



SPEC CPU®2017 Integer Speed Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL385 Gen11

(3.60 GHz, AMD EPYC 9015)

SPECspeed®2017_int_base = 17.4

SPECspeed®2017_int_peak = 17.4

CPU2017 License: 3

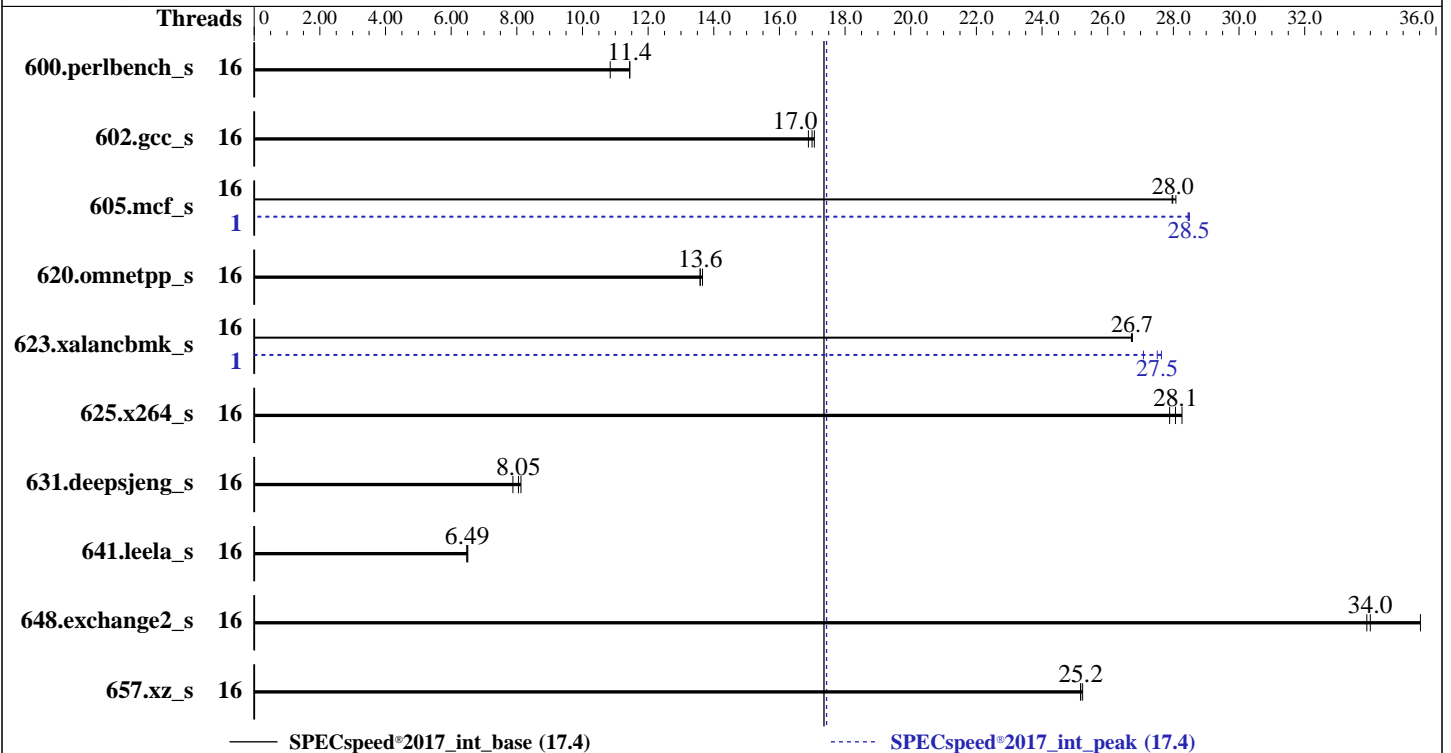
Test Sponsor: HPE

Tested by: HPE

Test Date: Dec-2024

Hardware Availability: Jan-2025

Software Availability: Oct-2024



Hardware

CPU Name: AMD EPYC 9015
 Max MHz: 4100
 Nominal: 3600
 Enabled: 16 cores, 2 chips
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 64 MB I+D on chip per chip,
 32 MB shared / 4 cores
 Other: None
 Memory: 768 GB (24 x 32 GB 2Rx8 PC5-6400B-R,
 running at 6000)
 Storage: 1 x 960 GB SATA SSD
 Other: CPU Cooling: Air

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: Yes
 Firmware: HPE BIOS Version v2.20 10/31/2024 released
 Oct-2024
 File System: xfs
 System State: Run level 5 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 64-bit
 Other: None
 Power Management: BIOS and OS set to prefer performance at
 the cost of additional power usage



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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	16	164	10.8	155	11.4	155	11.4	16	164	10.8	155	11.4	155	11.4
602.gcc_s	16	236	16.9	234	17.0	233	17.1	16	236	16.9	234	17.0	233	17.1
605.mcf_s	16	168	28.1	169	28.0	169	28.0	1	166	28.4	166	28.5	166	28.5
620.omnetpp_s	16	119	13.7	120	13.6	120	13.6	16	119	13.7	120	13.6	120	13.6
623.xalancbmk_s	16	53.0	26.7	53.0	26.7	53.0	26.8	1	51.5	27.5	52.3	27.1	51.3	27.6
625.x264_s	16	62.9	28.1	62.4	28.3	63.3	27.9	16	62.9	28.1	62.4	28.3	63.3	27.9
631.deepsjeng_s	16	176	8.13	178	8.05	182	7.88	16	176	8.13	178	8.05	182	7.88
641.leela_s	16	263	6.47	262	6.51	263	6.49	16	263	6.47	262	6.51	263	6.49
648.exchange2_s	16	82.8	35.5	86.7	33.9	86.5	34.0	16	82.8	35.5	86.7	33.9	86.5	34.0
657.xz_s	16	246	25.2	246	25.2	245	25.2	16	246	25.2	246	25.2	245	25.2

SPECspeed®2017_int_base = **17.4**

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

The AMD64 AOCC Compiler Suite is available at <http://developer.amd.com/amd-aocc/>

Submit Notes

The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.



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Environment Variables Notes

Environment variables set by runcpu before the start of the run:

GOMP_CPU_AFFINITY = "0-15"

LD_LIBRARY_PATH =

"/home/cpu2017/amd_speed_aocc500_znver5_A_lib/lib:/home/cpu2017/amd_speed_aocc500_znver5_A_lib/lib32:"

LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"

MALLOC_CONF = "retain:true"

OMP_DYNAMIC = "false"

OMP_SCHEDULE = "static"

OMP_STACKSIZE = "128M"

OMP_THREAD_LIMIT = "16"

Environment variables set by runcpu during the 605.mcf_s peak run:

GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:

GOMP_CPU_AFFINITY = "0"

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 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

AMD SMT Option set to Disabled

NUMA memory domains per socket set to Two memory domains per socket

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.localdomain Thu Dec 5 13:31:23 2024

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

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2. w
3. Username
4. ulimit -a

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Platform Notes (Continued)

- 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 (254.10+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.localdomain 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
13:31:23 up 15 min, 3 users, load average: 0.17, 0.07, 0.09
USER      TTY      FROM          LOGIN@      IDLE        JCPU        PCPU WHAT
root      :         :             13:30      ?xdm?      1:56        0.02s  gdm-session-worker [pam/gdm-password]
root      seat0    login-        13:30      0.00s      0.00s      0.00s  /usr/lib/gdm/gdm-x-session
--register-session --run-script gnome
root      :1       :             13:30      ?xdm?      1:56        0.00s  /usr/lib/gdm/gdm-x-session
--register-session --run-script gnome
root      pts/1    172.17.1.96   13:31      11.00s     0.78s      0.06s  /bin/bash ./amd_speed_aocc500_znver5_A1.sh
```

```
3. Username
From environment variable $USER: root
```

```
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size                (blocks, -f) unlimited
pending signals          (-i) 3094790
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) 3094790
virtual memory           (kbytes, -v) unlimited
file locks               (-x) unlimited
```

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Platform Notes (Continued)

```

5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/1
-bash
python3 ./run_intspeed.py
/bin/bash ./amd_speed_aocc500_znver5_A1.sh
runcpu --config amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 intspeed
runcpu --configfile amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode speed --tune base:peak --size test:train:refspeed intspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.006/templogs/preenv.intspeed.006.0.log --lognum 006.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

```

```

6. /proc/cpuinfo
model name      : AMD EPYC 9015 8-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      : 8
siblings       : 8
2 physical ids (chips)
16 processors (hardware threads)
physical id 0: core ids 0-7
physical id 1: core ids 0-7
physical id 0: apicids 0-7
physical id 1: apicids 8-15

```

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):                 16
On-line CPU(s) list:   0-15
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9015 8-Core Processor
BIOS Model name:       AMD EPYC 9015 8-Core Processor
BIOS CPU family:       107
CPU family:             26
Model:                  2
Thread(s) per core:    1
Core(s) per socket:    8
Socket(s):              2
Stepping:               1
Frequency boost:       enabled
CPU(s) scaling MHz:    94%

```

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Platform Notes (Continued)

```

CPU max MHz:          3600.0000
CPU min MHz:          1500.0000
BogoMIPS:             7189.33
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 movbe popcnt aes xsave avx f16c rdrand lahf_lm
                    cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
                    osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
                    perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
                    ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
                    smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                    avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                    xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                    cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
                    xsaveerptr rdpru wbinvd 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_lld debug_swap
Virtualization:      AMD-V
L1d cache:          768 KiB (16 instances)
L1i cache:          512 KiB (16 instances)
L2 cache:           16 MiB (16 instances)
L3 cache:           128 MiB (4 instances)
NUMA node(s):       4
NUMA node0 CPU(s): 0-3
NUMA node1 CPU(s): 4-7
NUMA node2 CPU(s): 8-11
NUMA node3 CPU(s): 12-15
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
                                      disabled; RSB filling; PBRSE-eIBRS Not affected; BHI Not affected
Vulnerability Srbds:                Not affected
Vulnerability Tsx async abort:      Not affected

```

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	768K	12	Data	1	64	1	64
L1i	32K	512K	8	Instruction	1	64	1	64
L2	1M	16M	16	Unified	2	1024	1	64
L3	32M	128M	16	Unified	3	32768	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)

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Platform Notes (Continued)

```

node 0 cpus: 0-3
node 0 size: 193217 MB
node 0 free: 192558 MB
node 1 cpus: 4-7
node 1 size: 193534 MB
node 1 free: 192201 MB
node 2 cpus: 8-11
node 2 size: 193496 MB
node 2 free: 192641 MB
node 3 cpus: 12-15
node 3 size: 193480 MB
node 3 free: 192536 MB
node distances:
node  0  1  2  3
  0: 10 12 32 32
  1: 12 10 32 32
  2: 32 32 10 12
  3: 32 32 12 10

```

```

-----
9. /proc/meminfo
   MemTotal:      792297708 kB

```

```

-----
10. who -r
    run-level 5 Dec 5 13:16

```

```

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

```

```

-----
12. Services, from systemctl list-unit-files
    STATE          UNIT FILES
    enabled         ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd
                    bluetooth cron display-manager getty@ irqbalance issue-generator kbdsettings klog
                    lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked
                    wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant
    enabled-runtime systemd-remount-fs
    disabled        NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon autofs
                    autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates
                    chrony-wait chronyd console-getty cups cups-browsed debug-shell dnsmasq ebttables
                    exchange-bmc-os-info firewalld fsidd gpm grub2-once haveged hwloc-dump-hwdata ipmi ipmievd
                    issue-add-ssh-keys kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nmb openvpn@
                    ostree-remount rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@
                    smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures
                    systemd-confext systemd-network-generator systemd-sysextd systemd-time-wait-sync
                    systemd-timesyncd tuned udisks2 update-system-flatpaks upower vncserver@ wpa_supplicant@
    indirect        pcsd saned@ systemd-userdbd wickedd

```

```

-----
13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
    root=UUID=03804bb9-43a7-4bf1-b551-5c912b239e58
    splash=silent
    mitigations=auto
    quiet
    security=apparmor

```

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Platform Notes (Continued)

14. cpupower frequency-info

analyzing CPU 6:

current policy: frequency should be within 1.50 GHz and 3.60 GHz.

The governor "performance" may decide which speed to use within this range.

boost state support:

Supported: yes

Active: yes

15. tuned-adm active

No current active profile.

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

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

20. Disk information

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Platform Notes (Continued)

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sdd2	xfs	892G	47G	845G	6%	/

```

-----
21. /sys/devices/virtual/dmi/id
Vendor:          HPE
Product:         ProLiant DL385 Gen11
Product Family: ProLiant
Serial:          DL385GEN11-001
-----

```

```

-----
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:
  24x Hynix HMC88AHBRA472N 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: 1.63
-----

```

Compiler Version Notes

```

=====
C          | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
          | 657.xz_s(base, peak)
-----

```

```

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#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++       | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
          | 641.leela_s(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   | 648.exchange2_s(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
-----

```

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SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL385 Gen11

(3.60 GHz, AMD EPYC 9015)

SPECspeed®2017_int_base = 17.4

SPECspeed®2017_int_peak = 17.4

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

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

Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

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

C++ benchmarks:

-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -DSPEC_OPENMP -flto

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Base Optimization Flags (Continued)

C++ benchmarks (continued):

```
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -mllvm -unroll-threshold=100 -zopt
-fvirtual-function-elimination -fvisibility=hidden -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc-ext
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-iv-split -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -O3 -march=znver5 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -mllvm -optimize-strided-mem-cost
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc
```

Base Other Flags

C benchmarks:

```
-Wno-return-type -Wno-unused-command-line-argument
```

C++ benchmarks:

```
-Wno-unused-command-line-argument
```

Fortran benchmarks:

```
-Wno-unused-command-line-argument
```

Peak Compiler Invocation

C benchmarks:

```
clang
```

C++ benchmarks:

```
clang++
```

Fortran benchmarks:

```
flang
```



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CPU2017 License: 3

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Tested by: HPE

Test Date: Dec-2024

Hardware Availability: Jan-2025

Software Availability: Oct-2024

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s: basepeak = yes

602.gcc_s: basepeak = yes

605.mcf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-DSPEC_OPENMP -fremap-arrays -fstrip-mining
-fstruct-layout=9 -mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -zopt -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang

625.x264_s: basepeak = yes

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m64 -std=c++14
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=advanced -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -DSPEC_OPENMP -mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=100 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -fopenmp=libomp -lomp
-lamdlibm -lamdalloc-ext -lflang

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

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Peak Optimization Flags (Continued)

Fortran benchmarks:

648.exchange2_s: basepeak = yes

Peak Other Flags

C benchmarks:

-Wno-return-type -Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

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>

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Tested with SPEC CPU®2017 v1.1.9 on 2024-12-05 03:01:23-0500.

Report generated on 2025-01-28 22:03:46 by CPU2017 PDF formatter v6716.

Originally published on 2025-01-28.