SPEC CPU®2026 Floating Point Speed Result

Hewlett Packard Enterprise

(Test Sponsor: HPE)

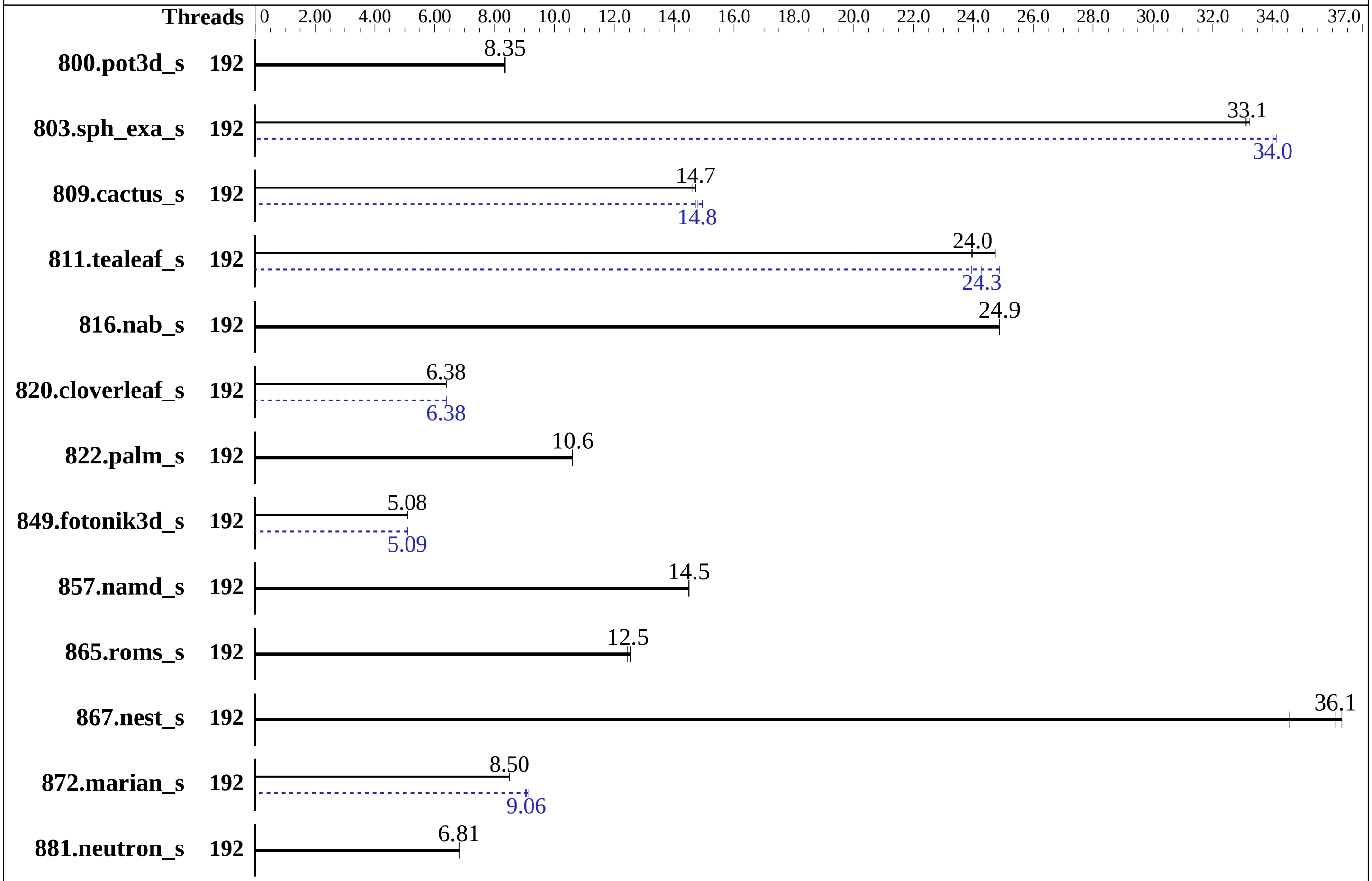
ProLiant Compute DL345 Gen12
(2.25 GHz, AMD EPYC 9965)

SPECspeed®2026_fp_base = 13.0

SPECspeed®2026_fp_peak = 13.1

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
800.pot3d_s	192	**80.6**	**8.35**	80.9	8.32	80.5	8.36	192	**80.6**	**8.35**	80.9	8.32	80.5	8.36
803.sph_exa_s	192	37.2	33.2	**37.4**	**33.1**	37.4	33.1	192	36.3	34.1	37.4	33.1	**36.4**	**34.0**
809.cactus_s	192	76.2	14.7	76.9	14.6	**76.2**	**14.7**	192	**76.0**	**14.8**	75.1	14.9	76.2	14.7
811.tealeaf_s	192	**23.2**	**24.0**	23.3	23.9	22.5	24.7	192	**22.9**	**24.3**	22.4	24.9	23.3	23.9
816.nab_s	192	45.3	24.9	**45.3**	**24.9**	45.3	24.9	192	45.3	24.9	**45.3**	**24.9**	45.3	24.9
820.cloverleaf_s	192	134	6.38	**134**	**6.38**	134	6.38	192	**134**	**6.38**	134	6.38	134	6.38
822.palm_s	192	116	10.6	**116**	**10.6**	116	10.6	192	116	10.6	**116**	**10.6**	116	10.6
849.fotonik3d_s	192	130	5.08	130	5.09	**130**	**5.08**	192	130	5.09	130	5.09	**130**	**5.09**
857.namd_s	192	100	14.5	**100**	**14.5**	100	14.5	192	100	14.5	**100**	**14.5**	100	14.5
865.roms_s	192	86.9	12.5	**87.5**	**12.5**	87.7	12.4	192	86.9	12.5	**87.5**	**12.5**	87.7	12.4
867.nest_s	192	59.5	36.3	**59.8**	**36.1**	62.5	34.6	192	59.5	36.3	**59.8**	**36.1**	62.5	34.6
872.marian_s	192	**127**	**8.50**	127	8.49	127	8.50	192	119	9.12	120	9.04	**119**	**9.06**
881.neutron_s	192	**120**	**6.81**	120	6.81	119	6.83	192	**120**	**6.81**	120	6.81	119	6.83

SPECspeed®2026_fp_base = 13.0

SPECspeed®2026_fp_peak = 13.1

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.

To disable Transparent Hugepages (THP) for 816.nab_s,865.roms_s=peak:
'echo never > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo never > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
tuned-adm profile was set to virtual-host using 'tuned-adm profile virtual-host'
```

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
Thermal Configuration set to Maximum Cooling
```

(Continued on next page)

Platform Notes (Continued)

```
AMD Periodic Directory Rinse set to Periodic
Workload Profile set to Custom
 Power Regulator set to OS Control Mode

 Sysinfo program /home/cpu2026_1/bin/sysinfo
 Rev: 779ab21020787073335a329f3a45e2cd
 running on localhost Thu Sep 17 05:22:17 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
    05:22:17 up 39 min,  2 users,  load average: 0.28, 0.14, 0.05
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     pts/0    172.16.0.100     05:15   33.00s  7.70s  6.54s python3 ./run_aocc520_fpspeed.py
```

(Continued on next page)

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) 3092265
  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) 3092265
  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_fpspeed.py
 runcpu --config amd_speed_aocc520_znver5_A1.cfg --tune all --reportable --iterations 3 fpspeed
 runcpu --configfile amd_speed_aocc520_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
   --runmode speed --tune base:peak --size test:train:refspeed fpspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2026.001/templogs/preenv.fpspeed.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
```

(Continued on next page)

Platform Notes (Continued)

```
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso
    TLB size        : 192 4K pages
    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:                                4493.33
  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
```

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Platform Notes (Continued)

```
                                                 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
  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):                                  1
  NUMA node0 CPU(s):                             0-383
  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
     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: 1 nodes (0)
  node 0 cpus: 0-383
  node 0 size: 773095 MB
```

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Platform Notes (Continued)

```
    node 0 free: 769713 MB
    node distances:
    node   0
      0:  10

  ------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       791650244 kB

  ------------------------------------------------------------
  10. who -r
    run-level 3 Sep 17 04:44

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

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

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Platform Notes (Continued)

```
    quiet
    security=apparmor

  ------------------------------------------------------------
  14. cpupower frequency-info
    analyzing CPU 68:
      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
    Current active profile: virtual-host

  ------------------------------------------------------------
  16. sysctl
    kernel.numa_balancing                0
    kernel.randomize_va_space            0
    vm.compaction_proactiveness         20
    vm.dirty_background_bytes            0
    vm.dirty_background_ratio            5
    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

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

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

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Platform Notes (Continued)

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

Compiler Version Notes

```
==============================================================================
C       | 811.tealeaf_s(base, peak) 816.nab_s(base, peak) 881.neutron_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++     | 803.sph_exa_s(base, peak) 857.namd_s(base, peak) 867.nest_s(base,
        | peak) 872.marian_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  | 809.cactus_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
------------------------------------------------------------------------------

==============================================================================
Fortran | 800.pot3d_s(base, peak) 820.cloverleaf_s(base, peak)
        | 822.palm_s(base, peak) 849.fotonik3d_s(base, peak) 865.roms_s(base,
        | peak)
------------------------------------------------------------------------------
flang version 22.1.0-rc2 (https://github.com/llvm/llvm-project
  a47b42eb9f9b302167b4fc413e6c92798d65dd0b)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/llvm/llvm-22.1.0-rc2/install/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`clang`

(Continued on next page)

Base Compiler Invocation (Continued)

C++ benchmarks:
clang++

Fortran benchmarks:
flang-22

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

Base Portability Flags

800.pot3d_s: -DSPEC_LP64
803.sph_exa_s: -DSPEC_LP64
809.cactus_s: -DSPEC_LP64
811.tealeaf_s: -DSPEC_LP64
816.nab_s: -DSPEC_LP64
820.cloverleaf_s: -DSPEC_LP64
822.palm_s: -DSPEC_LP64
849.fotonik3d_s: -DSPEC_LP64
857.namd_s: -DSPEC_LP64
865.roms_s: -DSPEC_LP64
867.nest_s: -fno-finite-math-only -DSPEC_LP64
872.marian_s: -DSPEC_LP64
881.neutron_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 -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -fremap-arrays -fstrip-mining
-fstruct-layout=7 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=50 -zopt
-mrecip=none -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 -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fopenmp -DSPEC_OPENMP

(Continued on next page)

Base Optimization Flags (Continued)

C++ benchmarks (continued):
`-pthread -lamdalloc -lamdlibm -fopenmp=libomp -lomp`

Fortran benchmarks:
`-m64 -std=f2018 -O3 -flto -march=znver5 -fveclib=AMDLIBM -ffast-math -funroll-loops -DSPEC_OPENMP -fopenmp -fdo-concurrent-to-openmp=host -lamdalloc -lamdlibm -fopenmp=libomp -lomp`

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 -O3 -flto -march=znver5 -fveclib=AMDLIBM -ffast-math -fremap-arrays -fstrip-mining -fstruct-layout=7 -mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=50 -zopt -mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000 -mrecip=none -fopenmp -DSPEC_OPENMP -pthread -lamdalloc -lamdlibm -fopenmp=libomp -lomp`

Base Other Flags

C benchmarks:
`-Wno-return-type -Wno-unused-command-line-argument`

Benchmarks using both C and C++:
`-Wno-return-type -Wno-unused-command-line-argument`

Peak Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang-22`

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

SPEC CPU®2026 Floating Point Speed Result

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

811.tealeaf_s: -m64 -std=c18
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -flto
-march=znver5 -fveclib=AMDLIBM -ffast-math
-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

816.nab_s: basepeak = yes

881.neutron_s: basepeak = yes

C++ benchmarks:

803.sph_exa_s: -m64 -std=c++17
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math
-mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=100 -fopenmp -DSPEC_OPENMP
-pthread -lamdalloc -lamdlibm -fopenmp=libomp -lomp

857.namd_s: basepeak = yes

867.nest_s: basepeak = yes

872.marian_s: Same as 803.sph_exa_s

Fortran benchmarks:

800.pot3d_s: basepeak = yes

820.cloverleaf_s: -m64 -std=f2018 -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -funroll-loops

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Peak Optimization Flags (Continued)

820.cloverleaf_s (continued):
-DSPEC_OPENMP -fopenmp -fdo-concurrent-to-openmp=host
-lamdalloc -lamdlibm -fopenmp=libomp -lomp

822.palm_s: basepeak = yes

849.fotonik3d_s: Same as 820.cloverleaf_s

865.roms_s: basepeak = yes

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 -O3 -flto -march=znver5
-fveclib=AMDLIBM -ffast-math -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 -pthread
-lamdalloc -lamdlibm -fopenmp=libomp -lomp

Peak Other Flags

C benchmarks (except as noted below):
-Wno-return-type -Wno-unused-command-line-argument

811.tealeaf_s: -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

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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