**SPEC CPU®2017 Integer Speed Result**

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL365 Gen11
(3.10 GHz, AMD EPYC 9554)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peak = 14.3

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s 128</td>
<td>8.51</td>
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</tr>
<tr>
<td>602.gcc_s 128</td>
<td>14.6</td>
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<tr>
<td>605.mcf_s 128</td>
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</tr>
<tr>
<td>620.omnetpp_s 128</td>
<td>19.1</td>
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<tr>
<td>623.xalancbmk_s 128</td>
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<tr>
<td>625.x264_s 128</td>
<td>7.03</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s 128</td>
<td>5.89</td>
<td></td>
</tr>
<tr>
<td>641.leela_s 128</td>
<td>5.90</td>
<td></td>
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<tr>
<td>648.exchange2_s 128</td>
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</tr>
<tr>
<td>657.xz_s 128</td>
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<td></td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** AMD EPYC 9554
- **Max MHz:** 3750
- **Nominal:** 3100
- **Enabled:** 128 cores, 2 chips
- **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, 32 MB shared / 8 cores
- **Other:** None
- **Memory:** 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
- **Storage:** 1 x 480 GB SATA SSD
- **Other:** None

**Software**

- **OS:** Ubuntu 22.04.1 LTS
- **Kernel:** 5.15.0-56-generic
- **Compiler:** C/C++/Fortran: Version 4.0.0 of AOCC
- **Parallel:** Yes
- **Firmware:** HPE BIOS Version v1.12 11/24/2022 released
- **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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**CPU2017 License:** 3  
**Test Date:** Dec-2022  
**Test Sponsor:** HPE  
**Hardware Availability:** Dec-2022  
**Tested by:** HPE  
**Software Availability:** Nov-2022
## Results Table

<table>
<thead>
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<th>Seconds</th>
<th>Ratio</th>
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<td>21.6</td>
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<td>289</td>
<td>5.90</td>
<td>290</td>
<td>5.89</td>
</tr>
</tbody>
</table>

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.

(Continued on next page)
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Operating System Notes (Continued)

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:
GOMP_CPU_AFFINITY = "0-127"
LD_LIBRARY_PATH = "/home/cpu2017/amd_speed_aocc400_genoa_B_lib/lib:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOCR_CONF = "oversize_threshold:0,retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 641.leela_s peak run:
GOMP_CPU_AFFINITY = "15"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-127"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "8"

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)
### SPEC CPU®2017 Integer Speed Result

**Test Sponsor:** HPE  
**Test Date:** Dec-2022  
**Hardware Availability:** Dec-2022  
**Software Availability:** Nov-2022

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<thead>
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**Hewlett Packard Enterprise**  
**ProLiant DL365 Gen11**  
**(3.10 GHz, AMD EPYC 9554)**

**SPECspeed®2017_int_base = 14.1**  
**SPECspeed®2017_int_peak = 14.3**

---

**General Notes (Continued)**

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
- AMD SMT Option set to Disabled
- NUMA memory domains per socket set to Four memory domains per socket
- Last-Level Cache (LLC) as NUMA Node set to Enabled
- ACPI CST C2 Latency set to 18 microseconds
- Memory PStates set to Disabled
- Thermal Configuration set to Maximum Cooling

The system ROM used for this result contains microcode version 0xa10110e for the AMD EPYC 9nn4X family of processors. The reference code/AGESA version used in this ROM is version GenoaPI 1.0.0.1-L6

```
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b5589ef0e16aca6c64d
running on admin1 Tue Jun 28 01:27:30 2022
```

SUT (System Under Test) info as seen by some common utilities.  
For more information on this section, see https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
- model name: AMD EPYC 9554 64-Core Processor
- 128 "processors"
- cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  - cpu cores: 64
  - siblings: 64
  - physical 0: cores 0 1 2 3 4 5 6 7 16 17 18 19 20 21 22 23 32 33 34 35 36 37 38 39
  - physical 1: cores 0 1 2 3 4 5 6 7 16 17 18 19 20 21 22 23 32 33 34 35 36 37 38 39

From lscpu from util-linux 2.37.2:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
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**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

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**Platform Notes (Continued)**

- **Address sizes:** 52 bits physical, 57 bits virtual
- **Byte Order:** Little Endian
- **CPU(s):** 128
- **On-line CPU(s) list:** 0-127
- **Vendor ID:** AuthenticAMD
- **Model name:** AMD EPYC 9554 64-Core Processor
- **CPU family:** 25
- **Model:** 17
- **Thread(s) per core:** 1
- **Core(s) per socket:** 64
- **Socket(s):** 2
- **Stepping:** 1
- **Frequency boost:** enabled
- **CPU max MHZ:** 3764.0000
- **CPU min MHZ:** 400.0000
- **BogoMIPS:** 6190.84
- **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 nopl nonstop_tsc cpuid extd_apicid aperf perf rr nmi pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3nowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb b european perfctr_llc mwaitx cpb cat_l3 cdph l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsqsb hare biml avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt xsave xsetbv bxsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local avx512_bf16 clzero irperf xsaveopt bnd nds ovp npe svm lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbi umip pku ospe avx512_vbmi2 gfni vaes vpcm1muldq avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpmi overflow_recoav succor smca fsrm flush_lld

---

**Virtualization:** AMD-V

- **L1d cache:** 4 MiB (128 instances)
- **L1i cache:** 4 MiB (128 instances)
- **L2 cache:** 128 MiB (128 instances)
- **L3 cache:** 512 MiB (16 instances)

---

**NUMA node(s):** 16

- **NUMA node0 CPU(s):** 0-7
- **NUMA node1 CPU(s):** 32-39
- **NUMA node2 CPU(s):** 16-23
- **NUMA node3 CPU(s):** 48-55
- **NUMA node4 CPU(s):** 24-31
- **NUMA node5 CPU(s):** 56-63
- **NUMA node6 CPU(s):** 8-15
- **NUMA node7 CPU(s):** 40-47
- **NUMA node8 CPU(s):** 64-71
- **NUMA node9 CPU(s):** 96-103

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**SPECspeed®2017_int_base = 14.1**

**SPECspeed®2017_int_peak = 14.3**

Platform Notes (Continued)

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<th>NUMA node10 CPU(s):</th>
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<tbody>
<tr>
<td>NUMA node11 CPU(s):</td>
<td>112-119</td>
</tr>
<tr>
<td>NUMA node12 CPU(s):</td>
<td>88-95</td>
</tr>
<tr>
<td>NUMA node13 CPU(s):</td>
<td>120-127</td>
</tr>
<tr>
<td>NUMA node14 CPU(s):</td>
<td>72-79</td>
</tr>
<tr>
<td>NUMA node15 CPU(s):</td>
<td>104-111</td>
</tr>
<tr>
<td>Vulnerability Itlb multihit:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability L1tf:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Mds:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Meltdown:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Mmio stale data:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Retbleed:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Spec store bypass:</td>
<td>Mitigation; Speculative Store Bypass disabled via prctl and seccomp</td>
</tr>
<tr>
<td>Vulnerability Spectre v1:</td>
<td>Mitigation; usercopy/swapgs barriers and ___user pointer sanitization</td>
</tr>
<tr>
<td>Vulnerability Spectre v2:</td>
<td>Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP disabled, RSB filling, PBRSB-eIBRS Not affected</td>
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<tr>
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<tr>
<td>Vulnerability Tsx async abort:</td>
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From `lscpu --cache`:

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<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
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<th>COHERENCY-SIZE</th>
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<td>8</td>
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<td>64</td>
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<td>L1i</td>
<td>32K</td>
<td>4M</td>
<td>8</td>
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<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>32M</td>
<td>512M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
<td>32768</td>
<td>1</td>
<td>64</td>
</tr>
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</table>

/proc/cpuinfo cache data

- cache size: 1024 KB

From `numactl --hardware`

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

<table>
<thead>
<tr>
<th>available: 16 nodes (0-15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>node 0 cpus: 0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>node 0 size: 96455 MB</td>
</tr>
<tr>
<td>node 0 free: 96154 MB</td>
</tr>
<tr>
<td>node 1 cpus: 32 33 34 35 36 37 38 39</td>
</tr>
<tr>
<td>node 1 size: 96765 MB</td>
</tr>
<tr>
<td>node 1 free: 96499 MB</td>
</tr>
<tr>
<td>node 2 cpus: 16 17 18 19 20 21 22 23</td>
</tr>
<tr>
<td>node 2 size: 96765 MB</td>
</tr>
<tr>
<td>node 2 free: 96479 MB</td>
</tr>
<tr>
<td>node 3 cpus: 48 49 50 51 52 53 54 55</td>
</tr>
<tr>
<td>node 3 size: 96730 MB</td>
</tr>
<tr>
<td>node 3 free: 96520 MB</td>
</tr>
<tr>
<td>node 4 cpus: 24 25 26 27 28 29 30 31</td>
</tr>
</tbody>
</table>

(Continued on next page)
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## Platform Notes (Continued)

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<thead>
<tr>
<th>node</th>
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<th>free</th>
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<tbody>
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<td>5</td>
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<tr>
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<tr>
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<table>
<thead>
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## Platform Notes (Continued)

<table>
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(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL365 Gen11
(3.10 GHz, AMD EPYC 9554)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peak = 14.3

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

Platform Notes (Continued)

10: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
11: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
12: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
13: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
14: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12
15: 32 32 32 32 32 32 32 32 12 12 12 12 12 12 12 12

From /proc/meminfo
MemTotal: 1585007792 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

/usr/bin/lsb_release -d
Ubuntu 22.04.1 LTS

From /etc/*release* /etc/*version*
debian_version: bookworm/sid
os-release:
    PRETTY_NAME="Ubuntu 22.04.1 LTS"
    NAME="Ubuntu"
    VERSION_ID="22.04"
    VERSION="22.04.1 LTS (Jammy Jellyfish)"
    VERSION_CODENAME=jammy
    ID=ubuntu
    ID_LIKE=debian
    HOME_URL="https://www.ubuntu.com/"

uname -a:
Linux admin1 5.15.0-56-generic #62-Ubuntu SMP Tue Nov 22 19:54:14 UTC 2022 x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
mmio_stale_data: Not affected
retbleed: Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store
Bypass disabled via prctl and

(Continued on next page)
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Test Date: Dec-2022
Hardware Availability: Dec-2022
Software Availability: Nov-2022

Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1):
Mitigation: usercopy/swapgs barriers and __user pointer sanitation

CVE-2017-5715 (Spectre variant 2):
Mitigation: Retpolines, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling, PBRSB-eIBRS: Not affected

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Jun 28 00:00

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/ubuntu--vg-ubuntu--lv ext4 98G 19G 75G 20% /

From /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL365 Gen11
Product Family: ProLiant
Serial: DL365G11-003

Additional information from dmidecode 3.3 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 HMCG94AEBRA103N 64 GB 2 rank 4800

BIOS:
BIOS Vendor: HPE
BIOS Version: 1.12
BIOS Date: 11/24/2022
BIOS Revision: 1.12
Firmware Revision: 1.10

(End of data from sysinfo program)

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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on

(Continued on next page)
### SPEC CPU®2017 Integer Speed Result

#### Hewlett Packard Enterprise
- **(Test Sponsor: HPE)**
- **ProLiant DL365 Gen11**
- **(3.10 GHz, AMD EPYC 9554)**

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

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</tr>
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### Compiler Version Notes (Continued)

- LLVM Mirror.Version.14.0.6)
- Target: x86_64-unknown-linux-gnu
- Thread model: posix
- InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL365 Gen11
(3.10 GHz, AMD EPYC 9554)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peak = 14.3

Base Portability Flags (Continued)

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 -O3 - march=znver4 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3
-DSPEC_OPENMP -zopt -fopenmp=libomp -lomp -lamdlibm -lflang
-lamdalloc

C++ benchmarks:
-m64 -Wl, -mllvm -Wl, -align-all-nofallthru-blocks=6
-Wl, -mllvm -Wl, -reduce-array-computations=3 -O3 - march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -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, -inlined-recursion=4 -Wl, -mllvm -Wl, -lsr-in-nested-loop
-Wl, -mllvm -Wl, -enable-iv-split -O3 - march=znver4 -fveclib=AMDLIBM
-ffast-math -fopenmp -flto -mllvm -optimize-strided-mem-cost
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -fopenmp=libomp
-lomp -lamdlibm -lflang -lamdalloc
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL365 Gen11
(3.10 GHz, AMD EPYC 9554)

SPECspeed®2017_int_base = 14.1
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<td>Hardware Availability: Dec-2022</td>
</tr>
<tr>
<td></td>
<td>Software Availability: Nov-2022</td>
</tr>
</tbody>
</table>

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

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,-allow-multiple-definition -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-fstruct-layout=9 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt

(Continued on next page)
Peak Optimization Flags (Continued)

605.mcf_s (continued):
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

625.x264_s: Same as 605.mcf_s

657.xz_s: Same as 605.mcf_s

C++ benchmarks:

620.omnetpp_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang

623.xalancbmk_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder-aggressive -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-mllvm -do-block-reorder-aggressive
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc-ext -lflang

631.deepsjeng_s: basepeak = yes

641.leela_s: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -zopt
-fvirtual-function-elimination -fvisibility=hidden
-fopenmp=libomp -lomp -lamdlibm -lamdalloc -lflang

Fortran benchmarks:

648.exchange2_s: basepeak = yes
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL365 Gen11
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SPECspeed®2017_int_base = 14.1
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CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Peak Other Flags

C benchmarks:
- W-no-return-type
- W-no-unused-command-line-argument

C++ benchmarks:
- W-no-unused-command-line-argument

Fortran benchmarks:
- W-no-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-Genoa-rev2.1.html
http://www.spec.org/cpu2017/flags/aocc400-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-Genoa-rev2.1.xml
http://www.spec.org/cpu2017/flags/aocc400-flags.xml

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

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