



# SPEC CPU®2017 Integer Speed Result

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## Hewlett Packard Enterprise

(Test Sponsor: HPE)

### ProLiant DL385 Gen11

(3.55 GHz, AMD EPYC 9355)

SPECspeed®2017\_int\_base = 19.0

SPECspeed®2017\_int\_peak = 19.1

CPU2017 License: 3

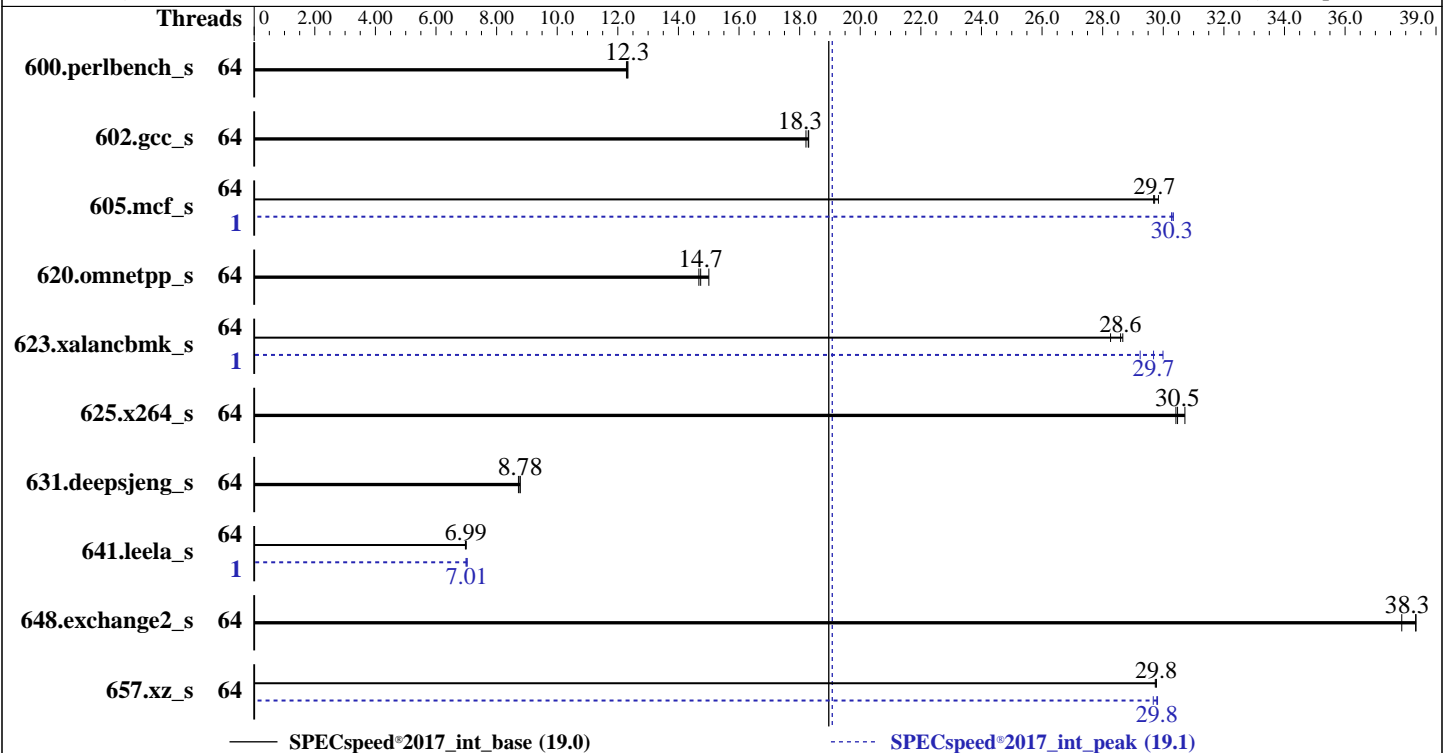
Test Sponsor: HPE

Tested by: HPE

Test Date: Oct-2024

Hardware Availability: Nov-2024

Software Availability: Sep-2024



### Hardware

CPU Name: AMD EPYC 9355  
 Max MHz: 4400  
 Nominal: 3550  
 Enabled: 64 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: 256 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 v2.10 09/11/2024 released  
 Sep-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	64	144	12.3	144	12.3	<b>144</b>	<b>12.3</b>	64	144	12.3	144	12.3	<b>144</b>	<b>12.3</b>
602.gcc_s	64	218	18.3	<b>218</b>	<b>18.3</b>	219	18.2	64	218	18.3	<b>218</b>	<b>18.3</b>	219	18.2
605.mcf_s	64	158	29.8	159	29.7	<b>159</b>	<b>29.7</b>	1	156	30.3	<b>156</b>	<b>30.3</b>	156	30.3
620.omnetpp_s	64	111	14.7	109	15.0	<b>111</b>	<b>14.7</b>	64	111	14.7	109	15.0	<b>111</b>	<b>14.7</b>
623.xalancbmk_s	64	49.4	28.7	50.1	28.3	<b>49.6</b>	<b>28.6</b>	1	47.2	30.0	<b>47.7</b>	<b>29.7</b>	48.5	29.2
625.x264_s	64	57.4	30.7	58.0	30.4	<b>57.9</b>	<b>30.5</b>	64	57.4	30.7	58.0	30.4	<b>57.9</b>	<b>30.5</b>
631.deepsjeng_s	64	163	8.78	164	8.72	<b>163</b>	<b>8.78</b>	64	163	8.78	164	8.72	<b>163</b>	<b>8.78</b>
641.leela_s	64	245	6.97	<b>244</b>	<b>6.99</b>	244	6.99	1	244	6.99	243	7.03	<b>243</b>	<b>7.01</b>
648.exchange2_s	64	<b>76.7</b>	<b>38.3</b>	77.6	37.9	76.7	38.3	64	<b>76.7</b>	<b>38.3</b>	77.6	37.9	76.7	38.3
657.xz_s	64	<b>208</b>	<b>29.8</b>	208	29.7	208	29.8	64	207	29.8	208	29.7	<b>208</b>	<b>29.8</b>

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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 = "0-63"

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 = "64"

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"

Environment variables set by runcpu during the 641.leela\_s peak run:

GOMP\_CPU\_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz\_s peak run:

GOMP\_CPU\_AFFINITY = "0-63"

## 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 Four memory domains per socket

Package Power Limit Control Mode set to Manual

Package Power Limit Value set to 300

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 1.0.0.0

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost.localdomain Thu Oct 17 13:35:03 2024

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

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## Platform Notes (Continued)

-----  
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-----

1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 254 (254.10+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  
13:35:03 up 3 min, 3 users, load average: 0.55, 1.40, 0.71

USER	TTY	FROM	LOGIN@	IDLE	JCPU	PCPU	WHAT
root	:		13:34	?xdm?	6:32	0.02s	gdm-session-worker [pam/gdm-password]
root	seat0	login-	13:34	0.00s	0.00s	0.00s	/usr/lib/gdm/gdm-x-session
--register-session --run-script gnome							
root	:	1	13:34	?xdm?	6:32	0.00s	/usr/lib/gdm/gdm-x-session
--register-session --run-script gnome							
root	pts/1	172.17.1.96	13:34	15.00s	0.75s	0.09s	/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)	3094619
max locked memory	(kbytes, -l)	2097152
max memory size	(kbytes, -m)	unlimited
open files	(-n)	1024
pipe size	(512 bytes, -p)	8

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## Platform Notes (Continued)

```
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) 3094619
virtual memory            (kbytes, -v) unlimited
file locks                 (-x) unlimited
```

```
-----
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize=42
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/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/CPU2017.011/temlogs/preenv.intspeed.011.0.log --lognum 011.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

```
-----
6. /proc/cpuinfo
model name      : AMD EPYC 9355 32-Core Processor
vendor_id      : AuthenticAMD
cpu family      : 26
model           : 2
stepping        : 1
microcode       : 0xb002116
bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size       : 192 4K pages
cpu cores       : 32
siblings        : 32
2 physical ids (chips)
64 processors (hardware threads)
physical id 0: core ids 0-31
physical id 1: core ids 0-31
physical id 0: apicids 0-31
physical id 1: apicids 32-63
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):                 64
On-line CPU(s) list:   0-63
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9355 32-Core Processor
BIOS Model name:       AMD EPYC 9355 32-Core Processor
BIOS CPU family:       107
CPU @ 3.5GHz
```

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## Platform Notes (Continued)

```

CPU family:                26
Model:                     2
Thread(s) per core:       1
Core(s) per socket:       32
Socket(s):                 2
Stepping:                  1
Frequency boost:           enabled
CPU(s) scaling MHz:       101%
CPU max MHz:               3550.0000
CPU min MHz:               1500.0000
BogoMIPS:                  7089.51
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
                             xsaves 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 vnni
                             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
Virtualization:            AMD-V
L1d cache:                 3 MiB (64 instances)
L1i cache:                 2 MiB (64 instances)
L2 cache:                  64 MiB (64 instances)
L3 cache:                  512 MiB (16 instances)
NUMA node(s):              8
NUMA node0 CPU(s):         0-7
NUMA node1 CPU(s):         8-15
NUMA node2 CPU(s):         16-23
NUMA node3 CPU(s):         24-31
NUMA node4 CPU(s):         32-39
NUMA node5 CPU(s):         40-47
NUMA node6 CPU(s):         48-55
NUMA node7 CPU(s):         56-63
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

```

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## Platform Notes (Continued)

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	3M	12	Data	1	64	1	64
L1i	32K	2M	8	Instruction	1	64	1	64
L2	1M	64M	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: 8 nodes (0-7)

```
node 0 cpus: 0-7
node 0 size: 96444 MB
node 0 free: 96037 MB
node 1 cpus: 8-15
node 1 size: 96765 MB
node 1 free: 96431 MB
node 2 cpus: 16-23
node 2 size: 96765 MB
node 2 free: 95497 MB
node 3 cpus: 24-31
node 3 size: 96727 MB
node 3 free: 95851 MB
node 4 cpus: 32-39
node 4 size: 96765 MB
node 4 free: 96447 MB
node 5 cpus: 40-47
node 5 size: 96765 MB
node 5 free: 96426 MB
node 6 cpus: 48-55
node 6 size: 96765 MB
node 6 free: 96437 MB
node 7 cpus: 56-63
node 7 size: 96685 MB
node 7 free: 96114 MB
```

node distances:

node	0	1	2	3	4	5	6	7
0:	10	12	12	12	32	32	32	32
1:	12	10	12	12	32	32	32	32
2:	12	12	10	12	32	32	32	32
3:	12	12	12	10	32	32	32	32
4:	32	32	32	32	10	12	12	12
5:	32	32	32	32	12	10	12	12
6:	32	32	32	32	12	12	10	12
7:	32	32	32	32	12	12	12	10

9. /proc/meminfo

MemTotal: 792253752 kB

10. who -r

run-level 5 Oct 17 13:32

11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)

Default Target	Status
graphical	running

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## Platform Notes (Continued)

-----  
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 autofsd 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
```

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

```
analyzing CPU 26:
  current policy: frequency should be within 1.50 GHz and 3.55 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`

<code>kernel.numa_balancing</code>	1
<code>kernel.randomize_va_space</code>	0
<code>vm.compaction_proactiveness</code>	20
<code>vm.dirty_background_bytes</code>	0
<code>vm.dirty_background_ratio</code>	10
<code>vm.dirty_bytes</code>	0
<code>vm.dirty_expire_centisecs</code>	3000
<code>vm.dirty_ratio</code>	8
<code>vm.dirty_writeback_centisecs</code>	500
<code>vm.dirtytime_expire_seconds</code>	43200
<code>vm.extfrag_threshold</code>	500
<code>vm.min_unmapped_ratio</code>	1
<code>vm.nr_hugepages</code>	0
<code>vm.nr_hugepages_mempolicy</code>	0
<code>vm.nr_overcommit_hugepages</code>	0
<code>vm.swappiness</code>	1

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(Test Sponsor: HPE)

**ProLiant DL385 Gen11**

**(3.55 GHz, AMD EPYC 9355)**

**SPECspeed®2017\_int\_base = 19.0**

**SPECspeed®2017\_int\_peak = 19.1**

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Oct-2024

**Hardware Availability:** Nov-2024

**Software Availability:** Sep-2024

## Platform Notes (Continued)

```

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
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:     2.10
BIOS Date:        09/11/2024
BIOS Revision:    2.10
Firmware Revision: 1.63

```



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## 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  
-----

## 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

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## Base Portability Flags (Continued)

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
-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
```

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## Base Other Flags (Continued)

Fortran benchmarks:

-Wno-unused-command-line-argument

## Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

## 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: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6

-Wl,-mllvm -Wl,-reduce-array-computations=3

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Test Sponsor: HPE

Tested by: HPE

Test Date: Oct-2024

Hardware Availability: Nov-2024

Software Availability: Sep-2024

## Peak Optimization Flags (Continued)

657.xz\_s (continued):

```
-Wl,-allow-multiple-definition
-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
```

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: -m64 -std=c++14

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

Fortran benchmarks:

648.exchange2\_s: basepeak = yes

## Peak Other Flags

C benchmarks:

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

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## Peak Other Flags (Continued)

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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