SPEC CPU®2026 Integer Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

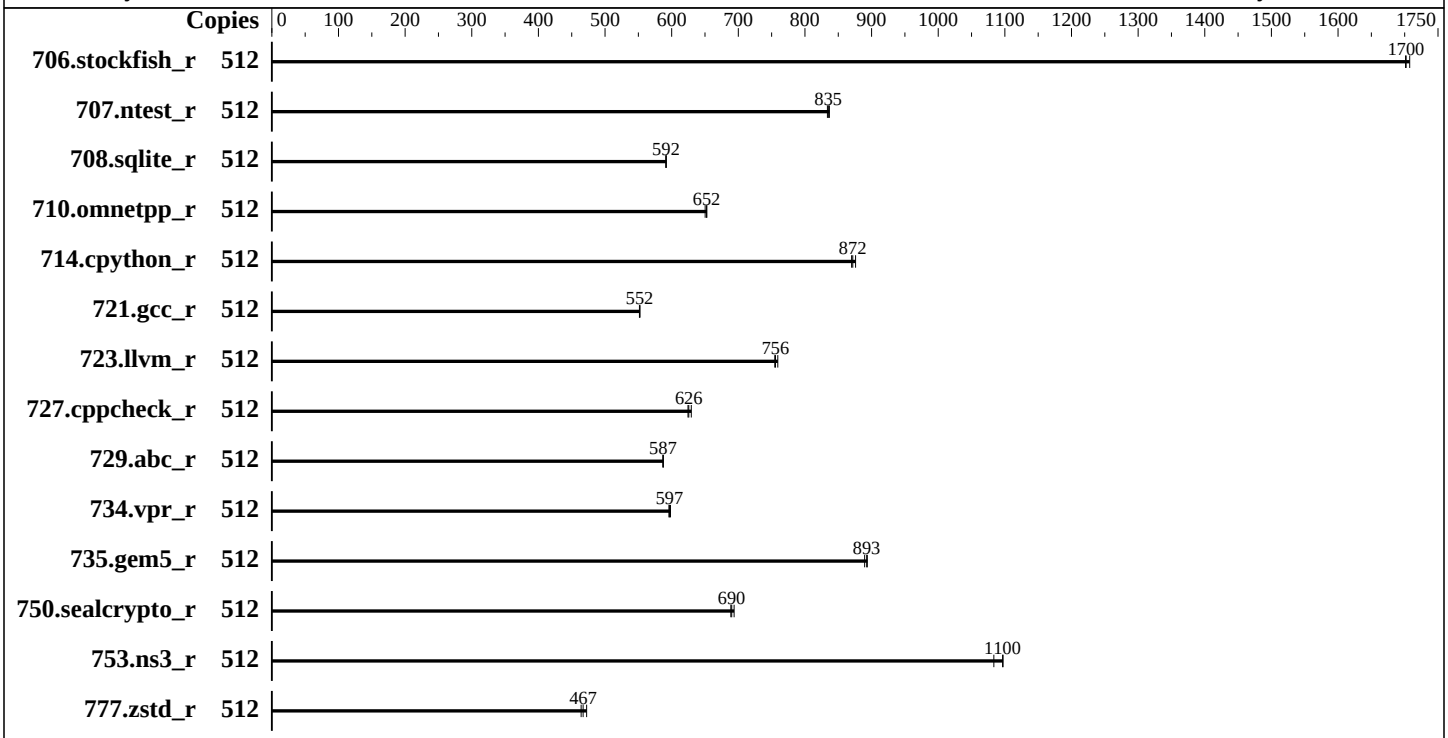
ProLiant DL385 Gen11
(2.25 GHz, AMD EPYC 9754)

SPECrate®2026_int_base = 736

SPECrate®2026_int_peak = 736

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

Test Date: Jan-2026
Hardware Availability: Jun-2023
Software Availability: Jan-2026



Hardware

CPU Name:	AMD EPYC 9754
Max MHz:	3100
Nominal:	2250
Enabled:	256 cores, 2 chips, 2 threads/core
Orderable:	1,2 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	256 MB I+D on chip per chip, 16 MB shared / 8 cores
Other:	None
Memory:	1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage:	1 x 480 GB NVMe SSD
Cooling:	DLC
Other:	None

Software

OS:	Ubuntu 24.04.3 LTS Kernel 6.8.0-90-generic
Compiler:	C/C++/Fortran: Version 5.1.0 of AOCC
Compiler Category:	Vendor
Firmware:	HPE BIOS Version v2.90 released Jan-2026
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	None
Power Management:	BIOS and OS is set to prefer performance at the cost of additional power usage

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
706.stockfish_r	512	378	1710	**379**	**1700**	379	1700	512	378	1710	**379**	**1700**	379	1700
707.ntest_r	512	364	834	362	837	**363**	**835**	512	364	834	362	837	**363**	**835**
708.sqlite_r	512	457	591	**457**	**592**	457	592	512	457	591	**457**	**592**	457	592
710.omnetpp_r	512	**381**	**652**	383	650	381	653	512	**381**	**652**	383	650	381	653
714.cpython_r	512	**281**	**872**	282	870	280	876	512	**281**	**872**	282	870	280	876
721.gcc_r	512	636	552	**636**	**552**	637	552	512	636	552	**636**	**552**	637	552
723.llvm_r	512	342	759	344	755	**343**	**756**	512	342	759	344	755	**343**	**756**
727.cppcheck_r	512	**294**	**626**	292	629	294	624	512	**294**	**626**	292	629	294	624
729.abc_r	512	400	587	400	587	**400**	**587**	512	400	587	400	587	**400**	**587**
734.vpr_r	512	396	596	395	598	**395**	**597**	512	396	596	395	598	**395**	**597**
735.gem5_r	512	280	890	**279**	**893**	279	894	512	280	890	**279**	**893**	279	894
750.sealcrypto_r	512	**398**	**690**	396	694	398	689	512	**398**	**690**	396	694	398	689
753.ns3_r	512	286	1100	290	1080	**286**	**1100**	512	286	1100	290	1080	**286**	**1100**
777.zstd_r	512	**706**	**467**	698	472	710	464	512	**706**	**467**	698	472	710	464

SPECrate®2026_int_base = 736

SPECrate®2026_int_peak = 736

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.
```

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Operating System Notes (Continued)

```
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.
To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/cpu2026/amd_rate_aocc510_znver5_A_lib/lib:/home/cpu2026/amd_rate_
     aocc510_znver5_A_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC Venice256 CPU + 2TiB
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 Throughput Compute
Determinism Control set to Manual
 Performance Determinism set to Power Deterministic
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
Data Fabric C-State Enable set to Force Enabled
Last-Level Cache (LLC) as NUMA Node set to Enabled
Workload Profile set to Custom
 Power Regulator set to OS Control Mode

 Sysinfo program /home/cpu2026/bin/sysinfo
```

(Continued on next page)

Platform Notes (Continued)

```
Rev: 069f95da7e7f5d81b2ce48a82150e54f
running on admin1 Fri Jan 30 11:52:23 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 255 (255.4-1ubuntu8.12)
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 6.8.0-90-generic #91-Ubuntu SMP PREEMPT_DYNAMIC Tue Nov 18 14:14:30 UTC 2025 x86_64

------------------------------------------------------------
2. w
   11:52:23 up 5 min,  6 users,  load average: 0.55, 0.21, 0.09
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU  WHAT
  admin1            10.30.195.96     11:51   65days  0.00s  0.02s sshd: admin1 [priv]
  admin1            10.30.195.96     11:51   65days  0.00s  0.02s sshd: admin1 [priv]
  admin1            10.30.195.96     25Nov25 65days  0.00s  0.02s sshd: admin1 [priv]
  admin1            10.30.195.96     25Nov25 65days  0.00s  0.02s sshd: admin1 [priv]
  admin1            10.30.195.94     25Nov25 65days  0.00s  0.05s sshd: admin1 [priv]
  admin1            10.30.195.94     25Nov25 65days  0.00s  0.03s sshd: admin1 [priv]
```

(Continued on next page)

Platform Notes (Continued)

```
------------------------------------------------------------
3. Username
  From environment variable $USER:  root
  From the command 'logname':       admin1

------------------------------------------------------------
4. ulimit -a
  time(seconds)        unlimited
  file(blocks)         unlimited
  data(kbytes)         unlimited
  stack(kbytes)        unlimited
  coredump(blocks)     0
  memory(kbytes)       unlimited
  locked memory(kbytes) 2097152
  process              6190119
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: admin1 [priv]
 sshd: admin1@notty
 sudo $SPEC/intrate.sh
 /bin/bash $SPEC/intrate.sh
 sudo ./run_amd_rate_aocc510_znver5_A1.py
 python3 ./run_amd_rate_aocc510_znver5_A1.py
 /bin/bash ./amd_rate_aocc510_znver5_A1.sh
 runcpu --config amd_rate_aocc510_znver5_A1.cfg --tune base --reportable --iterations 3 intrate
 runcpu --configfile amd_rate_aocc510_znver5_A1.cfg --tune base --reportable --iterations 3 --nopower
   --runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2026.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2026

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9754 128-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 25
    model           : 160
    stepping        : 1
    microcode       : 0xaa00116
```

(Continued on next page)

Platform Notes (Continued)

```
     bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass srso vmscape
     TLB size       : 3584 4K pages
     cpu cores      : 128
     siblings       : 256
     2 physical ids (chips)
     512 processors (hardware threads)
     physical id 0: core ids 0-127
     physical id 1: core ids 0-127
     physical id 0: apicids 0-255
     physical id 1: apicids 256-511
   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):                               512
    On-line CPU(s) list:                  0-511
    Vendor ID:                            AuthenticAMD
    BIOS Vendor ID:                       Advanced Micro Devices, Inc.
    Model name:                           AMD EPYC 9754 128-Core Processor
    BIOS Model name:                    AMD EPYC 9754 128-Core Processor                CPU @ 2.2GHz
    BIOS CPU family:                      107
    CPU family:                           25
    Model:                                160
    Thread(s) per core:                   2
    Core(s) per socket:                   128
    Socket(s):                            2
    Stepping:                             1
    Frequency boost:                      enabled
    CPU(s) scaling MHz:                   101%
    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
```

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Platform Notes (Continued)

```
                                ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase 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 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 overflow_recov succor smca fsrm flush_l1d
                                debug_swap ibpb_exit_to_user
  Virtualization:               AMD-V
  L1d cache:                    8 MiB (256 instances)
  L1i cache:                    8 MiB (256 instances)
  L2 cache:                     256 MiB (256 instances)
  L3 cache:                     512 MiB (32 instances)
  NUMA node(s):                 32
  NUMA node0 CPU(s):            0-7,256-263
  NUMA node1 CPU(s):            8-15,264-271
  NUMA node2 CPU(s):            16-23,272-279
  NUMA node3 CPU(s):            24-31,280-287
  NUMA node4 CPU(s):            32-39,288-295
  NUMA node5 CPU(s):            40-47,296-303
  NUMA node6 CPU(s):            48-55,304-311
  NUMA node7 CPU(s):            56-63,312-319
  NUMA node8 CPU(s):            64-71,320-327
  NUMA node9 CPU(s):            72-79,328-335
  NUMA node10 CPU(s):           80-87,336-343
  NUMA node11 CPU(s):           88-95,344-351
  NUMA node12 CPU(s):           96-103,352-359
  NUMA node13 CPU(s):           104-111,360-367
  NUMA node14 CPU(s):           112-119,368-375
  NUMA node15 CPU(s):           120-127,376-383
  NUMA node16 CPU(s):           128-135,384-391
  NUMA node17 CPU(s):           136-143,392-399
  NUMA node18 CPU(s):           144-151,400-407
  NUMA node19 CPU(s):           152-159,408-415
  NUMA node20 CPU(s):           160-167,416-423
  NUMA node21 CPU(s):           168-175,424-431
  NUMA node22 CPU(s):           176-183,432-439
  NUMA node23 CPU(s):           184-191,440-447
  NUMA node24 CPU(s):           192-199,448-455
  NUMA node25 CPU(s):           200-207,456-463
  NUMA node26 CPU(s):           208-215,464-471
  NUMA node27 CPU(s):           216-223,472-479
  NUMA node28 CPU(s):           224-231,480-487
  NUMA node29 CPU(s):           232-239,488-495
```

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Platform Notes (Continued)

```
   NUMA node30 CPU(s):                   240-247,496-503
   NUMA node31 CPU(s):                   248-255,504-511
   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:   Mitigation; Safe RET
   Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl
   Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
   Vulnerability Spectre v2:             Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP
                                         always-on; RSB filling; PBRSB-eIBRS Not affected; BHI Not affected
   Vulnerability Srbds:                  Not affected
   Vulnerability Tsx async abort:        Not affected
   Vulnerability Vmscape:                Mitigation; IBPB before exit to userspace

 From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
      L1d       32K       8M    8 Data            1    64        1             64
      L1i       32K       8M    8 Instruction     1    64        1             64
      L2         1M     256M    8 Unified         2  2048        1             64
      L3        16M     512M   16 Unified         3 16384        1             64

 ------------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 32 nodes (0-31)
   node 0 cpus: 0-7,256-263
   node 0 size: 47999 MB
   node 0 free: 47141 MB
   node 1 cpus: 8-15,264-271
   node 1 size: 48378 MB
   node 1 free: 48170 MB
   node 2 cpus: 16-23,272-279
   node 2 size: 48378 MB
   node 2 free: 48199 MB
   node 3 cpus: 24-31,280-287
   node 3 size: 48378 MB
   node 3 free: 48171 MB
   node 4 cpus: 32-39,288-295
   node 4 size: 48378 MB
   node 4 free: 48141 MB
   node 5 cpus: 40-47,296-303
   node 5 size: 48378 MB
```

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Platform Notes (Continued)

```
node 5 free: 48194 MB
node 6 cpus: 48-55,304-311
node 6 size: 48378 MB
node 6 free: 48192 MB
node 7 cpus: 56-63,312-319
node 7 size: 48378 MB
node 7 free: 48175 MB
node 8 cpus: 64-71,320-327
node 8 size: 48378 MB
node 8 free: 48203 MB
node 9 cpus: 72-79,328-335
node 9 size: 48378 MB
node 9 free: 48186 MB
node 10 cpus: 80-87,336-343
node 10 size: 48378 MB
node 10 free: 48184 MB
node 11 cpus: 88-95,344-351
node 11 size: 48378 MB
node 11 free: 48196 MB
node 12 cpus: 96-103,352-359
node 12 size: 48378 MB
node 12 free: 48172 MB
node 13 cpus: 104-111,360-367
node 13 size: 48378 MB
node 13 free: 48205 MB
node 14 cpus: 112-119,368-375
node 14 size: 48378 MB
node 14 free: 48190 MB
node 15 cpus: 120-127,376-383
node 15 size: 48335 MB
node 15 free: 48123 MB
node 16 cpus: 128-135,384-391
node 16 size: 48378 MB
node 16 free: 48189 MB
node 17 cpus: 136-143,392-399
node 17 size: 48378 MB
node 17 free: 48181 MB
node 18 cpus: 144-151,400-407
node 18 size: 48378 MB
node 18 free: 48157 MB
node 19 cpus: 152-159,408-415
node 19 size: 48378 MB
node 19 free: 48184 MB
node 20 cpus: 160-167,416-423
node 20 size: 48378 MB
node 20 free: 48185 MB
node 21 cpus: 168-175,424-431
```

(Continued on next page)

Platform Notes (Continued)

```
  node 21 size: 48378 MB
  node 21 free: 48147 MB
  node 22 cpus: 176-183,432-439
  node 22 size: 48378 MB
  node 22 free: 48173 MB
  node 23 cpus: 184-191,440-447
  node 23 size: 48378 MB
  node 23 free: 48186 MB
  node 24 cpus: 192-199,448-455
  node 24 size: 48378 MB
  node 24 free: 48177 MB
  node 25 cpus: 200-207,456-463
  node 25 size: 48378 MB
  node 25 free: 48121 MB
  node 26 cpus: 208-215,464-471
  node 26 size: 48378 MB
  node 26 free: 48174 MB
  node 27 cpus: 216-223,472-479
  node 27 size: 48378 MB
  node 27 free: 48173 MB
  node 28 cpus: 224-231,480-487
  node 28 size: 48378 MB
  node 28 free: 48134 MB
  node 29 cpus: 232-239,488-495
  node 29 size: 48378 MB
  node 29 free: 48156 MB
  node 30 cpus: 240-247,496-503
  node 30 size: 48378 MB
  node 30 free: 48179 MB
  node 31 cpus: 248-255,504-511
  node 31 size: 48301 MB
  node 31 free: 48094 MB
  node distances:
 node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24
  25  26  27  28  29  30  31
   0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
   1:  11  10  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
   2:  11  11  10  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
   3:  11  11  11  10  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
   4:  12  12  12  12  10  11  11  11  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
   5:  12  12  12  12  11  10  11  11  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
    32  32  32  32  32  32  32
```

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Platform Notes (Continued)

```
  6:  12  12  12  12  11  11  10  11  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
  7:  12  12  12  12  11  11  11  10  12  12  12  12  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
  8:  12  12  12  12  12  12  12  12  10  11  11  11  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
  9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 11:  12  12  12  12  12  12  12  12  11  11  11  10  12  12  12  12  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 12:  12  12  12  12  12  12  12  12  12  12  12  12  10  11  11  11  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 13:  12  12  12  12  12  12  12  12  12  12  12  12  11  10  11  11  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 14:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  10  11  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 15:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  11  10  32  32  32  32  32  32  32  32  32
   32  32  32  32  32  32  32
 16:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  11  12  12  12  12  12
   12  12  12  12  12  12  12
 17:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11  12  12  12  12  12
   12  12  12  12  12  12  12
 18:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11  12  12  12  12  12
   12  12  12  12  12  12  12
 19:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10  12  12  12  12  12
   12  12  12  12  12  12  12
 20:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  10  11  11  11  12
   12  12  12  12  12  12  12
 21:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  10  11  11  12
   12  12  12  12  12  12  12
 22:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  11  10  11  12
   12  12  12  12  12  12  12
 23:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  11  11  11  10  12
   12  12  12  12  12  12  12
 24:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  10
   11  11  11  12  12  12  12
 25:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
   10  11  11  12  12  12  12
 26:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
   11  10  11  12  12  12  12
 27:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  11
   11  11  10  12  12  12  12
 28:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
   12  12  12  10  11  11  11
 29:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
```

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Platform Notes (Continued)

```
    12  12  12  11  10  11  11
   30:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  11  11  10  11
   31:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12  12  12  12  12  12
    12  12  12  11  11  11  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1584752404 kB

------------------------------------------------------------
10. who -r
  run-level 5 Nov 25 18:16

------------------------------------------------------------
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.12)
  Default Target  Status
  graphical       running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager apparmor apport blk-availability cloud-config cloud-final cloud-init
                   cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
                     grub-common grub-initrd-fallback keyboard-setup lvm2-monitor multipathd
                   networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
                     snapd sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore
                     systemd-resolved thermald tuned ua-reboot-cmds ubuntu-advantage udisks2 ufw
                       unattended-upgrades vgauth
  enabled-runtime    netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled           console-getty debug-shell iscsid nftables rsync serial-getty@ ssh
                    systemd-boot-check-no-failures systemd-confext systemd-network-generator
                  systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code
                  systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy
                  systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysext
                      systemd-time-wait-sync systemd-timesyncd upower
  indirect            systemd-sysupdate systemd-sysupdate-reboot uuidd
  masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.8.0-90-generic
  root=UUID=60685607-d408-4b5d-9478-a6a431e11442
  ro

------------------------------------------------------------
14. cpupower frequency-info
```

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Platform Notes (Continued)

```
  analyzing CPU 220:
    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
      Boost States: 0
      Total States: 3
      Pstate-P0:  2250MHz

------------------------------------------------------------
15. tuned-adm active
  Current active profile: balanced

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

(Continued on next page)

Platform Notes (Continued)

```
  defrag                    1
  max_ptes_none           511
  max_ptes_shared         256
  max_ptes_swap            64
  pages_to_scan          4096
  scan_sleep_millisecs  10000

------------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release Ubuntu 24.04.3 LTS

------------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2026
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda2      ext4  439G   51G  366G  13% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:          HPE
    Product:         ProLiant DL385 Gen11
    Product Family: ProLiant
    Serial:          DL385G11-003

------------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.5 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:
     11x Hynix HMCG94AEBRA103N 64 GB 2 rank 4800
     1x Hynix HMCG94AEBRA109N 64 GB 2 rank 4800
     5x Hynix HMCG94AEBRA123N 64 GB 2 rank 4800
     7x Hynix HMCG94MEBRA121N 64 GB 2 rank 4800


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       HPE
   BIOS Version:      2.90
   BIOS Date:         01/09/2026
   BIOS Revision:     2.90
   Firmware Revision: 1.63
```

Compiler Version Notes

```
==============================================================================
C      | 708.sqlite_r(base) 714.cpython_r(base) 777.zstd_r(base)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.1.0-Build#1994 2025_12_23)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-5.1.0/bin
------------------------------------------------------------------------------

==============================================================================
C++    | 706.stockfish_r(base) 707.ntest_r(base) 727.cppcheck_r(base)
       | 753.ns3_r(base)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.1.0-Build#1994 2025_12_23)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-5.1.0/bin
------------------------------------------------------------------------------

==============================================================================
C++, C | 710.omnetpp_r(base) 721.gcc_r(base) 723.llvm_r(base) 729.abc_r(base)
       | 734.vpr_r(base) 735.gem5_r(base) 750.sealcrypto_r(base)
------------------------------------------------------------------------------
AMD clang version 17.0.6 (CLANG: AOCC_5.1.0-Build#1994 2025_12_23)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-5.1.0/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

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

Base Portability Flags

706.stockfish_r: -DSPEC_LP64

(Continued on next page)

Base Portability Flags (Continued)

707.ntest_r: -DSPEC_LP64
708.sqlite_r: -DSPEC_LP64
710.omnetpp_r: -DSPEC_LP64
714.cpython_r: -DSPEC_LP64
721.gcc_r: -DSPEC_LP64
723.llvm_r: -DSPEC_LP64
727.cppcheck_r: -DSPEC_LP64
729.abc_r: -DSPEC_LP64
734.vpr_r: -DSPEC_LP64
735.gem5_r: -DSPEC_LP64
750.sealcrypto_r: -DSPEC_LP64
753.ns3_r: -DSPEC_LP64
777.zstd_r: -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,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-Wl,-mllvm -Wl,-extra-inliner -O3 -march=znver5 -fveclib=AMDLIBM
-fno-PIE -no-pie -flto -fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc

C++ benchmarks:
-m64 -std=c++17 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver5
-fveclib=AMDLIBM -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc

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 -march=znver5
-fveclib=AMDLIBM -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 -fvirtual-function-elimination
-fvisibility=hidden -lamdlibm -lflang -lamdalloc

Peak Optimization Flags

C benchmarks:

708.sqlite_r: `basepeak = yes`

714.cpython_r: `basepeak = yes`

777.zstd_r: `basepeak = yes`

C++ benchmarks:

706.stockfish_r: `basepeak = yes`

707.ntest_r: `basepeak = yes`

727.cppcheck_r: `basepeak = yes`

753.ns3_r: `basepeak = yes`

Benchmarks using both C and C++:

710.omnetpp_r: `basepeak = yes`

721.gcc_r: `basepeak = yes`

723.llvm_r: `basepeak = yes`

729.abc_r: `basepeak = yes`

734.vpr_r: `basepeak = yes`

735.gem5_r: `basepeak = yes`

750.sealcrypto_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-AMD-Turin-rev1.11.html`
`http://www.spec.org/cpu2026/results/flags/aocc-flags.2026-05-04.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2026/results/flags/HPE-Platform-Flags-AMD-Turin-rev1.11.xml`
`http://www.spec.org/cpu2026/results/flags/aocc-flags.2026-05-04.xml`

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