



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

CPU2017 License: 9017

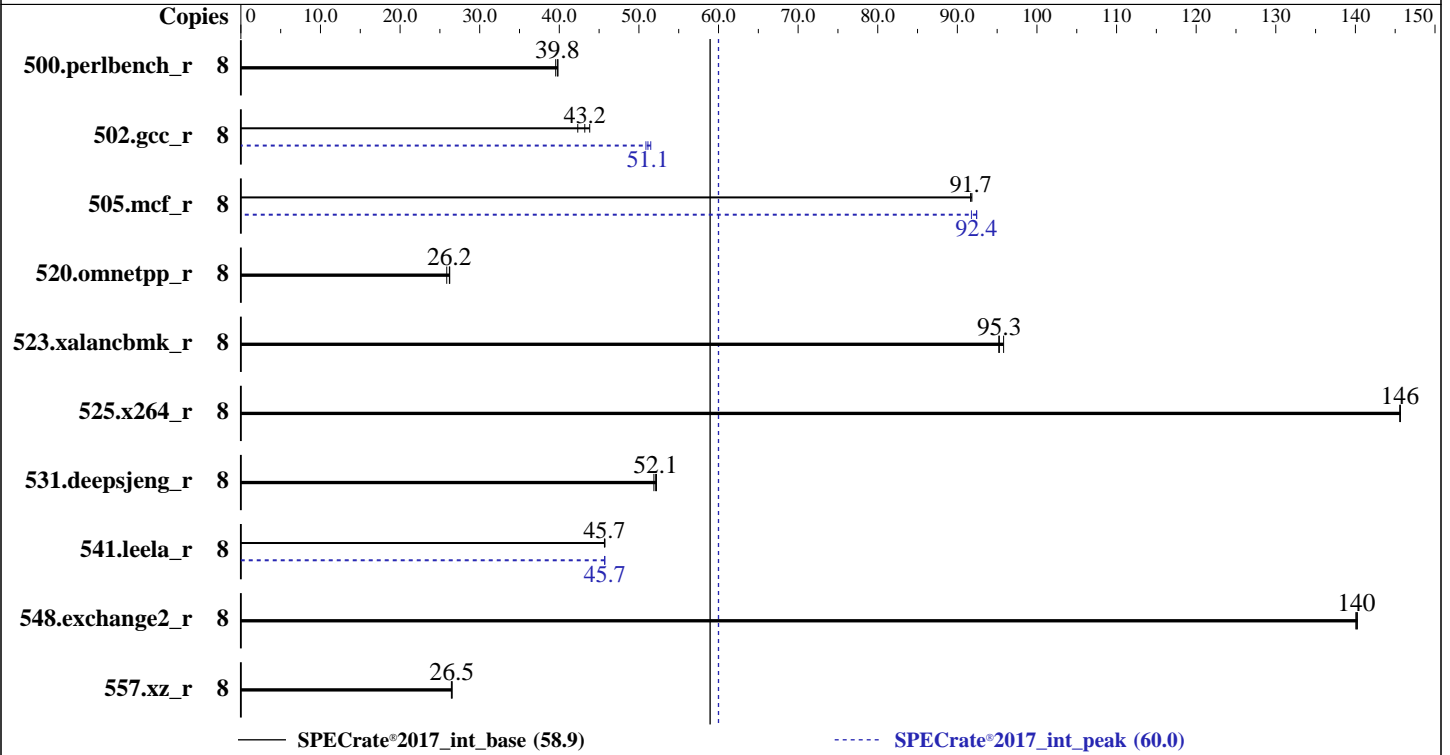
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Dec-2024

Hardware Availability: Dec-2024

Software Availability: Oct-2024



### Hardware

CPU Name: AMD EPYC 4124P  
 Max MHz: 5100  
 Nominal: 3800  
 Enabled: 4 cores, 1 chip, 2 threads/core  
 Orderable: 1 chip  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 16 MB I+D on chip per chip  
 Other: None  
 Memory: 64 GB (2 x 32 GB 2Rx8 PC5-5600B-E, running at 5200)  
 Storage: 1 x 960 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: No  
 Firmware: Lenovo BIOS Version QIE101W 1.10 released Nov-2024  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other: None  
 Power Management: OS set to balance power and performance



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

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

Test Date: Dec-2024  
Hardware Availability: Dec-2024  
Software Availability: Oct-2024

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	8	<b>320</b>	<b>39.8</b>	320	39.8	322	39.5	8	<b>320</b>	<b>39.8</b>	320	39.8	322	39.5
502.gcc_r	8	268	42.3	<b>262</b>	<b>43.2</b>	259	43.8	8	223	50.9	220	51.5	<b>222</b>	<b>51.1</b>
505.mcf_r	8	<b>141</b>	<b>91.7</b>	141	91.8	141	91.7	8	<b>140</b>	<b>92.4</b>	141	91.8	140	92.4
520.omnetpp_r	8	400	26.2	406	25.9	<b>401</b>	<b>26.2</b>	8	400	26.2	406	25.9	<b>401</b>	<b>26.2</b>
523.xalancbmk_r	8	88.7	95.2	88.2	95.8	<b>88.7</b>	<b>95.3</b>	8	88.7	95.2	88.2	95.8	<b>88.7</b>	<b>95.3</b>
525.x264_r	8	<b>96.2</b>	<b>146</b>	96.2	146	96.2	146	8	<b>96.2</b>	<b>146</b>	96.2	146	96.2	146
531.deepsjeng_r	8	<b>176</b>	<b>52.1</b>	176	52.2	177	51.9	8	<b>176</b>	<b>52.1</b>	176	52.2	177	51.9
541.leela_r	8	<b>290</b>	<b>45.7</b>	290	45.7	290	45.7	8	290	45.7	290	45.7	<b>290</b>	<b>45.7</b>
548.exchange2_r	8	<b>150</b>	<b>140</b>	149	140	150	140	8	<b>150</b>	<b>140</b>	149	140	150	140
557.xz_r	8	<b>326</b>	<b>26.5</b>	326	26.5	327	26.4	8	<b>326</b>	<b>26.5</b>	326	26.5	327	26.4

SPECrate®2017\_int\_base = **58.9**

SPECrate®2017\_int\_peak = **60.0**

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.



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

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

**Test Date:** Dec-2024  
**Hardware Availability:** Dec-2024  
**Software Availability:** Oct-2024

## Environment Variables Notes

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

```
LD_LIBRARY_PATH =
"/home/cpu2017-1.1.9-amd-aocc500_znver5_A1/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017-1.1.9-amd-aocc500_znver5_A1/amd_rate_aocc500_znver5_A_lib/lib32:"
MALLOCONF = "retain:true"
```

## General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

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

```
Sysinfo program /home/cpu2017-1.1.9-amd-aocc500_znver5_A1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Tue Dec 10 19:07:59 2024
```

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 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 (36cle09)
```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

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

**Test Date:** Dec-2024  
**Hardware Availability:** Dec-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

x86\_64 x86\_64 x86\_64 GNU/Linux

```

-----
2. w
  19:07:59 up 1 day,  1:03,  2 users,  load average: 2.63, 5.78, 5.46
USER   TTY      FROM             LOGIN@   IDLE   JCPU   PCPU   WHAT
root   pts/0    172.30.81.2      Mon18    25:02m 0.86s  0.03s  /bin/bash ./amd_rate_aocc500_znver5_A1.sh
root   pts/1    172.30.81.2      Mon18    4:25m  0.11s  0.11s  -bash

```

```

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

```

```

-----
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size                (blocks, -f) unlimited
pending signals         (-i) 253446
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) 253446
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited

```

```

-----
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@pts/0
-bash
/bin/bash ./03.local_run_SPECCcpu.sh
/bin/bash ./Run025-compliant-amd-rateint.sh
python3 ./run_amd_rate_aocc500_znver5_A1.py
/bin/bash ./amd_rate_aocc500_znver5_A1.sh
runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 intrate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.011/templogs/preenv.intrate.011.0.log --lognum 011.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017-1.1.9-amd-aocc500_znver5_A1

```

```

-----
6. /proc/cpuinfo
model name      : AMD EPYC 4124P 4-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 25
model          : 97
stepping       : 2
microcode      : 0xa601209
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srs0
TLB size      : 3584 4K pages

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECrate®2017\_int\_base = 58.9

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_peak = 60.0

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

**Test Date:** Dec-2024  
**Hardware Availability:** Dec-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

```
cpu cores      : 4
siblings      : 8
1 physical ids (chips)
8 processors (hardware threads)
physical id 0: core ids 0-3
physical id 0: apicids 0-7
```

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:         48 bits physical, 48 bits virtual
Byte Order:            Little Endian
CPU(s):                8
On-line CPU(s) list:   0-7
Vendor ID:             AuthenticAMD
BIOS Vendor ID:       Advanced Micro Devices, Inc.
Model name:            AMD EPYC 4124P 4-Core Processor
BIOS Model name:      AMD EPYC 4124P 4-Core Processor
BIOS CPU family:      107
CPU family:            25
Model:                 97
Thread(s) per core:    2
Core(s) per socket:    4
Socket(s):             1
Stepping:              2
Frequency boost:       enabled
CPU(s) scaling MHz:    65%
CPU max MHz:           5169.3350
CPU min MHz:           3000.0000
BogoMIPS:              7585.35
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 aperfmpperf rapl pni pclmulqdq monitor ssse3 fma cx16
sse4_1 sse4_2 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 bmi1 avx2 smep bmi2
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 avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd 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 vnmisr avx512vbmi umip pku ospke avx512_vbmi2 gfni
vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq rdpid
overflow_recov succor smca flush_l1d
Virtualization:       AMD-V
L1d cache:            128 KiB (4 instances)
L1i cache:            128 KiB (4 instances)
L2 cache:              4 MiB (4 instances)
L3 cache:              16 MiB (1 instance)
NUMA node(s):         1
NUMA node0 CPU(s):    0-7

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

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

**Test Date:** Dec-2024  
**Hardware Availability:** Dec-2024  
**Software Availability:** Oct-2024

### Platform Notes (Continued)

```

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: Mitigation; Safe RET
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; PBRBS-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	32K	128K	8	Data	1	64	1	64
L1i	32K	128K	8	Instruction	1	64	1	64
L2	1M	4M	8	Unified	2	2048	1	64
L3	16M	16M	16	Unified	3	16384	1	64

8. numactl --hardware

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

```

available: 1 nodes (0)
node 0 cpus: 0-7
node 0 size: 63411 MB
node 0 free: 62853 MB
node distances:
node 0
0: 10

```

9. /proc/meminfo

MemTotal: 64933876 kB

10. who -r

run-level 3 Dec 9 18:04

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 autofsd autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
chronyd console-getty cups cups-browsed debug-shell ebttables 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
systemd-confext systemd-network-generator systemd-sysextd systemd-time-wait-sync

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Dec-2024

**Hardware Availability:** Dec-2024

**Software Availability:** Oct-2024

### Platform Notes (Continued)

indirect           systemd-timesyncd  
                  systemd-userdbd wickedd

-----  
13. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default  
root=UUID=69af5974-2680-4d0c-9805-7dae997bdc7d  
splash=silent  
mitigations=auto  
quiet  
security=apparmor

-----  
14. cpupower frequency-info  
analyzing CPU 6:  
  current policy: frequency should be within 3.00 GHz and 3.80 GHz.  
                  The governor "ondemand" may decide which speed to use  
                  within this range.  
  
  boost state support:  
    Supported: yes  
    Active: yes

-----  
15. sysctl  
kernel.numa\_balancing           0  
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)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

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

**Test Date:** Dec-2024  
**Hardware Availability:** Dec-2024  
**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  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda3 xfs 893G 43G 851G 5% /

-----  
20. /sys/devices/virtual/dmi/id  
Vendor: LENOVO  
Product: ThinkSystem ST45 V3  
Product Family: ThinkSystem  
Serial: INVALID

-----  
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:  
2x SK Hynix HMC88AGBEA084N 32 GB 2 rank 5600, configured at 5200

-----  
22. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: LENOVO  
BIOS Version: QIE101W-1.10  
BIOS Date: 11/11/2024  
BIOS Revision: 1.10  
Firmware Revision: 12.65  
ST45 V3 CPU performance result based on 65W maximum consumption limit.

### Compiler Version Notes

=====  
C | 502.gcc\_r(peak)

-----  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin

=====  
C | 500.perlbench\_r(base, peak) 502.gcc\_r(base) 505.mcf\_r(base, peak) 525.x264\_r(base, peak)  
| 557.xz\_r(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

(Continued on next page)





# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Dec-2024

**Hardware Availability:** Dec-2024

**Software Availability:** Oct-2024

## Compiler Version Notes (Continued)

=====  
C | 502.gcc\_r(peak)  
-----

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
-----

=====  
C | 500.perlbench\_r(base, peak) 502.gcc\_r(base) 505.mcf\_r(base, peak) 525.x264\_r(base, peak)  
557.xz\_r(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++ | 520.omnetpp\_r(base, peak) 523.xalancbmk\_r(base, peak) 531.deepsjeng\_r(base, peak)  
541.leela\_r(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 | 548.exchange2\_r(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



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate®2017\_int\_base = 58.9

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_peak = 60.0

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Dec-2024

Hardware Availability: Dec-2024

Software Availability: Oct-2024

## Base Portability Flags

```
500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

## Base Optimization Flags

C benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-Wl,-mllvm -Wl,-extra-inliner -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc-ext -ldl
```

C++ benchmarks:

```
-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 -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto
-fepilog-vectorization-of-inductions -mllvm -optimize-strided-mem-cost
-floop-transform -mllvm -unroll-aggressive -mllvm -unroll-threshold=500
-lamdlibm -lflang -lamdalloc -ldl
```



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Dec-2024

**Hardware Availability:** Dec-2024

**Software Availability:** Oct-2024

## Base Other Flags

C benchmarks:

-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

500.perlbench\_r: -DSPEC\_LINUX\_X64 -DSPEC\_LP64

502.gcc\_r: -D\_FILE\_OFFSET\_BITS=64

505.mcf\_r: -DSPEC\_LP64

520.omnetpp\_r: -DSPEC\_LP64

523.xalancbmk\_r: -DSPEC\_LINUX -DSPEC\_LP64

525.x264\_r: -DSPEC\_LP64

531.deepsjeng\_r: -DSPEC\_LP64

541.leela\_r: -DSPEC\_LP64

548.exchange2\_r: -DSPEC\_LP64

557.xz\_r: -DSPEC\_LP64

## Peak Optimization Flags

C benchmarks:

500.perlbench\_r: basepeak = yes

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Dec-2024

**Hardware Availability:** Dec-2024

**Software Availability:** Oct-2024

## Peak Optimization Flags (Continued)

```
502.gcc_r: -m32 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner
-z muldefs -Ofast -march=znver5 -fveclib=AMDLIBM
-ffast-math -fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -fgnu89-inline
-lamdalloc
```

```
505.mcf_r: -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 -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc-ext -ldl
```

525.x264\_r: basepeak = yes

557.xz\_r: basepeak = yes

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

523.xalancbmk\_r: basepeak = yes

531.deepsjeng\_r: basepeak = yes

```
541.leela_r: -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 -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -fno-PIE
-no-pie -fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang
-lamdalloc-ext -ldl
```

Fortran benchmarks:

548.exchange2\_r: basepeak = yes



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem ST45 V3  
(3.80 GHz, AMD EPYC 4124P)

SPECrate®2017\_int\_base = 58.9

SPECrate®2017\_int\_peak = 60.0

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Dec-2024

**Hardware Availability:** Dec-2024

**Software Availability:** Oct-2024

## Peak Other Flags

C benchmarks (except as noted below):

-Wno-unused-command-line-argument

502.gcc\_r: -L/usr/lib32 -Wno-unused-command-line-argument

-L/home/work/cpu2017/v119/aocc5/1316/amd\_rate\_aocc500\_znver5\_A\_lib/lib32

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-C.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-C.xml>

<http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml>

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.9 on 2024-12-10 06:07:59-0500.

Report generated on 2025-01-15 12:32:22 by CPU2017 PDF formatter v6716.

Originally published on 2025-01-14.