



SPEC CPU®2017 Floating Point Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant Compute DL325 Gen12

(4.2 GHz, AMD EPYC 9175F)

SPECspeed®2017_fp_base = 219

SPECspeed®2017_fp_peak = 228

CPU2017 License: 3

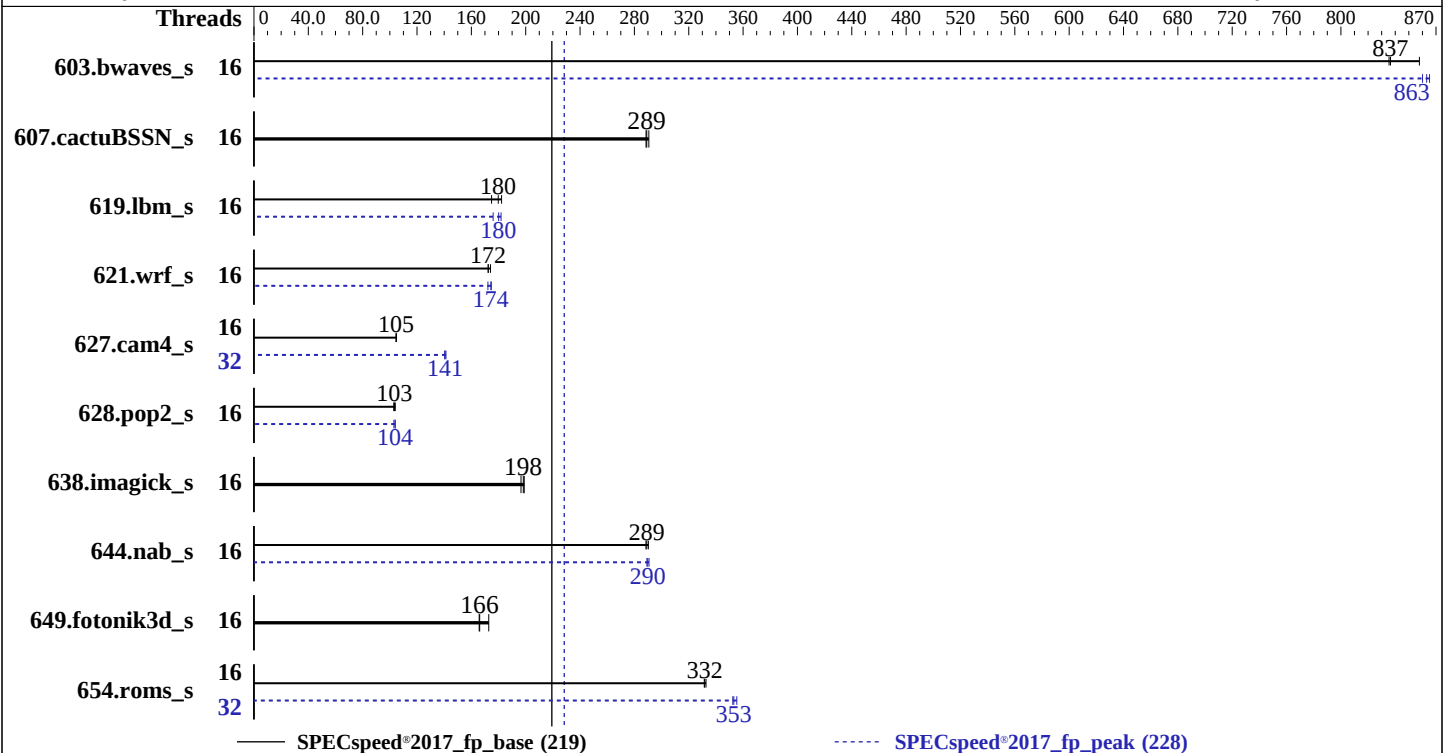
Test Sponsor: HPE

Tested by: HPE

Test Date: Sep-2025

Hardware Availability: Jul-2025

Software Availability: Oct-2024



Hardware

CPU Name: AMD EPYC 9175F
Max MHz: 5000
Nominal: 4200
Enabled: 16 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: 512 MB I+D on chip per chip, 32 MB shared / 1 cores
Other: None
Memory: 768 GB (12 x 64 GB 2Rx4 PC5-6400B-R, running at 5200)
Storage: 1 x 2 TB NVMe 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 v1.20 07/11/2025 released Jul-2025
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 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
603.bwaves_s	16	68.8	858	<u>70.5</u>	<u>837</u>	70.6	835	16	68.6	860	<u>68.4</u>	<u>863</u>	68.2	865
607.cactuBSSN_s	16	<u>57.7</u>	<u>289</u>	57.8	289	57.4	291	16	<u>57.7</u>	<u>289</u>	57.8	289	57.4	291
619.lbm_s	16	28.7	182	30.0	175	<u>29.1</u>	<u>180</u>	16	<u>29.1</u>	<u>180</u>	29.8	176	28.8	182
621.wrf_s	16	76.7	172	<u>76.7</u>	<u>172</u>	76.0	174	16	76.8	172	75.7	175	<u>75.8</u>	<u>174</u>
627.cam4_s	16	84.7	105	<u>84.7</u>	<u>105</u>	84.5	105	32	63.2	140	<u>63.0</u>	<u>141</u>	62.7	141
628.pop2_s	16	114	104	115	103	<u>115</u>	<u>103</u>	16	115	103	<u>114</u>	<u>104</u>	114	104
638.imagick_s	16	72.5	199	<u>72.8</u>	<u>198</u>	73.4	197	16	72.5	199	<u>72.8</u>	<u>198</u>	73.4	197
644.nab_s	16	60.2	290	<u>60.4</u>	<u>289</u>	60.6	288	16	60.1	291	<u>60.3</u>	<u>290</u>	60.4	289
649.fotonik3d_s	16	55.0	166	<u>54.9</u>	<u>166</u>	52.8	173	16	55.0	166	<u>54.9</u>	<u>166</u>	52.8	173
654.roms_s	16	47.3	333	47.5	331	<u>47.5</u>	<u>332</u>	32	<u>44.6</u>	<u>353</u>	44.3	355	44.7	352

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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 = "0-31"

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 = "32"

Environment variables set by runcpu during the 603.bwaves_s peak run:

GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 619.lbm_s peak run:

GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 621.wrf_s peak run:

GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 627.cam4_s peak run:

GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 628.pop2_s peak run:

GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 644.nab_s peak run:

GOMP_CPU_AFFINITY = "0-15"

Environment variables set by runcpu during the 654.roms_s peak run:

GOMP_CPU_AFFINITY = "0-31"

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 Configurations : Parameters are selected in the order shown below

Workload Profile set to General Peak Frequency Compute

Determinism Control set to Manual

Performance Determinism set to Power Deterministic

Memory Patrol Scrubbing set to Disabled

ACPI CST C2 Latency set to 18 microseconds

Last-Level Cache (LLC) as NUMA Node set to Enabled

NUMA memory domains per socket set to Four memory domains per socket

Thermal Configuration set to Enhanced CPU Cooling

Workload Profile set to Custom

Power Regulator set to OS Control Mode

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Platform Notes (Continued)

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Tue Sep 2 19:45:00 2025

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

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1. uname -a
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7. lscpu
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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. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/khugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id
21. dmidecode
22. 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/lp)
x86_64 x86_64 x86_64 GNU/Linux

2. w
19:45:00 up 3:26, 5 users, load average: 6.21, 4.59, 2.93
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
root console :0 16:21 3:26m 0.00s 0.01s gdm-session-worker [pam/gdm-password]
root :0 16:21 ?xdm? 34.24s 0.05s /usr/lib/gnome-session-binary
root pts/2 10.79.30.185:S.0 17:26 2:18m 0.73s 0.08s /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) 3094708
max locked memory (kbytes, -l) 2097152
max memory size (kbytes, -m) unlimited
open files (-n) 1024

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Platform Notes (Continued)

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) 3094708
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited

5. sysinfo process ancestry

```
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
```

```
SCREEN -S cpu
```

```
/bin/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 fpspeed
```

```
runcpu --configfile amd_speed_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
```

```
--runmode speed --tune base:peak --size test:train:refspeed fpspeed --nopreenv --note-preenv --logfile  
$SPEC/tmp/CPU2017.022/temlogs/preenv.fpspeed.022.0.log --lognum 022.0 --from_runcpu 2
```

```
specperl $SPEC/bin/sysinfo
```

```
$SPEC = /home/cpu2017
```

6. /proc/cpuinfo

```
model name      : AMD EPYC 9175F 16-Core Processor
```

```
vendor_id       : AuthenticAMD
```

```
cpu family      : 26
```

```
model           : 2
```

```
stepping        : 1
```

```
microcode       : 0xb002151
```

```
bugs             : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
```

```
TLB size        : 192 4K pages
```

```
cpu cores        : 16
```

```
siblings         : 32
```

```
1 physical ids (chips)
```

```
32 processors (hardware threads)
```

```
physical id 0: core ids 0,8,16,24,32,40,48,56,64,72,80,88,96,104,112,120
```

```
physical id 0: apicids
```

```
0-1,16-17,32-33,48-49,64-65,80-81,96-97,112-113,128-129,144-145,160-161,176-177,192-193,208-209,224-225,2  
40-241
```

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):            32  
On-line CPU(s) list: 0-31  
Vendor ID:          AuthenticAMD  
BIOS Vendor ID:     Advanced Micro Devices, Inc.  
Model name:         AMD EPYC 9175F 16-Core Processor  
BIOS Model name:    AMD EPYC 9175F 16-Core Processor  
BIOS CPU family:    107  
CPU family:         26
```

CPU @ 4.2GHz

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Platform Notes (Continued)

Model: 2
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 1
Stepping: 1
Frequency boost: enabled
CPU(s) scaling MHz: 106%
CPU max MHz: 4200.0000
CPU min MHz: 1500.0000
BogoMIPS: 8387.60
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb
rdtscp lm constant_tsc rep_good amd_lbr_v2 nopl nonstop_tsc cpuid
extd_apicid aperfmperf rapl pni pclmulqdq monitor ssse3 fma cx16 pcid
sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd mba perfmon_v2
ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase tsc_adjust bmi1 avx2
smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
xsaveerptr rdpru wbnoinvd amd_ppin cppc 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
AMD-V
768 KiB (16 instances)
L1d cache: 512 KiB (16 instances)
L1i cache: 16 MiB (16 instances)
L2 cache: 512 MiB (16 instances)
L3 cache: 16
NUMA node(s): 0,16
NUMA node0 CPU(s): 1,17
NUMA node1 CPU(s): 2,18
NUMA node2 CPU(s): 3,19
NUMA node3 CPU(s): 4,20
NUMA node4 CPU(s): 5,21
NUMA node5 CPU(s): 6,22
NUMA node6 CPU(s): 7,23
NUMA node7 CPU(s): 8,24
NUMA node8 CPU(s): 9,25
NUMA node9 CPU(s): 10,26
NUMA node10 CPU(s): 11,27
NUMA node11 CPU(s): 12,28
NUMA node12 CPU(s): 13,29
NUMA node13 CPU(s): 14,30
NUMA node14 CPU(s): 15,31
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

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Platform Notes (Continued)

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; 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	512M	16	Unified	3	32768	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

available: 16 nodes (0-15)

node 0 cpus: 0,16
node 0 size: 48066 MB
node 0 free: 47609 MB
node 1 cpus: 1,17
node 1 size: 48383 MB
node 1 free: 48188 MB
node 2 cpus: 2,18
node 2 size: 48383 MB
node 2 free: 48165 MB
node 3 cpus: 3,19
node 3 size: 48383 MB
node 3 free: 48165 MB
node 4 cpus: 4,20
node 4 size: 48383 MB
node 4 free: 48184 MB
node 5 cpus: 5,21
node 5 size: 48383 MB
node 5 free: 48252 MB
node 6 cpus: 6,22
node 6 size: 48383 MB
node 6 free: 48209 MB
node 7 cpus: 7,23
node 7 size: 48383 MB
node 7 free: 48234 MB
node 8 cpus: 8,24
node 8 size: 48383 MB
node 8 free: 48238 MB
node 9 cpus: 9,25
node 9 size: 48383 MB
node 9 free: 48181 MB
node 10 cpus: 10,26
node 10 size: 48383 MB
node 10 free: 48247 MB
node 11 cpus: 11,27
node 11 size: 48312 MB
node 11 free: 48153 MB
node 12 cpus: 12,28
node 12 size: 48344 MB
node 12 free: 48212 MB
node 13 cpus: 13,29
node 13 size: 48383 MB

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Platform Notes (Continued)

node 13 free: 48190 MB
node 14 cpus: 14,30
node 14 size: 48383 MB
node 14 free: 48229 MB
node 15 cpus: 15,31
node 15 size: 48383 MB
node 15 free: 48078 MB
node distances:

node	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0:	10	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12
1:	11	10	11	11	11	11	11	11	12	12	12	12	12	12	12	12
2:	11	11	10	11	11	11	11	11	12	12	12	12	12	12	12	12
3:	11	11	11	10	11	11	11	11	12	12	12	12	12	12	12	12
4:	11	11	11	11	10	11	11	11	12	12	12	12	12	12	12	12
5:	11	11	11	11	11	10	11	11	12	12	12	12	12	12	12	12
6:	11	11	11	11	11	11	10	11	12	12	12	12	12	12	12	12
7:	11	11	11	11	11	11	11	10	12	12	12	12	12	12	12	12
8:	12	12	12	12	12	12	12	12	10	11	11	11	11	11	11	11
9:	12	12	12	12	12	12	12	12	11	10	11	11	11	11	11	11
10:	12	12	12	12	12	12	12	12	11	11	10	11	11	11	11	11
11:	12	12	12	12	12	12	12	12	11	11	11	10	11	11	11	11
12:	12	12	12	12	12	12	12	12	11	11	11	11	10	11	11	11
13:	12	12	12	12	12	12	12	12	11	11	11	11	11	10	11	11
14:	12	12	12	12	12	12	12	12	11	11	11	11	11	11	10	11
15:	12	12	12	12	12	12	12	12	11	11	11	11	11	11	11	10

9. /proc/meminfo

MemTotal: 792276396 kB

10. who -r

run-level 5 Sep 2 16:19

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 iscsi issue-generator kbdsettings klog lvm2-monitor nscd nvme-fc-boot-connections nvme-fc-autoconnect oracle postfix purge-kernels rollback rsyslog sapconf smartd sshd systemctl-logger systemd-pstore virtqemu virtxend wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant xencnmons
enabled-runtime	systemd-fsck-root systemd-remount-fs
disabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon amavis apache2 apache2@ autofs autoyast-initscripts bgpd blk-availability bluetooth-mesh boot-sysctl booth-arbitrator booth@ ca-certificates certmonger chrony-wait chronyd clamav-milter clamd console-getty corosync corosync-notifyd crm_mon ctdb cups cups-browsed ddclient debug-shell dhcpd dhcpd6 dhcrelay dhcrelay6 dirsrv@ dlm dnsmasq drbd drbd-lvchange@ drbd-wait-promotable@ ebttables exchange-bmc-os-info fetchmail firewallld freshclam fsidd gpm grub2-once haveged hawk hwloc-dump-hwdata ipmi ipmievdp ipvsadm iscsi-init iscsid isisd issue-add-ssh-keys kexec-load ksm kvm_stat ldirectord libvirt-guests logd lunmask lvmlockd lvmlocks man-db-create mariadb mariadb@ multipathd named nfs blkmap nfs-server nfs-server nmb openvpn@ ospf6d ospfd ostree-remount pacemaker racoon racoon-setkey radvd rarpd@ ripd ripngd rpcbind rpmconfigcheck rsyncd rtkit-daemon sanlock sbd sbd_remote serial-getty@ smartd-generate_opts smb snmpd snmptrapd

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Platform Notes (Continued)

indirect
spamd spampd speech-dispatcherd squid srp_daemon srp_daemon_port@ strongswan
strongswan-starter svnserve sysstat systemd-boot-check-no-failures systemd-confext
systemd-network-generator systemd-nspawn@ systemd-sysextd systemd-time-wait-sync
systemd-timesyncd tcshd udisks2 update-systemd-flatpaks upower virtinterfaced virtlockd
virtlogd virtnetworkd virtnodedevd virtnwfilterd virtsecrettd virtstoraged vncserver@
vsftpd wdm wdmd winbind wpa_supplicant@ xen-dom0-modules xen-init-dom0
xen-qemu-dom0-disk-backend xen-watchdog xenconsole xendomains xenstored zebra
pcscd saned@ systemd-userdbd tftpd uidd wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline

BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
root=UUID=97def8eb-7bcd-4ed3-b3a2-8816e352f9b0
splash=silent
mitigations=auto
quiet
security=apparmor
amd_pstate=active

14. cpupower frequency-info

analyzing CPU 31:
current policy: frequency should be within 1.50 GHz and 4.20 GHz.
The governor "performance" may decide which speed to use
within this range.
boost state support:
Supported: yes
Active: yes

15. sysctl

kernel.numa_balancing	0
kernel.randomize_va_space	0
vm.compaction_proactiveness	20
vm.dirty_background_bytes	314572800
vm.dirty_background_ratio	0
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

16. /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

17. /sys/kernel/mm/transparent_hugepage/khugepaged

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Platform Notes (Continued)

```
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
```

18. OS release

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

19. Disk information

SPEC is set to: /home/cpu2017

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p3 ext4 1.8T 19G 1.7T 2% /
```

20. /sys/devices/virtual/dmi/id

```
Vendor: HPE
Product: HPE ProLiant Compute DL325 Gen12
Product Family: ProLiant
Serial: SANJACSCM
```

21. 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:

```
8x Hynix HMC94AHBRA480N 64 GB 2 rank 6400, configured at 5200
4x Micron MTC40F2046S1RC64BD2 QSFF 64 GB 2 rank 6400, configured at 5200
```

22. BIOS

(This section combines info from /sys/devices and dmidecode.)

```
BIOS Vendor: HPE
BIOS Version: 1.20
BIOS Date: 07/11/2025
BIOS Revision: 1.20
Firmware Revision: 1.16
```

Compiler Version Notes

```
====
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
```

```
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)
```

```
Target: x86_64-unknown-linux-gnu
```

```
Thread model: posix
```

```
InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin
```

```
====
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
```

(Continued on next page)



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Compiler Version Notes (Continued)

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

Fortran | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

Fortran, C | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1377 2024_09_24)

Target: x86_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-5.0.0/bin

Base Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang



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Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

-m64 -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
-fremap-arrays -fstrip-mining -fstruct-layout=7
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3
-mllvm -unroll-threshold=50 -zopt -mrecip=none -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang

Fortran benchmarks:

-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -funroll-loops
-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3
-Mrecursive -zopt -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang

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 -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 -funroll-loops
-mllvm -lsr-in-nested-loop -Mrecursive -mrecip=none -fopenmp=libomp
-lomp -lamdlibm -lamdalloc -lflang

Benchmarks using Fortran, C, and C++:

-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6

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Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

-Wl, -mllvm -Wl, -reduce-array-computations=3
-Wl, -mllvm -Wl, -x86-use-vzeroupper=false -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
-mllvm -loop-unswitch-threshold=200000 -mllvm -unroll-threshold=100
-funroll-loops -mllvm -lsr-in-nested-loop -Mrecursive -mrecip=none
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

Base Other Flags

C benchmarks:

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

Fortran benchmarks:

-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:

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

Benchmarks using Fortran, C, and C++:

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

Peak Compiler Invocation

C benchmarks:

clang

Fortran benchmarks:

flang

Benchmarks using both Fortran and C:

flang clang

Benchmarks using Fortran, C, and C++:

clang++ clang flang



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Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
619.lbm_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -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
```

638.imagick_s: basepeak = yes

```
644.nab_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -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 -mrecip=none
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

Fortran benchmarks:

```
603.bwaves_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-enable-X86-prefetching -DSPEC_OPENMP
-Ofast -march=znver5 -fveclib=AMDLIBM -ffast-math
-fopenmp -fscalar-transform -fvector-transform
-mllvm -reduce-array-computations=3 -Mrecursive
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang
```

649.fotonik3d_s: basepeak = yes

654.roms_s: Same as 603.bwaves_s

Benchmarks using both Fortran and C:

```
621.wrf_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
```

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Peak Optimization Flags (Continued)

621.wrf_s (continued):

```
-Wl, -mllvm -Wl, -enable-X86-prefetching -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 -funroll-loops
-mllvm -lsr-in-nested-loop -Mrecursive -fopenmp=libomp
-lomp -lamdlibm -lamdalloc -lflang
```

627.cam4_s: -m64 -Wl, -mllvm -Wl, -align-all-nofallthru-blocks=6

```
-Wl, -mllvm -Wl, -reduce-array-computations=3
-Wl, -mllvm -Wl, -enable-X86-prefetching -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 -Mrecursive
-mrecip=none -fopenmp=libomp -lomp -lamdlibm -lamdalloc
-lflang
```

628.pop2_s: -m64 -Wl, -mllvm -Wl, -align-all-nofallthru-blocks=6

```
-Wl, -mllvm -Wl, -reduce-array-computations=3
-Wl, -mllvm -Wl, -enable-X86-prefetching -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 -fscalar-transform
-fvector-transform -Mrecursive -fopenmp=libomp -lomp
-lamdlibm -lamdalloc -lflang
```

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

Peak Other Flags

C benchmarks:

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

Fortran benchmarks:

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

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Peak Other Flags (Continued)

Benchmarks using both Fortran and C:

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

Benchmarks using Fortran, C, and C++:

-Wno-return-type -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-rev1.7.html>

<http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.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-rev1.7.xml>

<http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml>

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