



# SPEC CPU®2017 Integer Speed Result

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**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant Compute DL345 Gen12**

(4.20 GHz, AMD EPYC 9175F)

**SPECspeed®2017\_int\_base = 21.0**

**SPECspeed®2017\_int\_peak = 21.4**

**CPU2017 License:** 3

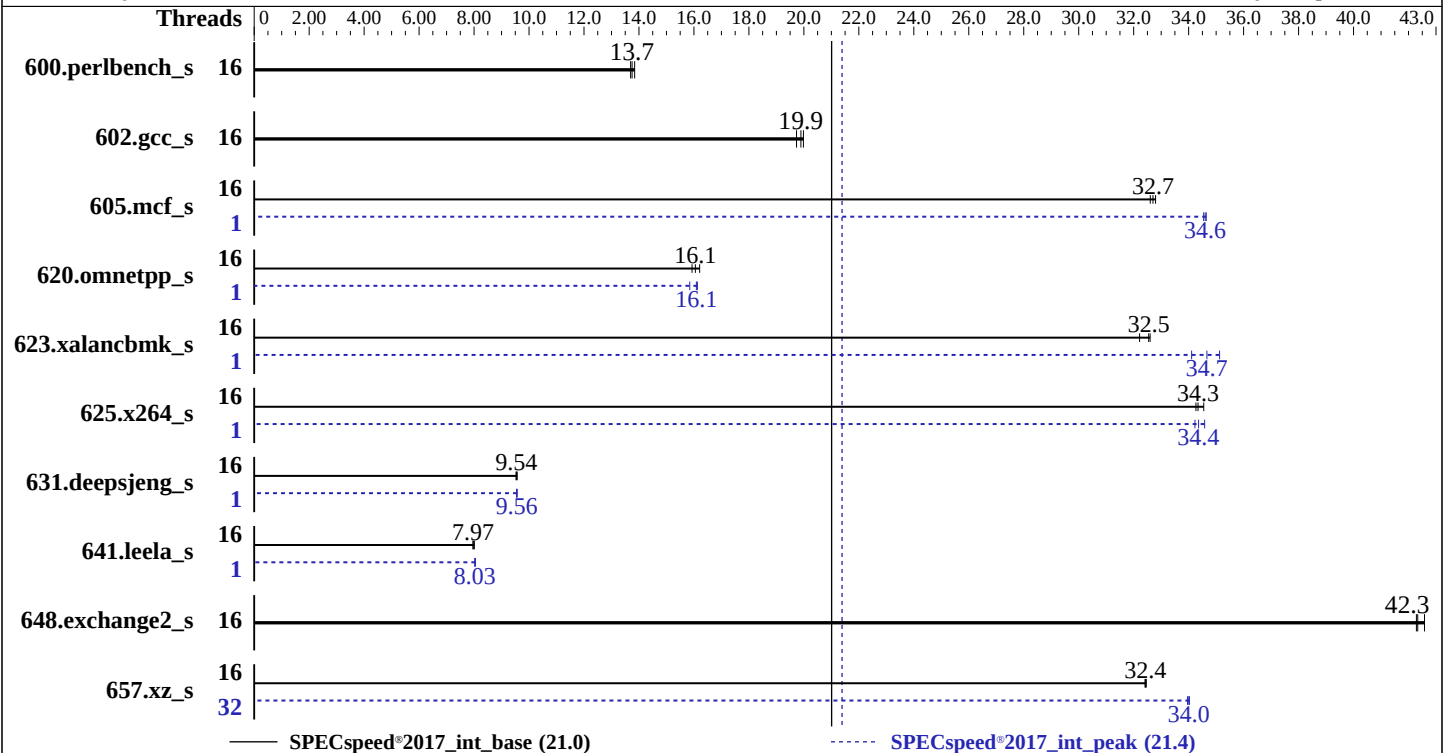
**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Sep-2025

**Hardware Availability:** Aug-2025

**Software Availability:** Apr-2025



## Hardware

CPU Name: AMD EPYC 9175F  
Max MHz: 5000  
Nominal: 4200  
Enabled: 16 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: 512 MB I+D on chip per chip, 32 MB shared / 1 cores  
Other: None  
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-6400B-R, running at 5200)  
Storage: 1 x 1.92 TB 64G NVME SS  
Other: CPU Cooling: Air

## Software

OS: SUSE Linux Enterprise Server 15 SP7  
Kernel 6.4.0-150700.51-default  
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC  
Parallel: Yes  
Firmware: HPE BIOS Version v1.20 07/11/2025 released Jul-2025  
File System: xfs  
System State: Run level 5 (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 | 16      | 130               | 13.7               | <b><u>129</u></b>  | <b><u>13.7</u></b> | 128                | 13.8               | 16      | 130                | 13.7               | <b><u>129</u></b>  | <b><u>13.7</u></b> | 128                | 13.8               |
| 602.gcc_s       | 16      | 202               | 19.7               | 199                | 20.0               | <b><u>200</u></b>  | <b><u>19.9</u></b> | 16      | 202                | 19.7               | 199                | 20.0               | <b><u>200</u></b>  | <b><u>19.9</u></b> |
| 605.mcf_s       | 16      | <b><u>144</u></b> | <b><u>32.7</u></b> | 144                | 32.8               | 145                | 32.6               | 1       | <b><u>136</u></b>  | <b><u>34.6</u></b> | 137                | 34.5               | 136                | 34.6               |
| 620.omnetpp_s   | 16      | 102               | 15.9               | <b><u>102</u></b>  | <b><u>16.1</u></b> | 101                | 16.2               | 1       | 101                | 16.1               | 103                | 15.8               | <b><u>101</u></b>  | <b><u>16.1</u></b> |
| 623.xalanchmk_s | 16      | 43.5              | 32.6               | 44.0               | 32.2               | <b><u>43.5</u></b> | <b><u>32.5</u></b> | 1       | 40.3               | 35.1               | 41.5               | 34.1               | <b><u>40.9</u></b> | <b><u>34.7</u></b> |
| 625.x264_s      | 16      | 51.5              | 34.3               | 51.1               | 34.5               | <b><u>51.4</u></b> | <b><u>34.3</u></b> | 1       | <b><u>51.3</u></b> | <b><u>34.4</u></b> | 51.5               | 34.2               | 51.0               | 34.6               |
| 631.deepsjeng_s | 16      | 150               | 9.53               | <b><u>150</u></b>  | <b><u>9.54</u></b> | 150                | 9.57               | 1       | <b><u>150</u></b>  | <b><u>9.56</u></b> | 150                | 9.56               | 150                | 9.55               |
| 641.leela_s     | 16      | <b><u>214</u></b> | <b><u>7.97</u></b> | 214                | 7.96               | 213                | 8.01               | 1       | 212                | 8.05               | <b><u>212</u></b>  | <b><u>8.03</u></b> | 212                | 8.03               |
| 648.exchange2_s | 16      | 69.0              | 42.6               | <b><u>69.4</u></b> | <b><u>42.3</u></b> | 69.5               | 42.3               | 16      | 69.0               | 42.6               | <b><u>69.4</u></b> | <b><u>42.3</u></b> | 69.5               | 42.3               |
| 657.xz_s        | 16      | <b><u>191</u></b> | <b><u>32.4</u></b> | 190                | 32.5               | 191                | 32.4               | 32      | 182                | 34.0               | 182                | 34.0               | <b><u>182</u></b>  | <b><u>34.0</u></b> |

SPECspeed®2017\_int\_base = 21.0

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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.

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 = "0-31"

LD\_LIBRARY\_PATH =

"/home/cpu2017/amd\_speed\_aocc500\_znver5\_A\_lib/lib:/home/cpu2017/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 = "32"

Environment variables set by runcpu during the 605.mcf\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 620.omnetpp\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 623.xalancbmk\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 625.x264\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 631.deepsjeng\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 641.leela\_s peak run:

GOMP\_CPU\_AFFINITY = "15"

Environment variables set by runcpu during the 657.xz\_s peak run:

GOMP\_CPU\_AFFINITY = "0-31"

## 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 Configurations : Parameters are selected in the order shown below

Workload Profile set to General Peak Frequency Compute

Determinism Control set to Manual

Performance Determinism set to Power Deterministic

Memory Patrol Scrubbing set to Disabled

ACPI CST C2 Latency set to 18 microseconds

Last-Level Cache (LLC) as NUMA Node set to Enabled

NUMA memory domains per socket set to Four memory domains per socket

Thermal Configuration set to Enhanced CPU Cooling

Workload Profile set to Custom

Power Regulator set to OS Control Mode

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## Platform Notes (Continued)

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost Tue Sep 2 17:23:41 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 254 (254.24+suse.148.g83b9060b6e)
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 6.4.0-150700.51-default #1 SMP PREEMPT\_DYNAMIC Wed Apr 30 21:35:43 UTC 2025 (6930611)  
x86\_64 x86\_64 x86\_64 GNU/Linux

2. w  
17:23:41 up 1:35, 3 users, load average: 0.08, 0.02, 0.01  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root : 15:49 ?xdm? 44.88s 0.01s gdm-session-worker [pam/gdm-password]  
root seat0 login- 15:49 0.00s 0.00s 0.00s /usr/lib/gdm/gdm-x-session  
--register-session --run-script gnome  
root :1 15:49 ?xdm? 44.88s 0.00s /usr/lib/gdm/gdm-x-session  
--register-session --run-script gnome  
root pts/2 10.28.68.136:S.0 17:22 13.00s 0.64s 0.03s /bin/bash ./amd\_speed\_aocc500\_znver5\_A1.sh

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) 3092933

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## Platform Notes (Continued)

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) 3092933  
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/1
-bash
screen -S cpu
SCREEN -S cpu
/bin/bash
python3 ./run_intspeed.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/CPU2017.024/templogs/preenv.intspeed.024.0.log --lognum 024.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

### 6. /proc/cpuinfo

```
model name      : AMD EPYC 9175F 16-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 26
model          : 2
stepping       : 1
microcode      : 0xb002151
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
TLB size       : 192 4K pages
cpu cores      : 16
siblings       : 32
1 physical ids (chips)
32 processors (hardware threads)
physical id 0: core ids 0-15
physical id 0: apicids 0-31
```

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 2.40.4:

```
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):             32
On-line CPU(s) list: 0-31
```

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## Platform Notes (Continued)

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vendor ID:                          | AuthenticAMD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Model name:                         | AMD EPYC 9175F 16-Core Processor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CPU family:                         | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Model:                              | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Thread(s) per core:                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Core(s) per socket:                 | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Socket(s):                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Stepping:                           | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Frequency boost:                    | enabled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CPU(s) scaling MHz:                 | 103%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CPU max MHz:                        | 4200.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CPU min MHz:                        | 1500.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| BogoMIPS:                           | 8399.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 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 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy 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 amd_ibpb_ret 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 hv_inuse_wr_allowed srso_user_kernel_no amd_lbr_pmc_freeze |
| L1d cache:                          | 768 KiB (16 instances)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| L1i cache:                          | 512 KiB (16 instances)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| L2 cache:                           | 16 MiB (16 instances)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| L3 cache:                           | 512 MiB (16 instances)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| NUMA node(s):                       | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| NUMA node0 CPU(s):                  | 0,16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node1 CPU(s):                  | 1,17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node2 CPU(s):                  | 2,18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node3 CPU(s):                  | 3,19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node4 CPU(s):                  | 4,20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node5 CPU(s):                  | 5,21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node6 CPU(s):                  | 6,22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node7 CPU(s):                  | 7,23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node8 CPU(s):                  | 8,24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node9 CPU(s):                  | 9,25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMA node10 CPU(s):                 | 10,26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NUMA node11 CPU(s):                 | 11,27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NUMA node12 CPU(s):                 | 12,28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NUMA node13 CPU(s):                 | 13,29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NUMA node14 CPU(s):                 | 14,30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NUMA node15 CPU(s):                 | 15,31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Vulnerability Gather data sampling: | Not affected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Vulnerability Itlb multihit:        | Not affected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Vulnerability L1tf:                 | Not affected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Vulnerability Mds:                  | Not affected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Vulnerability Meltdown:             | Not affected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant Compute DL345 Gen12

(4.20 GHz, AMD EPYC 9175F)

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SPECspeed®2017\_int\_peak = 21.4

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Sep-2025

Hardware Availability: Aug-2025

Software Availability: Apr-2025

## Platform Notes (Continued)

Vulnerability Mmio stale data: Not affected  
Vulnerability Reg file data sampling: Not affected  
Vulnerability Retbleed: Not affected  
Vulnerability Spec rstack overflow: Mitigation; IBPB on VMEXIT only  
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; 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      | 768K     | 12   | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 512K     | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 1M       | 16M      | 16   | Unified     | 2     | 1024  | 1        | 64             |
| L3   | 32M      | 512M     | 16   | Unified     | 3     | 32768 | 1        | 64             |

8. numactl --hardware

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

available: 16 nodes (0-15)

node 0 cpus: 0,16  
node 0 size: 47995 MB  
node 0 free: 47711 MB  
node 1 cpus: 1,17  
node 1 size: 48383 MB  
node 1 free: 48200 MB  
node 2 cpus: 2,18  
node 2 size: 48383 MB  
node 2 free: 48176 MB  
node 3 cpus: 3,19  
node 3 size: 48383 MB  
node 3 free: 48173 MB  
node 4 cpus: 4,20  
node 4 size: 48344 MB  
node 4 free: 48193 MB  
node 5 cpus: 5,21  
node 5 size: 48383 MB  
node 5 free: 48272 MB  
node 6 cpus: 6,22  
node 6 size: 48383 MB  
node 6 free: 48280 MB  
node 7 cpus: 7,23  
node 7 size: 48383 MB  
node 7 free: 48301 MB  
node 8 cpus: 8,24  
node 8 size: 48383 MB  
node 8 free: 48229 MB  
node 9 cpus: 9,25  
node 9 size: 48383 MB  
node 9 free: 48195 MB  
node 10 cpus: 10,26  
node 10 size: 48383 MB  
node 10 free: 48206 MB  
node 11 cpus: 11,27  
node 11 size: 48383 MB  
node 11 free: 47605 MB  
node 12 cpus: 12,28  
node 12 size: 48383 MB

(Continued on next page)





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**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Sep-2025

**Hardware Availability:** Aug-2025

**Software Availability:** Apr-2025

## Platform Notes (Continued)

node 12 free: 47490 MB  
node 13 cpus: 13,29  
node 13 size: 48383 MB  
node 13 free: 48072 MB  
node 14 cpus: 14,30  
node 14 size: 48383 MB  
node 14 free: 48148 MB  
node 15 cpus: 15,31  
node 15 size: 47938 MB  
node 15 free: 47414 MB  
node distances:

| node | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 0:   | 10 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 1:   | 11 | 10 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 2:   | 11 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 3:   | 11 | 11 | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 4:   | 12 | 12 | 12 | 12 | 10 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 5:   | 12 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 6:   | 12 | 12 | 12 | 12 | 11 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 7:   | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 8:   | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 |
| 9:   | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 12 | 12 | 12 | 12 | 12 |
| 10:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 |
| 11:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 12 | 12 | 12 | 12 | 12 |
| 12:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 11 | 11 | 11 | 11 |
| 13:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 11 |
| 14:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 10 | 11 | 11 |
| 15:  | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 11 | 10 |

9. /proc/meminfo  
MemTotal: 791819800 kB

10. who -r  
run-level 5 Sep 2 15:48

11. Systemd service manager version: systemd 254 (254.24+suse.148.g83b9060b6e)  
Default Target Status  
graphical running

12. Services, from systemctl list-unit-files

| STATE           | UNIT FILES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| enabled         | ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd bluetooth cron display-manager getty@ irqbalance issue-generator kbdsettings kdump kdump-early kdump-notify klog lvm2-monitor nscd nvme-fc-boot-connections nvme-autoconnect postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant                                                                                                                                                                                                                                                                                                                                                                                                 |
| enabled-runtime | systemd-remount-fs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| disabled        | NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon amavis autofs autostart-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd clamd clamondacc collectd console-getty cups cups-browsed debug-shell dhcpd dhcpd6 dhcrelay dhcrelay6 dnsmasq ebttables exchange-bmc-os-info fancontrol firewallld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys kexec-load lm_sensors lunmask man-db-create memcached multipathd munge named nfs nfs-blkmap nfs-server nfs-server nmb ostree-remount ostree-state-overlay@ pcp-geolocate pmcd pmfind pmie pmie_farm pmlogger pmlogger_farm pmproxy proftpd rpcbind rpmconfigcheck rsyncd rtkit-daemon samba-bgqd serial-getty@ smartd-generate-opts smb snmpd snmptrapd |

(Continued on next page)





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**CPU2017 License:** 3

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**Tested by:** HPE

**Test Date:** Sep-2025

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## Platform Notes (Continued)

indirect  
speech-dispatcherd sysstat systemd-boot-check-no-failures systemd-confext  
systemd-network-generator systemd-sysexit systemd-time-wait-sync systemd-timesyncd udisks2  
update-system-flatpaks upower vncserver@ vsftpd wpa\_supplicant@  
pcscd systemd-userdbd wickedd

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

BOOT\_IMAGE=/boot/vmlinuz-6.4.0-150700.51-default  
root=UUID=e9c24f90-4995-4bc8-80c5-b1e0dc1c50dd  
splash=silent  
resume=/dev/disk/by-uuid/f8d2aff2-72e3-490e-b7aa-5412864f7e46  
mitigations=auto  
quiet  
security=apparmor  
crashkernel=374M,high  
crashkernel=72M,low  
amd\_pstate=active

### 14. cpupower frequency-info

analyzing CPU 14:  
current policy: frequency should be within 1.50 GHz and 4.20 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

|                       |       |
|-----------------------|-------|
| alloc_sleep_millisecs | 60000 |
|-----------------------|-------|

(Continued on next page)



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CPU2017 License: 3

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## Platform Notes (Continued)

```
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 SP7
-----
```

```
-----
19. Disk information
SPEC is set to: /home/cpu2017
Filesystem  Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p5 xfs   953G   26G  928G   3% /home
-----
```

```
-----
20. /sys/devices/virtual/dmi/id
Vendor:      HPE
Product:     HPE ProLiant Compute DL345 Gen12
Product Family: ProLiant
Serial:      2M110725V1
-----
```

```
-----
21. dmidecode
Additional information from dmidecode 3.6 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:
  9x Hynix HMC94AHBRA480N 64 GB 2 rank 6400, configured at 5200
  3x Micron MTC40F2046S1RC64BD2 QSFF 64 GB 2 rank 6400, configured at 5200
-----
```

```
-----
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      HPE
BIOS Version:     1.20
BIOS Date:        07/11/2025
BIOS Revision:    1.20
Firmware Revision: 1.16
-----
```

## 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#1377 2024_09_24)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin
-----
```

```
=====
C++    | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
-----
```

(Continued on next page)



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CPU2017 License: 3

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Test Date: Sep-2025

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## Compiler Version Notes (Continued)

| 641.leela\_s(base, peak)

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1377 2024\_09\_24)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

Fortran | 648.exchange2\_s(base, peak)

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1377 2024\_09\_24)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/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

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## Base Optimization Flags (Continued)

C benchmarks (continued):

-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

## Peak Compiler Invocation

C benchmarks:

clang

(Continued on next page)



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## Peak Compiler Invocation (Continued)

C++ benchmarks:

clang++

Fortran benchmarks:

flang

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

600.perlbench\_s: basepeak = yes

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: -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

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## Peak Optimization Flags (Continued)

657.xz\_s: Same as 625.x264\_s

C++ benchmarks:

620.omnetpp\_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-ext -lflang

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

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

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**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant Compute DL345 Gen12**

(4.20 GHz, AMD EPYC 9175F)

**SPECspeed®2017\_int\_base = 21.0**

**SPECspeed®2017\_int\_peak = 21.4**

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Sep-2025

**Hardware Availability:** Aug-2025

**Software Availability:** Apr-2025

## Peak Other Flags (Continued)

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/HPE-Platform-Flags-AMD-Turin-rev1.7.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/HPE-Platform-Flags-AMD-Turin-rev1.7.xml>

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

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

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