SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate^{®}2017\_fp\_base = 568$
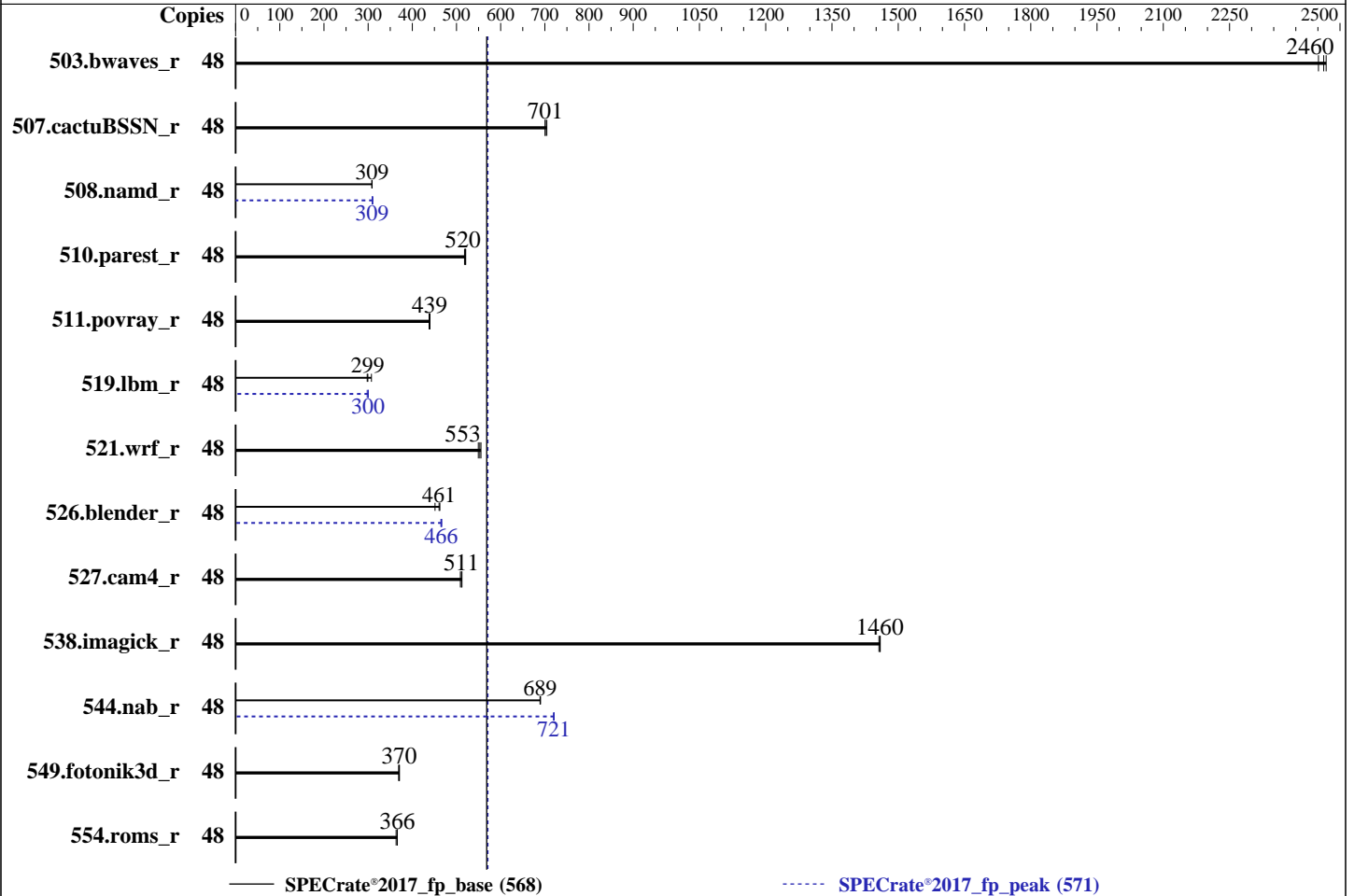
$SPECrate^{®}2017\_fp\_peak = 571$

CPU2017 License:	3	
Test Sponsor:	HPE	
Tested by:	HPE	

Test Date:	Dec-2024
Hardware Availability:	Jan-2025
Software Availability:	Oct-2024

Copies — 0 100 200 300 400 500 600 700 800 900 1050 1200 1350 1500 1650 1800 1950 2100 2250 2500

- 503.bwaves_r 48 — 2460
- 507.cactuBSSN_r 48 — 701
- 508.namd_r 48 — 309 / 309
- 510.parest_r 48 — 520
- 511.povray_r 48 — 439
- 519.lbm_r 48 — 299 / 300
- 521.wrf_r 48 — 553
- 526.blender_r 48 — 461 / 466
- 527.cam4_r 48 — 511
- 538.imagick_r 48 — 1460
- 544.nab_r 48 — 689 / 721
- 549.fotonik3d_r 48 — 370
- 554.roms_r 48 — 366

—— SPECrate®2017_fp_base (568)   ----- SPECrate®2017_fp_peak (571)

Hardware

CPU Name: AMD EPYC 9275F
 Max MHz: 4800
 Nominal: 4100
Enabled: 24 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: 256 MB I+D on chip per chip,
  32 MB shared / 3 cores
 Other: None
Memory: 384 GB (12 x 32 GB 2Rx8 PC5-6400B-R,
  running at 6000)
Storage: 1 x 480 GB SATA SSD
Other: CPU Cooling: CLC

Software

OS: SUSE Linux Enterprise Server 15 SP6
  Kernel 6.4.0-150600.21-default
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC
Parallel: No
Firmware: HPE BIOS Version v2.20 10/31/2024 released
  Oct-2024
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

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3	**Test Date:** Dec-2024
Test Sponsor: HPE	**Hardware Availability:** Jan-2025
Tested by: HPE	**Software Availability:** Oct-2024

Results Table

Benchmark	Base						Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	48	195	2470	**195**	**2460**	196	2450	48	195	2470	**195**	**2460**	196	2450
507.cactuBSSN_r	48	86.3	704	**86.7**	**701**	86.7	701	48	86.3	704	**86.7**	**701**	86.7	701
508.namd_r	48	148	308	148	309	**148**	**309**	48	**147**	**309**	147	311	147	309
510.parest_r	48	242	518	**241**	**520**	241	521	48	242	518	**241**	**520**	241	521
511.povray_r	48	**255**	**439**	256	438	255	440	48	**255**	**439**	256	438	255	440
519.lbm_r	48	170	298	165	307	**169**	**299**	48	170	298	169	300	**169**	**300**
521.wrf_r	48	194	555	**195**	**553**	196	549	48	194	555	**195**	**553**	196	549
526.blender_r	48	**159**	**461**	162	451	158	462	48	**157**	**466**	157	467	157	465
527.cam4_r	48	**164**	**511**	165	509	164	512	48	**164**	**511**	165	509	164	512
538.imagick_r	48	81.8	1460	82.0	1460	**81.9**	**1460**	48	81.8	1460	82.0	1460	**81.9**	**1460**
544.nab_r	48	117	690	**117**	**689**	117	689	48	**112**	**721**	112	719	112	721
549.fotonik3d_r	48	507	369	504	371	**505**	**370**	48	507	369	504	371	**505**	**370**
554.roms_r	48	**208**	**366**	208	366	210	363	48	**208**	**366**	208	366	210	363
SPECrate®2017_fp_base =		**568**										
SPECrate®2017_fp_peak =		**571**										

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,
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate®2017\_fp\_base = 568$

$SPECrate®2017\_fp\_peak = 571$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Dec-2024

Hardware Availability: Jan-2025

Software Availability: Oct-2024

Operating System Notes (Continued)

```
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/cpu2017/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017/amd_rate_aocc500_znver5_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

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

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
 BIOS Configuration
 Workload Profile set to General Throughput Compute
 Determinism Control set to Manual
 Performance Determinism set to Power Deterministic
 Memory Patrol Scrubbing set to Disabled
 Last-Level Cache (LLC) as NUMA Node set to Enabled
 ACPI CST C2 Latency set to 18 microseconds
 NUMA memory domains per socket set to Four memory domains per socket
 Thermal Configuration set to Maximum Cooling
 Workload Profile set to Custom
  Power Regulator set to OS Control Mode
 The reference code/AGESA version used in this ROM is version Turin-PI 1.0.0.2

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Mon Dec  9 15:48:57 2024

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

 -----------------------------------------------------------
 Table of contents
 -----------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
```

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate®2017\_fp\_base = 568$

$SPECrate®2017\_fp\_peak = 571$

CPU2017 License: 3		**Test Date:**	Dec-2024
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2025
Tested by:	HPE	**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. 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 -a
   Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
   x86_64 x86_64 x86_64 GNU/Linux

    ----------------------------------------------------------
 2. w
    15:48:57 up 17 min,  3 users,  load average: 0.57, 0.66, 0.44
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     pts/0    172.17.1.114     22Apr24 17.00s  0.66s  0.04s /bin/bash ./amd_rate_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) 1546467
   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) 1546467
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited

    ----------------------------------------------------------
 5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize=31
   sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
   sshd: root [priv]
   sshd: root@pts/0
   -bash
   python3 ./run_fprate.py
   /bin/bash ./amd_rate_aocc500_znver5_A1.sh
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate^{®}2017\_fp\_base = 568$

$SPECrate^{®}2017\_fp\_peak = 571$

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2024
Hardware Availability: Jan-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
  runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 fprate
  runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
    --runmode rate --tune base:peak --size test:train:refrate fprate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.006/templogs/preenv.fprate.006.0.log --lognum 006.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017


    -------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9275F 24-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 2
    stepping        : 1
    microcode       : 0xb00211a
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
    TLB size        : 192 4K pages
    cpu cores       : 24
    siblings        : 48
    1 physical ids (chips)
    48 processors (hardware threads)
    physical id 0: core ids 0-2,4-6,8-10,12-14,16-18,20-22,24-26,28-30
    physical id 0: apicids 0-5,8-13,16-21,24-29,32-37,40-45,48-53,56-61
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.


    -------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.39.3:
  Architecture:            x86_64
  CPU op-mode(s):          32-bit, 64-bit
  Address sizes:           52 bits physical, 57 bits virtual
  Byte Order:              Little Endian
  CPU(s):                  48
  On-line CPU(s) list:     0-47
  Vendor ID:               AuthenticAMD
  BIOS Vendor ID:          Advanced Micro Devices, Inc.
  Model name:              AMD EPYC 9275F 24-Core Processor
  BIOS Model name:         AMD EPYC 9275F 24-Core Processor          CPU @ 4.1GHz
  BIOS CPU family:         107
  CPU family:              26
  Model:                   2
  Thread(s) per core:      2
  Core(s) per socket:      24
  Socket(s):               1
  Stepping:                1
  Frequency boost:         enabled
  CPU(s) scaling MHz:      101%
  CPU max MHz:             4100.0000
  CPU min MHz:             1500.0000
  BogoMIPS:                8186.86
  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 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
```

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

SPECrate®2017_fp_base = 568

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_peak = 571

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2024
Hardware Availability: Jan-2025
Software Availability: Oct-2024

Platform Notes (Continued)

```
                           ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
                           smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                           avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                           xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                           cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                           xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                           nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                           pfthreshold avic v_vmsave_vmload vgif x2avic v_spec_ctrl vnmi
                           avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                           avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid bus_lock_detect
                           movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                           flush_l1d debug_swap
   Virtualization:         AMD-V
   L1d cache:              1.1 MiB (24 instances)
   L1i cache:              768 KiB (24 instances)
   L2 cache:               24 MiB (24 instances)
   L3 cache:               256 MiB (8 instances)
   NUMA node(s):           8
   NUMA node0 CPU(s):      0-2,24-26
   NUMA node1 CPU(s):      3-5,27-29
   NUMA node2 CPU(s):      6-8,30-32
   NUMA node3 CPU(s):      9-11,33-35
   NUMA node4 CPU(s):      12-14,36-38
   NUMA node5 CPU(s):      15-17,39-41
   NUMA node6 CPU(s):      18-20,42-44
   NUMA node7 CPU(s):      21-23,45-47
   Vulnerability Gather data sampling:  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:  Not affected
   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; 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     1.1M   12 Data            1    64        1             64
       L1i       32K     768K    8 Instruction     1    64        1             64
       L2         1M      24M   16 Unified         2  1024        1             64
       L3        32M     256M   16 Unified         3 32768        1             64


   ------------------------------------------------------------
   8. numactl --hardware
   NOTE: a numactl 'node' might or might not correspond to a physical chip.
     available: 8 nodes (0-7)
     node 0 cpus: 0-2,24-26
     node 0 size: 48028 MB
     node 0 free: 47863 MB
     node 1 cpus: 3-5,27-29
     node 1 size: 48382 MB
     node 1 free: 48242 MB
     node 2 cpus: 6-8,30-32
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$\text{SPECrate}^{®}2017\_fp\_base = 568$

$\text{SPECrate}^{®}2017\_fp\_peak = 571$

CPU2017 License:	3	**Test Date:**	Dec-2024
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2025
Tested by:	HPE	**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
   node 2 size: 48382 MB
   node 2 free: 48182 MB
   node 3 cpus: 9-11,33-35
   node 3 size: 48382 MB
   node 3 free: 48183 MB
   node 4 cpus: 12-14,36-38
   node 4 size: 48382 MB
   node 4 free: 48211 MB
   node 5 cpus: 15-17,39-41
   node 5 size: 48382 MB
   node 5 free: 48026 MB
   node 6 cpus: 18-20,42-44
   node 6 size: 48382 MB
   node 6 free: 48260 MB
   node 7 cpus: 21-23,45-47
   node 7 size: 48319 MB
   node 7 free: 48148 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  12  12  12  12  12  12
     1:  11  10  12  12  12  12  12  12
     2:  12  12  10  11  12  12  12  12
     3:  12  12  11  10  12  12  12  12
     4:  12  12  12  12  10  11  12  12
     5:  12  12  12  12  11  10  12  12
     6:  12  12  12  12  12  12  10  11
     7:  12  12  12  12  12  12  11  10


   ------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       395921160 kB


   ------------------------------------------------------------
10. who -r
   run-level 3 Apr 22 17:32


   ------------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
   Default Target  Status
   multi-user      running


   ------------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE             UNIT FILES
   enabled           apparmor auditd cron getty@ irqbalance issue-generator kbdsettings lvm2-monitor postfix
                     purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4
                     wickedd-dhcp6 wickedd-nanny
   enabled-runtime   systemd-remount-fs
   disabled          blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell
                     grub2-once haveged hwloc-dump-hwdata issue-add-ssh-keys kexec-load lunmask rpmconfigcheck
                     serial-getty@ systemd-boot-check-no-failures systemd-confext systemd-network-generator
                     systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
   generated         jexec
   indirect          pcscd systemd-userdbd wickedd


   ------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
   root=UUID=3b533ede-c3a8-4098-83c6-01dcf22acfe9
   splash=silent
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate®2017\_fp\_base = 568$

$SPECrate®2017\_fp\_peak = 571$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Dec-2024

Hardware Availability: Jan-2025

Software Availability: Oct-2024

Platform Notes (Continued)

```
    mitigations=auto
    quiet
    security=apparmor


   ----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 6:
      current policy: frequency should be within 1.50 GHz and 4.10 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: throughput-performance


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

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

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate®2017\_fp\_base = 568$

$SPECrate®2017\_fp\_peak = 571$

CPU2017 License:	3	**Test Date:**	Dec-2024
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2025
Tested by:	HPE	**Software Availability:**	Oct-2024

Platform Notes (Continued)

```
   From /etc/*-release /etc/*-version
   os-release SUSE Linux Enterprise Server 15 SP6


   ----------------------------------------------------------
   20. Disk information
   SPEC is set to: /home/cpu2017
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda2       btrfs  447G   44G  400G  10% /home


   ----------------------------------------------------------
   21. /sys/devices/virtual/dmi/id
       Vendor:          HPE
       Product:         ProLiant DL325 Gen11
       Product Family:  ProLiant
       Serial:          DL325G11-011


   ----------------------------------------------------------
   22. dmidecode
     Additional information from dmidecode 3.4 follows.  WARNING: Use caution when you interpret this section.
     The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
     determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
     "DMTF SMBIOS" standard.
     Memory:
       12x Hynix HMCG88AHBRA471N 32 GB 2 rank 6400, configured at 6000


   ----------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:       HPE
       BIOS Version:      2.20
       BIOS Date:         10/31/2024
       BIOS Revision:     2.20
       Firmware Revision: 1.65
```

Compiler Version Notes

```
==================================================================================================
C                 | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
--------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------


==================================================================================================
C++               | 508.namd_r(base, peak) 510.parest_r(base, peak)
--------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
--------------------------------------------------------------------------------------------------


==================================================================================================
C++, C            | 511.povray_r(base, peak) 526.blender_r(base, peak)
--------------------------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3	**Test Date:** Dec-2024
Test Sponsor: HPE	**Hardware Availability:** Jan-2025
Tested by: HPE	**Software Availability:** Oct-2024

Compiler Version Notes (Continued)

```
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2024
Hardware Availability: Jan-2025
Software Availability: Oct-2024

Base Compiler Invocation (Continued)

Fortran benchmarks:
```
flang
```

Benchmarks using both Fortran and C:
```
flang clang
```

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

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64`
526.blender_r: `-funsigned-char -DSPEC_LP64`
527.cam4_r: `-DSPEC_CASE_FLAG -DSPEC_LP64`
538.imagick_r: `-DSPEC_LP64`
544.nab_r: `-DSPEC_LP64`
549.fotonik3d_r: `-DSPEC_LP64`
554.roms_r: `-DSPEC_LP64`

Base Optimization Flags

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

C++ benchmarks:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
```

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

SPECrate®2017_fp_base = 568

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_peak = 571

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2024
Hardware Availability: Jan-2025
Software Availability: Oct-2024

Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc
-lflang -ldl
```

Benchmarks using both Fortran and C:
```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-aggressive-gather=true
-Wl,-mllvm -Wl,-enable-masked-gather-sequence=false -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Benchmarks using both C and C++:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang
-ldl
```

Benchmarks using Fortran, C, and C++:
```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
```

(Continued on next page)

spec®

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3		**Test Date:**	Dec-2024
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2025
Tested by:	HPE	**Software Availability:**	Oct-2024

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-extra-inliner
-O3 -march=znver5 -fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie
-flto -fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000 -Mrecursive -funroll-loops
-mllvm -lsr-in-nested-loop -fepilog-vectorization-of-inductions
-lamdlibm -lamdalloc -lflang -ldl
```

Base Other Flags

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

C++ benchmarks:
```
-Wno-unused-command-line-argument
```

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

Benchmarks using both Fortran and C:
```
-Wno-unused-command-line-argument
```

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

Benchmarks using Fortran, C, and C++:
```
-Wno-unused-command-line-argument
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3	**Test Date:** Dec-2024
Test Sponsor: HPE	**Hardware Availability:** Jan-2025
Tested by: HPE	**Software Availability:** Oct-2024

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
```
flang clang
```

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

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
519.lbm_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

```
538.imagick_r: basepeak = yes
```

```
544.nab_r: -m64 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

C++ benchmarks:

```
508.namd_r: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
```

(Continued on next page)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

$SPECrate®2017\_fp\_base = 568$

$SPECrate®2017\_fp\_peak = 571$

CPU2017 License: 3	**Test Date:** Dec-2024
Test Sponsor: HPE	**Hardware Availability:** Jan-2025
Tested by: HPE	**Software Availability:** Oct-2024

Peak Optimization Flags (Continued)

508.namd_r (continued):
```
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lamdalloc -ldl
```

510.parest_r: basepeak = yes

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

554.roms_r: basepeak = yes

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: `-m64 -std=c++14`
```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -lamdlibm -lamdalloc -ldl
```

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2025 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen11
(4.10 GHz, AMD EPYC 9275F)

SPECrate®2017_fp_base = 568

SPECrate®2017_fp_peak = 571

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2024
Hardware Availability: Jan-2025
Software Availability: Oct-2024

Peak Other Flags

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

C++ benchmarks:
`-Wno-unused-command-line-argument`

Fortran benchmarks:
`-Wno-unused-command-line-argument`

Benchmarks using both Fortran and C:
`-Wno-unused-command-line-argument`

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

Benchmarks using Fortran, C, and C++:
`-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-rev1.0.html`
`http://www.spec.org/cpu2017/flags/aocc500-flags.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-rev1.0.xml`
`http://www.spec.org/cpu2017/flags/aocc500-flags.xml`

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

Tested with SPEC CPU®2017 v1.1.9 on 2024-12-09 05:18:57-0500.
Report generated on 2025-01-28 22:06:45 by CPU2017 PDF formatter v6716.
Originally published on 2025-01-28.