SPEC CPU®2026 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

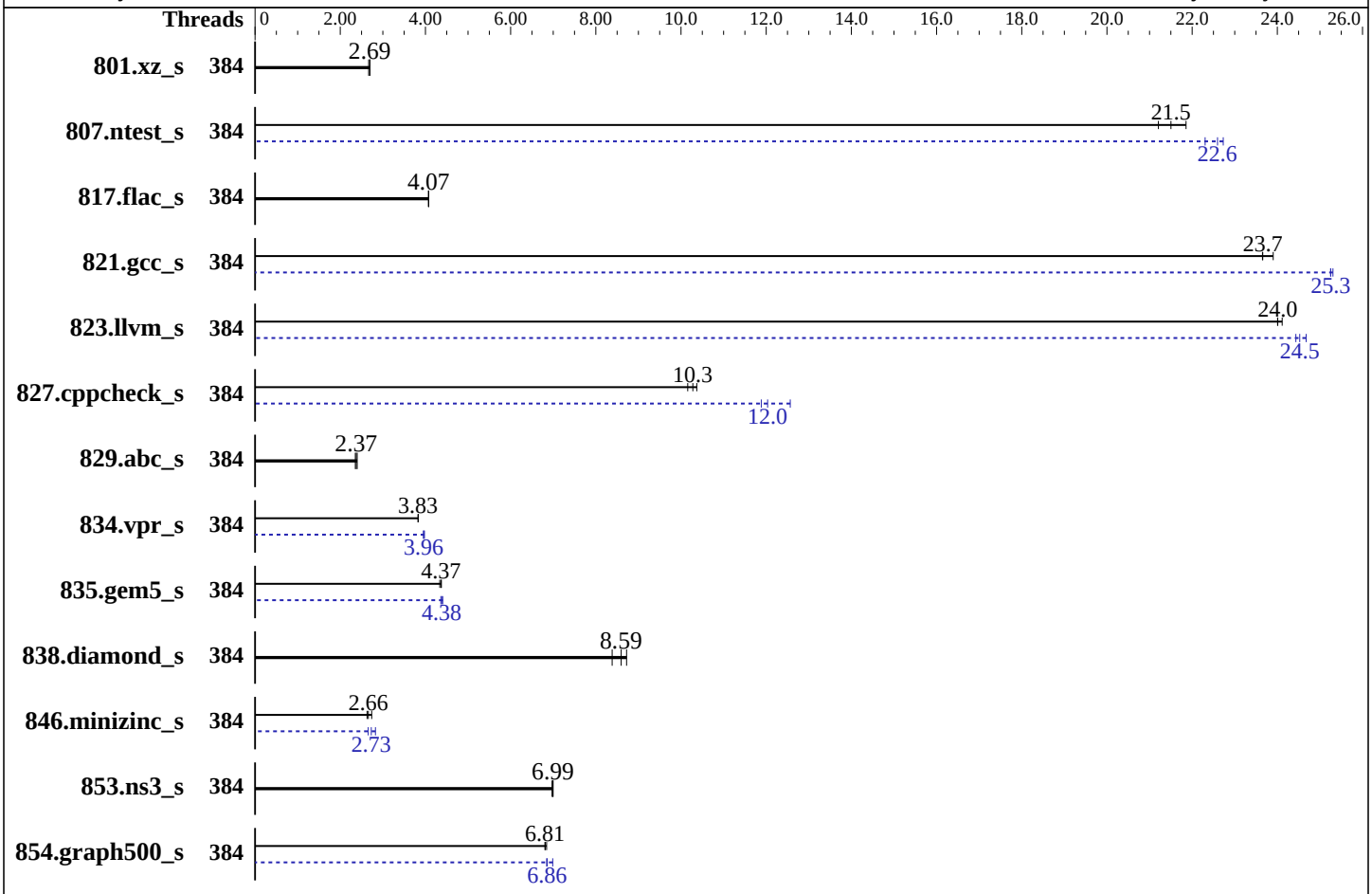
ProLiant Compute DL345 Gen12
(2.25 GHz, AMD EPYC 9965)

SPECspeed®2026_int_base = 6.74

SPECspeed®2026_int_peak = 6.93

CPU2026 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Sep-2026
Hardware Availability: Aug-2025
Software Availability: May-2026



Hardware

CPU Name:	AMD EPYC 9965
Max MHz:	3700
Nominal:	2250
Enabled:	192 cores, 1 chip, 2 threads/core
Orderable:	1 Chip
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	384 MB I+D on chip per chip, 32 MB shared / 16 cores
Other:	None
Memory:	768 GB (12 x 64 GB 2Rx4 PC5-6400B-R, running at 5200)
Storage:	1 x 3.2 TB NVMe SSD
Cooling:	Air
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 SP7 Kernel 6.4.0-150700.53.6-default
Compiler:	C/C++: Version 5.2.0 of AOCC Fortran: Flang v22
Compiler Category:	Vendor
Firmware:	HPE BIOS Version v1.60 07/27/2026 released Jul-2026
File System:	btrfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	None
Power Management:	BIOS and OS set to prefer performance at the cost of additional power usage

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
801.xz_s	384	**219**	**2.69**	219	2.70	222	2.67	384	**219**	**2.69**	219	2.70	222	2.67
807.ntest_s	384	**53.0**	**21.5**	53.8	21.2	52.2	21.9	384	51.1	22.3	50.2	22.7	**50.5**	**22.6**
817.flac_s	384	427	4.07	**426**	**4.07**	426	4.08	384	427	4.07	**426**	**4.07**	426	4.08
821.gcc_s	384	86.6	23.9	87.5	23.7	**87.5**	**23.7**	384	81.8	25.3	82.0	25.3	**82.0**	**25.3**
823.llvm_s	384	58.5	24.1	**58.8**	**24.0**	58.8	24.0	384	57.2	24.7	57.7	24.4	**57.5**	**24.5**
827.cppcheck_s	384	110	10.2	**109**	**10.3**	108	10.4	384	94.2	11.9	**93.0**	**12.0**	89.1	12.6
829.abc_s	384	353	2.35	347	2.40	**350**	**2.37**	384	353	2.35	347	2.40	**350**	**2.37**
834.vpr_s	384	249	3.83	**249**	**3.83**	249	3.83	384	240	3.98	**241**	**3.96**	241	3.95
835.gem5_s	384	263	4.34	260	4.37	**261**	**4.37**	384	261	4.36	259	4.41	**260**	**4.38**
838.diamond_s	384	**116**	**8.59**	119	8.38	115	8.72	384	**116**	**8.59**	119	8.38	115	8.72
846.minizinc_s	384	245	2.74	**252**	**2.66**	255	2.63	384	237	2.83	252	2.66	**246**	**2.73**
853.ns3_s	384	**165**	**6.99**	165	6.97	165	7.00	384	**165**	**6.99**	165	6.97	165	7.00
854.graph500_s	384	89.7	6.81	89.3	6.84	**89.7**	**6.81**	384	87.4	6.99	89.3	6.85	**89.1**	**6.86**

SPECspeed®2026_int_base = 6.74

SPECspeed®2026_int_peak = 6.93

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/
Flang v22 is available at
https://flang.llvm.org/
```

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 --physcpubind=0-15 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,
```

(Continued on next page)

Operating System Notes (Continued)

```
'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.
tuned-adm profile was stopped using 'systemctl stop tuned'
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-383"
LD_LIBRARY_PATH =
     "/home/cpu2026_1/amd_speed_aocc520_znver5_A_lib/lib:/home/cpu2026_1/amd_
     speed_aocc520_znver5_A_lib/lib32:/usr/local/python3.12/lib:"
MALLOC_CONF = "retain:true"
OMP_THREAD_LIMIT = "384"
```

General Notes

```
Binaries were compiled on a system with an AMD EPYC 9754 CPU + 768 GiB
Memory using Ubuntu 24.04
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 Two memory domains per socket
Thermal Configuration set to Maximum Cooling
Workload Profile set to Custom
```

(Continued on next page)

Platform Notes (Continued)

```
 Power Regulator set to OS Control Mode

 Sysinfo program /home/cpu2026_1/bin/sysinfo
 Rev: 779ab21020787073335a329f3a45e2cd
 running on localhost Thu Sep 17 13:46:18 2026

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

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -srvm
  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 (254.27+suse.167.g130293e510)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode
 23. BIOS
 ------------------------------------------------------------

 ------------------------------------------------------------
 1. uname -srvm
   Linux 6.4.0-150700.53.6-default #1 SMP PREEMPT_DYNAMIC Tue Jul  1 14:54:47 UTC 2025 (8ab7501) x86_64

 ------------------------------------------------------------
 2. w
    13:46:18 up 5 min,  2 users,  load average: 0.18, 0.10, 0.04
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     pts/0    172.16.0.100     13:44   34.00s  1.19s  0.16s python3 ./run_aocc520_intspeed.py

 ------------------------------------------------------------
```

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Platform Notes (Continued)

```
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) 3093794
  max locked memory       (kbytes, -l) 2048
  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) 3093794
  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
 python3 ./run_aocc520_intspeed.py
 runcpu --config amd_speed_aocc520_znver5_A1.cfg --tune all --reportable --iterations 3 intspeed
 runcpu --configfile amd_speed_aocc520_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/CPU2026.001/templogs/preenv.intspeed.001.0.log --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2026_1

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9965 192-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 17
    stepping        : 0
    microcode       : 0xb101066
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
    TLB size        : 192 4K pages
```

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Platform Notes (Continued)

```
     cpu cores       : 192
     siblings        : 384
     1 physical ids (chips)
     384 processors (hardware threads)
     physical id 0: core ids 0-191
     physical id 0: apicids 0-383
   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):                                  384
   On-line CPU(s) list:                     0-383
   Vendor ID:                               AuthenticAMD
   Model name:                              AMD EPYC 9965 192-Core Processor
   CPU family:                              26
   Model:                                   17
   Thread(s) per core:                      2
   Core(s) per socket:                      192
   Socket(s):                               1
   Stepping:                                0
   Frequency boost:                         enabled
   CPU(s) scaling MHz:                      100%
   CPU max MHz:                             2250.0000
   CPU min MHz:                             1500.0000
   BogoMIPS:                                4493.27
   Flags:                                   fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
    pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt
      pdpe1gb rdtscp lm constant_tsc rep_good amd_lbr_v2 nopl
    nonstop_tsc cpuid extd_apicid aperfmperf rapl pni pclmulqdq
   monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes
    xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy
      abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce
    topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb
     cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2 ibrs ibpb stibp
   ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms
    invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
   clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
    xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
    user_shstk avx_vnni avx512_bf16 clzero irperf xsaveerptr rdpru
      wbnoinvd amd_ppin cppc amd_ibpb_ret arat npt lbrv svm_lock
```

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Platform Notes (Continued)

```
                                    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
  Virtualization:                         AMD-V
  L1d cache:                              9 MiB (192 instances)
  L1i cache:                              6 MiB (192 instances)
  L2 cache:                               192 MiB (192 instances)
  L3 cache:                               384 MiB (12 instances)
  NUMA node(s):                           12
  NUMA node0 CPU(s):                      0-15,192-207
  NUMA node1 CPU(s):                      16-31,208-223
  NUMA node2 CPU(s):                      32-47,224-239
  NUMA node3 CPU(s):                      48-63,240-255
  NUMA node4 CPU(s):                      64-79,256-271
  NUMA node5 CPU(s):                      80-95,272-287
  NUMA node6 CPU(s):                      96-111,288-303
  NUMA node7 CPU(s):                      112-127,304-319
  NUMA node8 CPU(s):                      128-143,320-335
  NUMA node9 CPU(s):                      144-159,336-351
  NUMA node10 CPU(s):                     160-175,352-367
  NUMA node11 CPU(s):                     176-191,368-383
  Vulnerability Gather data sampling:     Not affected
  Vulnerability Indirect target selection: Not affected
  Vulnerability Itlb multihit:            Not affected
  Vulnerability L1tf:                     Not affected
  Vulnerability Mds:                      Not affected
  Vulnerability Meltdown:                 Not affected
  Vulnerability Mmio stale data:          Not affected
  Vulnerability Reg file data sampling:   Not affected
  Vulnerability Retbleed:                 Not affected
  Vulnerability Spec rstack overflow:     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; PBRSB-eIBRS Not affected; BHI Not affected
  Vulnerability Srbds:                    Not affected
  Vulnerability Tsx async abort:          Not affected

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
     L1d       48K       9M   12 Data            1    64        1             64
     L1i       32K       6M    8 Instruction     1    64        1             64
```

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Platform Notes (Continued)

```
      L2          1M     192M   16 Unified          2  1024        1              64
      L3         32M     384M   16 Unified          3 32768        1              64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 12 nodes (0-11)
  node 0 cpus: 0-15,192-207
  node 0 size: 64086 MB
  node 0 free: 63838 MB
  node 1 cpus: 16-31,208-223
  node 1 size: 64503 MB
  node 1 free: 64274 MB
  node 2 cpus: 32-47,224-239
  node 2 size: 64503 MB
  node 2 free: 64291 MB
  node 3 cpus: 48-63,240-255
  node 3 size: 64503 MB
  node 3 free: 64260 MB
  node 4 cpus: 64-79,256-271
  node 4 size: 64503 MB
  node 4 free: 64303 MB
  node 5 cpus: 80-95,272-287
  node 5 size: 64503 MB
  node 5 free: 64252 MB
  node 6 cpus: 96-111,288-303
  node 6 size: 64503 MB
  node 6 free: 63983 MB
  node 7 cpus: 112-127,304-319
  node 7 size: 64503 MB
  node 7 free: 63991 MB
  node 8 cpus: 128-143,320-335
  node 8 size: 64357 MB
  node 8 free: 63864 MB
  node 9 cpus: 144-159,336-351
  node 9 size: 64503 MB
  node 9 free: 63669 MB
  node 10 cpus: 160-175,352-367
  node 10 size: 64503 MB
  node 10 free: 64277 MB
  node 11 cpus: 176-191,368-383
  node 11 size: 64503 MB
  node 11 free: 64043 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11
    0:  10  11  11  11  11  11  12  12  12  12  12  12
    1:  11  10  11  11  11  11  12  12  12  12  12  12
```

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Platform Notes (Continued)

```
     2:  11  11  10  11  11  11  12  12  12  12  12  12
     3:  11  11  11  10  11  11  12  12  12  12  12  12
     4:  11  11  11  11  10  11  12  12  12  12  12  12
     5:  11  11  11  11  11  10  12  12  12  12  12  12
     6:  12  12  12  12  12  12  10  11  11  11  11  11
     7:  12  12  12  12  12  12  11  10  11  11  11  11
     8:  12  12  12  12  12  12  11  11  10  11  11  11
     9:  12  12  12  12  12  12  11  11  11  10  11  11
    10:  12  12  12  12  12  12  11  11  11  11  10  11
    11:  12  12  12  12  12  12  11  11  11  11  11  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       792041576 kB

------------------------------------------------------------
10. who -r
  run-level 3 Sep 17 13:42

------------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.27+suse.167.g130293e510)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager YaST2-Firstboot YaST2-Second-Stage ahslog amsd apparmor appstream-sync-cache
                     auditd bluetooth cpqFca cpqIde cpqScsi cron display-manager getty@ irqbalance
                   issue-generator kbdsettings klog lvm2-monitor mr_cpqScsi nscd nvmefc-boot-connections
                     nvmf-autoconnect postfix purge-kernels rollback rsyslog smad smartd sshd sut
                     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
                     amsd_rev autofs autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl
                   ca-certificates chrony-wait chronyd console-getty cpqFca_rev cpqIde_rev cpqScsi_rev
                   cpqiScsi cups cups-browsed debug-shell dnsmasq ebtables exchange-bmc-os-info firewalld
                     fsidd gnome-remote-desktop gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd
                     issue-add-ssh-keys kexec-load lunmask man-db-create mr_cpqScsi_rev multipathd nfs
                  nfs-blkmap nmb openvpn@ ostree-remount ostree-state-overlay@ rpcbind rpmconfigcheck rsyncd
                   rtkit-daemon samba-bgqd serial-getty@ smad_rev smartd_generate_opts smb snmpd snmptrapd
                       speech-dispatcherd systemd-boot-check-no-failures systemd-confext
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
                       udisks2 update-system-flatpaks upower vncserver@ wpa_supplicant@
  indirect             pcscd saned@ systemd-userdbd wickedd
```

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Platform Notes (Continued)

```
------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150700.53.6-default
  root=UUID=de91d38d-7b1b-4bc1-b4ce-f57bbe3b30b4
  splash=silent
  mitigations=auto
  quiet
  security=apparmor

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 382:
    current policy: frequency should be within 1.50 GHz and 2.25 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
15. tuned-adm active
  It seems that tuned daemon is not running, preset profile is not activated.
  Preset profile: virtual-host

------------------------------------------------------------
16. 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

------------------------------------------------------------
```

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Platform Notes (Continued)

```
17. /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

------------------------------------------------------------
18. /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

------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP7

------------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2026_1
  Filesystem     Type   Size  Used Avail Use% Mounted on
  /dev/nvme0n1p2 btrfs  3.0T   60G  2.9T   2% /home

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:          HPE
    Product:         HPE ProLiant Compute DL345 Gen12
    Product Family:  ProLiant
    Serial:          I2DZ4HNF1Y

------------------------------------------------------------
22. 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:
    12x Hynix HMCG94AHBRA480N 64 GB 2 rank 6400, configured at 5200


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
```

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Platform Notes (Continued)

```
    BIOS Vendor:       HPE
    BIOS Version:      1.60
    BIOS Date:         07/27/2026
    BIOS Revision:     1.60
    Firmware Revision: 1.22
```

Compiler Version Notes

```
==============================================================================
C      | 854.graph500_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.2.0-Build#2035 2026_04_10)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.2.0-4925-2035/bin
------------------------------------------------------------------------------

==============================================================================
C++    | 807.ntest_s(base, peak) 827.cppcheck_s(base, peak) 853.ns3_s(base,
       | peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.2.0-Build#2035 2026_04_10)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.2.0-4925-2035/bin
------------------------------------------------------------------------------

==============================================================================
C++, C | 801.xz_s(base, peak) 817.flac_s(base, peak) 821.gcc_s(base, peak)
       | 823.llvm_s(base, peak) 829.abc_s(base, peak) 834.vpr_s(base, peak)
       | 835.gem5_s(base, peak) 838.diamond_s(base, peak)
       | 846.minizinc_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.2.0-Build#2035 2026_04_10)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.2.0-4925-2035/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

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Base Compiler Invocation (Continued)

C++ benchmarks:
clang++

Benchmarks using both C and C++:
clang++ clang

Base Portability Flags

801.xz_s: -DSPEC_LP64
807.ntest_s: -DSPEC_LP64
817.flac_s: -DSPEC_LP64
821.gcc_s: -DSPEC_LP64
823.llvm_s: -DSPEC_LP64
827.cppcheck_s: -DSPEC_LP64
829.abc_s: -DSPEC_LP64
834.vpr_s: -fno-finite-math-only -DSPEC_LP64
835.gem5_s: -fno-finite-math-only -DSPEC_LP64
838.diamond_s: -DSPEC_LP64
846.minizinc_s: -DSPEC_LP64
853.ns3_s: -fno-finite-math-only -DSPEC_LP64
854.graph500_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c18 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-extra-inliner -O3 -flto
-march=znver5 -fveclib=AMDLIBM -ffast-math -zopt -fremap-arrays
-fstrip-mining -fstruct-layout=7 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=50
-fopenmp -DSPEC_OPENMP -lamdalloc -lamdlibm -fopenmp=libomp -lomp

C++ benchmarks:
-m64 -std=c++17 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -zopt -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -fopenmp -DSPEC_OPENMP
-fvirtual-function-elimination -fvisibility=hidden -lamdalloc
-lamdlibm -fopenmp=libomp -lomp

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Base Optimization Flags (Continued)

Benchmarks using both C and C++:
-m64 -std=c++17 -std=c18 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -zopt -fremap-arrays -fstrip-mining
-fstruct-layout=7 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=50
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-fopenmp -DSPEC_OPENMP -fvirtual-function-elimination
-fvisibility=hidden -lamdalloc -lamdlibm -fopenmp=libomp -lomp

Base Other Flags

C benchmarks:
-Wno-return-type

Benchmarks using both C and C++:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Benchmarks using both C and C++:
clang++ clang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
-m64 -std=c18 -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
-flto -march=znver5 -fveclib=AMDLIBM -ffast-math -zopt
-fremap-arrays -fstrip-mining -fstruct-layout=7
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -fopenmp -DSPEC_OPENMP -lamdalloc
-lamdlibm -fopenmp=libomp -lomp
```

C++ benchmarks:

807.ntest_s: `-m64 -std=c++17`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-x86-use-vzeroupper=false`
`-fprofile-instr-generate`(pass 1) `-fprofile-instr-use`(pass 2)
`-Ofast -flto -march=znver5 -fveclib=AMDLIBM -ffast-math`
`-zopt -mllvm -reduce-array-computations=3`
`-mllvm -unroll-threshold=100 -fopenmp -DSPEC_OPENMP`
`-fvirtual-function-elimination -fvisibility=hidden`
`-lamdalloc -lamdlibm -fopenmp=libomp -lomp`

827.cppcheck_s: `Same as 807.ntest_s`

853.ns3_s: `basepeak = yes`

Benchmarks using both C and C++:

801.xz_s: `basepeak = yes`

817.flac_s: `basepeak = yes`

821.gcc_s: `-m64 -std=c++17 -std=c18`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-x86-use-vzeroupper=false`
`-fprofile-instr-generate`(pass 1) `-fprofile-instr-use`(pass 2)
`-Ofast -flto -march=znver5 -fveclib=AMDLIBM -ffast-math`
`-zopt -fremap-arrays -fstrip-mining -fstruct-layout=7`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3`
`-mllvm -unroll-threshold=50 -mllvm -unroll-threshold=100`
`-fopenmp -DSPEC_OPENMP -fvirtual-function-elimination`
`-fvisibility=hidden -lamdalloc -lamdlibm -fopenmp=libomp`
`-lomp`

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Peak Optimization Flags (Continued)

823.llvm_s: Same as 821.gcc_s

829.abc_s: basepeak = yes

834.vpr_s: Same as 821.gcc_s

835.gem5_s: -m64 -std=c++17 -std=c18
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast -flto
-march=znver5 -fveclib=AMDLIBM -ffast-math -zopt
-fremap-arrays -fstrip-mining -fstruct-layout=7
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -mllvm -unroll-threshold=100
-fopenmp -DSPEC_OPENMP -fvirtual-function-elimination
-fvisibility=hidden -lamdalloc -lamdlibm -fopenmp=libomp
-lomp

838.diamond_s: basepeak = yes

846.minizinc_s: Same as 821.gcc_s

Peak Other Flags

C benchmarks:
-Wno-return-type

Benchmarks using both C and C++:
-Wno-return-type

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2026/results/flags/aocc-flags.2026-10-07.00.html
http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-AMD-Turin-rev1.12.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2026/results/flags/aocc-flags.2026-10-07.00.xml
http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-AMD-Turin-rev1.12.xml

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