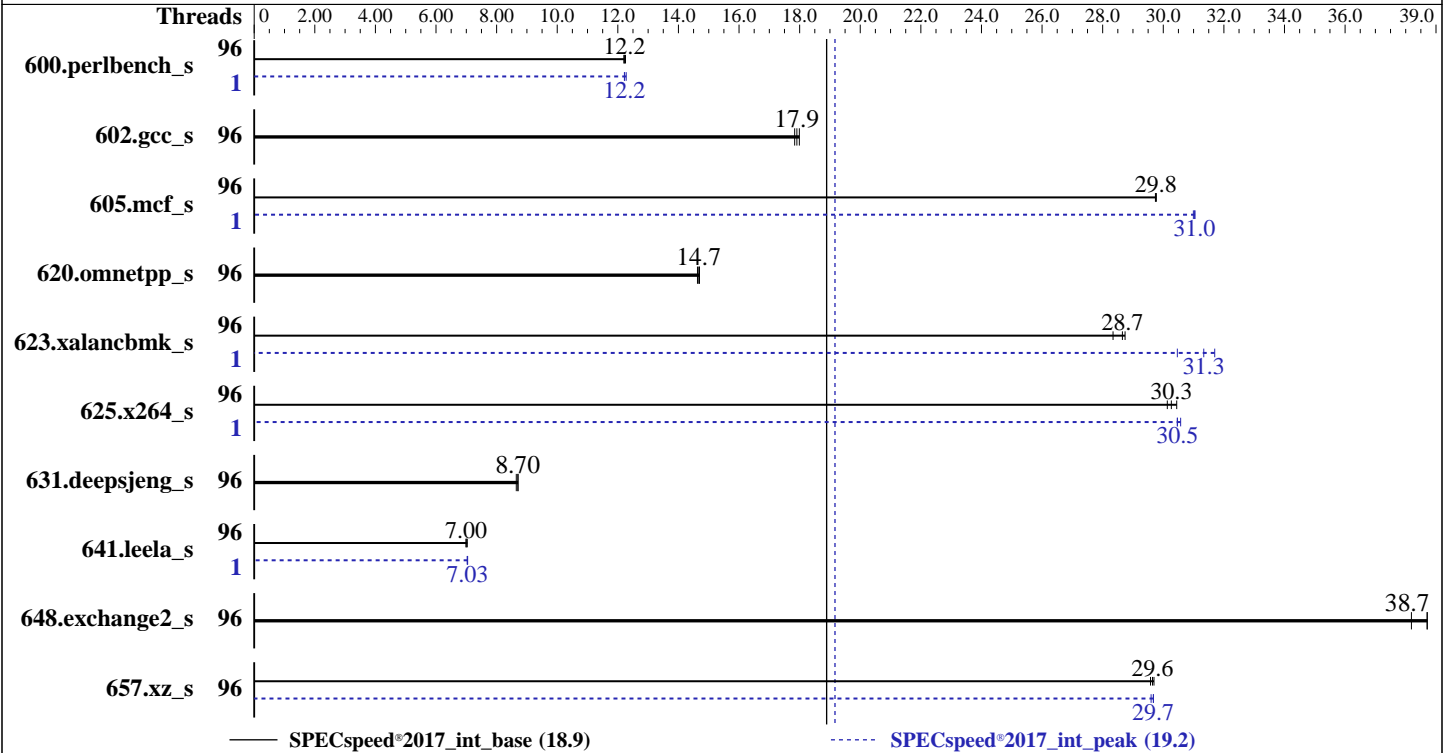
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Mar-2025

Hardware Availability: Mar-2025

Software Availability: Oct-2024



### Hardware

CPU Name: AMD EPYC 9455  
 Max MHz: 4400  
 Nominal: 3150  
 Enabled: 96 cores, 2 chips  
 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: 256 MB I+D on chip per chip,  
 32 MB shared / 6 cores  
 Other: None  
 Memory: 768 GB (24 x 32 GB 2Rx8 PC5-6400B-R, running at 6000)  
 Storage: 1 x 1.92 TB M.2 NVME 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 QGE1331 7.20 released Feb-2025  
 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	96	145	12.3	146	12.2	<b>145</b>	<b>12.2</b>	1	<b>145</b>	<b>12.2</b>	145	12.3	145	12.2
602.gcc_s	96	<b>222</b>	<b>17.9</b>	221	18.0	223	17.8	96	<b>222</b>	<b>17.9</b>	221	18.0	223	17.8
605.mcf_s	96	159	29.8	159	29.7	<b>159</b>	<b>29.8</b>	1	152	31.0	152	31.0	<b>152</b>	<b>31.0</b>
620.omnetpp_s	96	111	14.7	111	14.6	<b>111</b>	<b>14.7</b>	96	111	14.7	111	14.6	<b>111</b>	<b>14.7</b>
623.xalancbmk_s	96	50.0	28.3	49.3	28.7	<b>49.5</b>	<b>28.7</b>	1	44.7	31.7	<b>45.2</b>	<b>31.3</b>	46.5	30.5
625.x264_s	96	58.5	30.1	<b>58.3</b>	<b>30.3</b>	57.9	30.4	1	<b>57.9</b>	<b>30.5</b>	57.9	30.5	57.7	30.6
631.deepsjeng_s	96	166	8.65	165	8.71	<b>165</b>	<b>8.70</b>	96	166	8.65	165	8.71	<b>165</b>	<b>8.70</b>
641.leela_s	96	<b>244</b>	<b>7.00</b>	243	7.03	244	6.99	1	<b>243</b>	<b>7.03</b>	242	7.04	243	7.03
648.exchange2_s	96	<b>76.0</b>	<b>38.7</b>	75.9	38.7	77.0	38.2	96	<b>76.0</b>	<b>38.7</b>	75.9	38.7	77.0	38.2
657.xz_s	96	<b>209</b>	<b>29.6</b>	208	29.7	209	29.6	96	<b>208</b>	<b>29.7</b>	208	29.7	209	29.6

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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.



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## Environment Variables Notes

Environment variables set by runcpu before the start of the run:

GOMP\_CPU\_AFFINITY = "0-95"

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-amd-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 = "96"

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 625.x264\_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 = "0-95"

## 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

P-State set to Enabled

NUMA Nodes per Socket set to NPS4

SMT Mode set to Disabled

Sysinfo program /home/cpu2017-1.1.9-amd-aocc500\_znver5\_A1.2/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost Fri Mar 7 17:23:29 2025

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

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## Platform Notes (Continued)

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- 11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
- 12. Services, from systemctl list-unit-files
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- 19. Disk information
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- 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
17:23:29 up 3 min, 1 user, load average: 0.13, 0.21, 0.09
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) 3094193
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) 3094193
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited
```

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### Platform Notes (Continued)

#### 5. sysinfo process ancestry

```

/usr/lib/systemd/systemd --switched-root --system --deserialize=42
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 intspeerd
runcpu --configfile amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode speed --tune base:peak --size test:train:refspeed intspeerd --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.329/temlogs/preenv.intspeerd.329.0.log --lognum 329.0 --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 9455 48-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     : 48
siblings      : 48
2 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
physical id 1: core ids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
physical id 0: apicids 0-5,16-21,32-37,48-53,64-69,80-85,96-101,112-117
physical id 1: apicids 128-133,144-149,160-165,176-181,192-197,208-213,224-229,240-245

```

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):                96
On-line CPU(s) list:   0-95
Vendor ID:             AuthenticAMD
BIOS Vendor ID:       Advanced Micro Devices, Inc.
Model name:            AMD EPYC 9455 48-Core Processor
BIOS Model name:       AMD EPYC 9455 48-Core Processor
BIOS CPU family:      107
CPU family:            26
Model:                 2
Thread(s) per core:    1
Core(s) per socket:    48
Socket(s):             2
Stepping:              1
Frequency boost:       enabled
CPU(s) scaling MHz:    101%

```

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### Platform Notes (Continued)

```

CPU max MHz:          3150.0000
CPU min MHz:          1500.0000
BogoMIPS:              6290.75
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 fl6c 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_lld debug_swap
AMD-V
L1d cache:            4.5 MiB (96 instances)
L1i cache:            3 MiB (96 instances)
L2 cache:              96 MiB (96 instances)
L3 cache:              512 MiB (16 instances)
NUMA node(s):         8
NUMA node0 CPU(s):    0-11
NUMA node1 CPU(s):    12-23
NUMA node2 CPU(s):    24-35
NUMA node3 CPU(s):    36-47
NUMA node4 CPU(s):    48-59
NUMA node5 CPU(s):    60-71
NUMA node6 CPU(s):    72-83
NUMA node7 CPU(s):    84-95
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:        Not affected
Vulnerability Lltf:                  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/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2:              Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                       disabled; RSB filling; PBRSE-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	4.5M	12	Data	1	64	1	64
L1i	32K	3M	8	Instruction	1	64	1	64
L2	1M	96M	16	Unified	2	1024	1	64
L3	32M	512M	16	Unified	3	32768	1	64

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### Platform Notes (Continued)

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```

available: 8 nodes (0-7)
node 0 cpus: 0-11
node 0 size: 96341 MB
node 0 free: 95940 MB
node 1 cpus: 12-23
node 1 size: 96764 MB
node 1 free: 96442 MB
node 2 cpus: 24-35
node 2 size: 96764 MB
node 2 free: 96436 MB
node 3 cpus: 36-47
node 3 size: 96764 MB
node 3 free: 96004 MB
node 4 cpus: 48-59
node 4 size: 96764 MB
node 4 free: 96394 MB
node 5 cpus: 60-71
node 5 size: 96764 MB
node 5 free: 96482 MB
node 6 cpus: 72-83
node 6 size: 96726 MB
node 6 free: 96434 MB
node 7 cpus: 84-95
node 7 size: 96683 MB
node 7 free: 96249 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: 792140568 kB

10. who -r

run-level 3 Mar 7 17:20

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 nvme-fc-boot-connections nvme-fc-autoconnect postfix
                purge-kernels rollback rsyslog sapconf smartd sshd sysctl-logger systemd-pstore wickd
                wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime systemd-remount-fs

```

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### Platform Notes (Continued)

```

disabled      autofsd autofast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
              chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info
              firewallld 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 sysstat systemd-boot-check-no-failures
              systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
              systemd-timesyncd
generated     ntp_sync
indirect      systemd-userdbd uidd wickedd

```

#### 13. Linux kernel boot-time arguments, from /proc/cmdline

```

BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
root=UUID=240b751b-cc96-4bc0-bc79-208919660c0a
splash=silent
mitigations=auto
quiet
security=apparmor

```

#### 14. cpupower frequency-info

```

analyzing CPU 41:
  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

```

#### 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

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### Platform Notes (Continued)

```
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 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/nvme1n1p3 xfs 1.8T 94G 1.7T 6% /  
-----

-----  
20. /sys/devices/virtual/dmi/id  
Vendor: Lenovo  
Product: ThinkSystem SR675 V3 System Board  
Product Family: ThinkSystem  
Serial: None  
-----

-----  
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:  
12x SK Hynix HMC88AHBRA471N 32 GB 2 rank 6400, configured at 6000  
2x SK Hynix HMC88AHBRA472N 32 GB 2 rank 6400, configured at 6000  
10x SK Hynix HMC88AHBRA478N 32 GB 2 rank 6400, configured at 6000  
-----

-----  
22. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: Lenovo  
BIOS Version: QGE133I-7.20  
BIOS Date: 02/05/2025  
BIOS Revision: 7.20  
Firmware Revision: 9.10  
-----

### 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  
-----

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# SPEC CPU®2017 Integer Speed Result

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## Lenovo Global Technology

ThinkSystem SR675 V3  
(3.15 GHz, AMD EPYC 9455)

SPECspeed®2017\_int\_base = 18.9

SPECspeed®2017\_int\_peak = 19.2

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Mar-2025

**Hardware Availability:** Mar-2025

**Software Availability:** Oct-2024

## Compiler Version Notes (Continued)

-----  
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



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## 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
```

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
```



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Tested by: Lenovo Global Technology

Test Date: Mar-2025

Hardware Availability: Mar-2025

Software Availability: Oct-2024

## 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: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: Same as 600.perlbench\_s

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## Peak Optimization Flags (Continued)

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: basepeak = yes

```
641.leela_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
```

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



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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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