SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
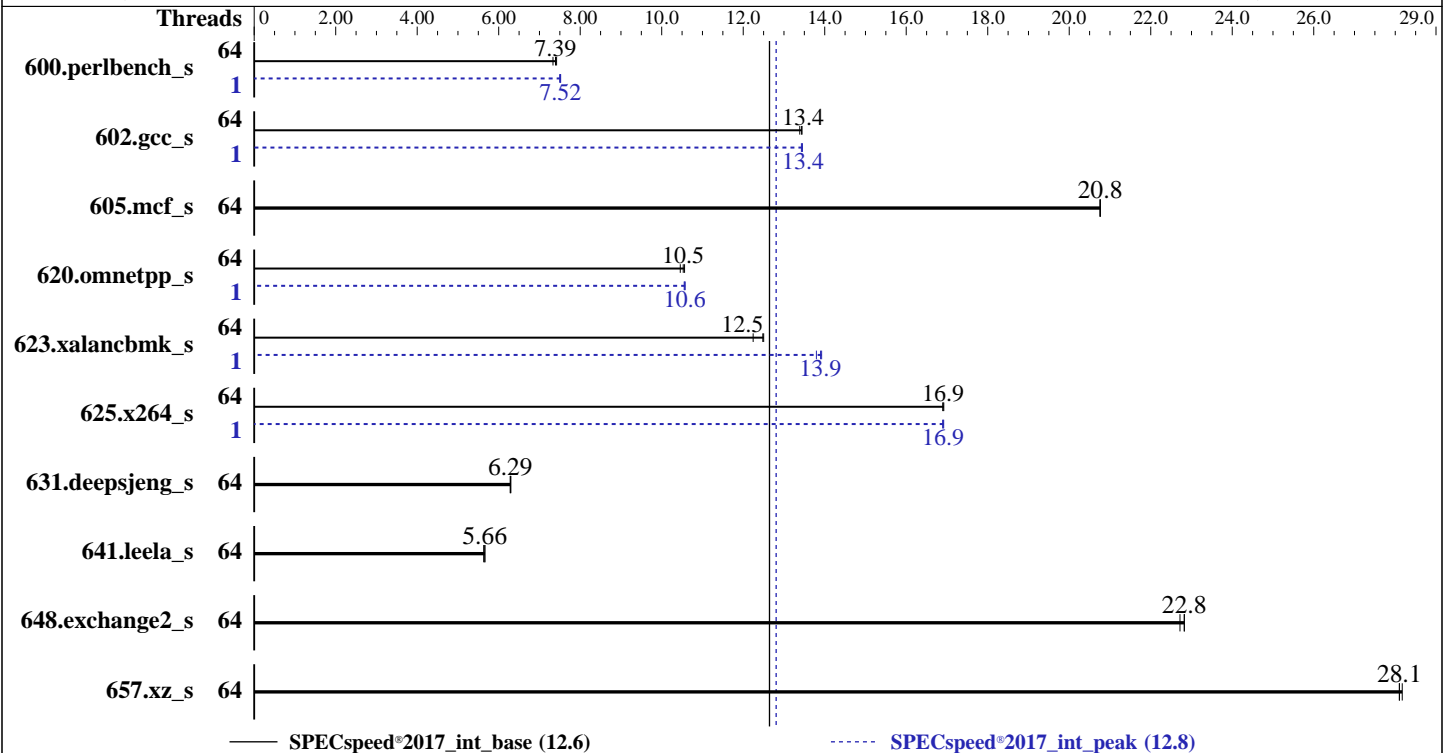
ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

$SPECspeed®2017\_int\_base = 12.6$

$SPECspeed®2017\_int\_peak = 12.8$

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Benchmark	Threads	base	peak
600.perlbench_s	64	7.39	
	1		7.52
602.gcc_s	64	13.4	
	1		13.4
605.mcf_s	64	20.8	
620.omnetpp_s	64	10.5	
	1		10.6
623.xalancbmk_s	64	12.5	
	1		13.9
625.x264_s	64	16.9	
	1		16.9
631.deepsjeng_s	64	6.29	
641.leela_s	64	5.66	
648.exchange2_s	64	22.8	
657.xz_s	64	28.1	

SPECspeed®2017_int_base (12.6)
SPECspeed®2017_int_peak (12.8)

Hardware

CPU Name: AMD EPYC 7573X
 Max MHz: 3600
 Nominal: 2800
Enabled: 32 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 768 MB I+D on chip per chip,
 96 MB shared / 4 cores
 Other: None
Memory: 1 TB (8 x 128 GB 4Rx4 PC4-3200AA-L)
Storage: 1 x 960 GB SATA SSD, RAID 0
Other: None

Software

OS: Ubuntu 20.04.1 LTS
 Kernel 5.4.0-54-generic
Compiler: C/C++/Fortran: Version 3.2.0 of AOCC
Parallel: Yes
Firmware: HPE BIOS Version A43 v2.56 02/10/2022 released Feb-2022
File System: ext4
System State: Run level 5 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc: jemalloc memory allocator library v5.1.0
Power Management: BIOS set to prefer performance at the cost of additional power usage

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Results Table

Benchmark	Base						Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	64	**240**	**7.39**	239	7.42	242	7.33	1	**236**	**7.52**	236	7.52	237	7.50
602.gcc_s	64	296	13.4	**296**	**13.4**	297	13.4	1	**296**	**13.4**	296	13.5	297	13.4
605.mcf_s	64	227	20.8	227	20.8	**227**	**20.8**	64	227	20.8	227	20.8	**227**	**20.8**
620.omnetpp_s	64	**155**	**10.5**	156	10.5	154	10.6	1	155	10.6	154	10.6	**154**	**10.6**
623.xalancbmk_s	64	116	12.2	113	12.5	**114**	**12.5**	1	**102**	**13.9**	102	13.9	103	13.8
625.x264_s	64	**104**	**16.9**	104	16.9	104	16.9	1	104	16.9	104	16.9	**104**	**16.9**
631.deepsjeng_s	64	**228**	**6.29**	228	6.28	228	6.30	64	**228**	**6.29**	228	6.28	228	6.30
641.leela_s	64	301	5.66	303	5.63	**301**	**5.66**	64	301	5.66	303	5.63	**301**	**5.66**
648.exchange2_s	64	**129**	**22.8**	129	22.7	129	22.8	64	**129**	**22.8**	129	22.7	129	22.8
657.xz_s	64	**220**	**28.1**	220	28.1	219	28.2	64	**220**	**28.1**	220	28.1	219	28.2
SPECspeed®2017_int_base =		**12.6**											
SPECspeed®2017_int_peak =		**12.8**											

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.
```

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


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.
```

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

$SPECspeed^{®}2017\_int\_base = 12.6$

$SPECspeed^{®}2017\_int\_peak = 12.8$

CPU2017 License:	3	**Test Date:**	Feb-2022
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2022
Tested by:	HPE	**Software Availability:**	Dec-2021

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_aocc320_milanx_A_lib/lib;/home/cpu2017/amd_spee
     d_aocc320_milanx_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"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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.


jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
```

Platform Notes

```
BIOS Configuration
 Workload Profile set to General Peak Frequency Compute
 Determinism Control set to Manual
   Performance Determinism set to Power Deterministic
 Last-Level Cache (LLC) as NUMA Node set to Enabled
 NUMA memory domains per socket set to One memory domain per socket
 Thermal Configuration set to Maximum Cooling
 Memory Patrol Scrubbing set to Disabled
 Infinity Fabric Power Management set to Disabled
   Infinity Fabric Performance State set to P0


The system date and time as discovered by sysinfo is incorrect as the time was not updated
prior to the run. The test_date field shows an accurate date for the result.
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Platform Notes (Continued)

```
The system ROM used for this result contains microcode version 0x 0A001227h for the
AMD EPYC 7nn3X family of processors. The reference code/AGESA version used in this
ROM is version MilanPI 1.0.0.8.

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on dl325gen10plus Wed Apr  1 12:26:39 2020

 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 7573X 32-Core Processor
       1  "physical id"s (chips)
       64 "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 : 32
       siblings  : 64
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
       25 26 27 28 29 30 31

 From lscpu from util-linux 2.34:
    Architecture:              x86_64
    CPU op-mode(s):            32-bit, 64-bit
    Byte Order:                Little Endian
    Address sizes:             48 bits physical, 48 bits virtual
    CPU(s):                    64
    On-line CPU(s) list:       0-63
    Thread(s) per core:        2
    Core(s) per socket:        32
    Socket(s):                 1
    NUMA node(s):              8
    Vendor ID:                 AuthenticAMD
    CPU family:                25
    Model:                     1
    Model name:                AMD EPYC 7573X 32-Core Processor
    Stepping:                  2
    CPU MHz:                   1795.753
    BogoMIPS:                  5589.41
    Virtualization:            AMD-V
    L1d cache:                 1 MiB
    L1i cache:                 1 MiB
    L2 cache:                  16 MiB
    L3 cache:                  768 MiB
    NUMA node0 CPU(s):         0-3,32-35
```

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Feb-2022

Hardware Availability: Mar-2022

Software Availability: Dec-2021

Platform Notes (Continued)

```
         NUMA node1 CPU(s):                    4-7,36-39
         NUMA node2 CPU(s):                    8-11,40-43
         NUMA node3 CPU(s):                    12-15,44-47
         NUMA node4 CPU(s):                    16-19,48-51
         NUMA node5 CPU(s):                    20-23,52-55
         NUMA node6 CPU(s):                    24-27,56-59
         NUMA node7 CPU(s):                    28-31,60-63
         Vulnerability Itlb multihit:        Not affected
         Vulnerability L1tf:                 Not affected
         Vulnerability Mds:                  Not affected
         Vulnerability Meltdown:             Not affected
         Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
         prctl and seccomp
         Vulnerability Spectre v1:           Mitigation; usercopy/swapgs barriers and __user
         pointer sanitization
         Vulnerability Spectre v2:           Mitigation; Full AMD retpoline, IBPB conditional,
         IBRS_FW, STIBP always-on, RSB filling
         Vulnerability Srbds:                Not affected
         Vulnerability Tsx async abort:      Not affected
         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
         aperfmperf 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 invpcid_single hw_pstate ssbd mba ibrs
         ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap
         clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
         cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr wbnoinvd arat npt lbrv svm_lock
         nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold
         v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_recov succor smca

  From lscpu --cache:
       NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL
       L1d       32K       1M    8 Data              1
       L1i       32K       1M    8 Instruction       1
       L2       512K      16M    8 Unified           2
       L3        96M     768M   16 Unified           3

  /proc/cpuinfo cache data
     cache size : 512 KB

  From numactl --hardware
  WARNING: a numactl 'node' might or might not correspond to a physical chip.
     available: 8 nodes (0-7)
     node 0 cpus: 0 1 2 3 32 33 34 35
     node 0 size: 128775 MB
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Platform Notes (Continued)

```
  node 0 free: 128588 MB
  node 1 cpus: 4 5 6 7 36 37 38 39
  node 1 size: 129022 MB
  node 1 free: 128858 MB
  node 2 cpus: 8 9 10 11 40 41 42 43
  node 2 size: 129022 MB
  node 2 free: 128905 MB
  node 3 cpus: 12 13 14 15 44 45 46 47
  node 3 size: 129022 MB
  node 3 free: 128903 MB
  node 4 cpus: 16 17 18 19 48 49 50 51
  node 4 size: 128997 MB
  node 4 free: 128477 MB
  node 5 cpus: 20 21 22 23 52 53 54 55
  node 5 size: 129022 MB
  node 5 free: 128898 MB
  node 6 cpus: 24 25 26 27 56 57 58 59
  node 6 size: 129022 MB
  node 6 free: 128660 MB
  node 7 cpus: 28 29 30 31 60 61 62 63
  node 7 size: 116908 MB
  node 7 free: 116785 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  11  11  11  11  11  11  11
    1:  11  10  11  11  11  11  11  11
    2:  11  11  10  11  11  11  11  11
    3:  11  11  11  10  11  11  11  11
    4:  11  11  11  11  10  11  11  11
    5:  11  11  11  11  11  10  11  11
    6:  11  11  11  11  11  11  10  11
    7:  11  11  11  11  11  11  11  10

 From /proc/meminfo
    MemTotal:       1044267252 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    Ubuntu 20.04.1 LTS

 From /etc/*release* /etc/*version*
    debian_version: bullseye/sid
    os-release:
       NAME="Ubuntu"
       VERSION="20.04.1 LTS (Focal Fossa)"
       ID=ubuntu
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result
Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

$SPECspeed®2017\_int\_base = 12.6$

$SPECspeed®2017\_int\_peak = 12.8$

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Platform Notes (Continued)

```
        ID_LIKE=debian
        PRETTY_NAME="Ubuntu 20.04.1 LTS"
        VERSION_ID="20.04"
        HOME_URL="https://www.ubuntu.com/"
        SUPPORT_URL="https://help.ubuntu.com/"

    uname -a:
        Linux dl325gen10plus 5.4.0-54-generic #60-Ubuntu SMP Fri Nov 6 10:37:59 UTC 2020
        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
    CVE-2018-3639 (Speculative Store Bypass):         Mitigation: Speculative Store
                                                      Bypass disabled via prctl and
                                                      seccomp
    CVE-2017-5753 (Spectre variant 1):                Mitigation: usercopy/swapgs
                                                      barriers and __user pointer
                                                      sanitization
    CVE-2017-5715 (Spectre variant 2):                Mitigation: Full AMD retpoline,
                                                     IBPB: conditional, IBRS_FW, STIBP:
                                                      always-on, RSB filling
    CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
    CVE-2019-11135 (TSX Asynchronous Abort):          Not affected

    run-level 5 Apr 1 12:23

    SPEC is set to: /home/cpu2017
        Filesystem      Type  Size  Used Avail Use% Mounted on
        /dev/sdb2       ext4  733G   43G  653G   7% /

    From /sys/devices/virtual/dmi/id
        Vendor:         HPE
        Product:        ProLiant DL325 Gen10 Plus
        Product Family: ProLiant
        Serial:         CN79290FKQ

    Additional information from dmidecode 3.2 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 Samsung M386AAG40AM3-CWE 128 GB 4 rank 3200
        8x UNKNOWN NOT AVAILABLE
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

$SPECspeed^{®}2017\_int\_base = 12.6$

$SPECspeed^{®}2017\_int\_peak = 12.8$

Platform Notes (Continued)

```
 BIOS:
    BIOS Vendor:       HPE
    BIOS Version:      A43
    BIOS Date:         02/10/2022
    BIOS Revision:     2.56
    Firmware Revision: 2.55

 (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 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/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 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran  | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------
```

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

CPU2017 License:	3	**Test Date:**	Feb-2022
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2022
Tested by:	HPE	**Software Availability:**	Dec-2021

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,-allow-multiple-definition -Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

C++ benchmarks:
```
-m64 -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

CPU2017 License:	3	**Test Date:**	Feb-2022
Test Sponsor:	HPE	**Hardware Availability:**	Mar-2022
Tested by:	HPE	**Software Availability:**	Dec-2021

Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100
-finline-aggressive -flv-function-specialization
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp=true
-mllvm -convert-pow-exp-to-int=false -z muldefs
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

Base Other Flags

C benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

C++ benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Fortran benchmarks:
```
-Wno-return-type
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s: `-m64 -Wl,-allow-multiple-definition`
`-Wl,-mllvm -Wl,-enable-licm-vrp`
`-Wl,-mllvm -Wl,-function-specialize`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
`-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp`
`-flto -fstruct-layout=5 -mllvm -unroll-threshold=50`
`-fremap-arrays -flv-function-specialization`
`-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist`
`-mllvm -global-vectorize-slp=true`
`-mllvm -function-specialize -mllvm -enable-licm-vrp`
`-mllvm -reduce-array-computations=3 -DSPEC_OPENMP`
`-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang`

602.gcc_s: `Same as 600.perlbench_s`

605.mcf_s: `basepeak = yes`

625.x264_s: `-m64 -Wl,-allow-multiple-definition`
`-Wl,-mllvm -Wl,-enable-licm-vrp`
`-Wl,-mllvm -Wl,-do-block-reorder=aggressive`
`-Wl,-mllvm -Wl,-region-vectorize`
`-Wl,-mllvm -Wl,-function-specialize`
`-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
`-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp`
`-flto -fstruct-layout=5 -mllvm -unroll-threshold=50`
`-mllvm -inline-threshold=1000 -fremap-arrays`
`-mllvm -function-specialize -flv-function-specialization`
`-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true`
`-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3`
`-mllvm -do-block-reorder=aggressive -DSPEC_OPENMP`
`-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang`

657.xz_s: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

Hewlett Packard Enterprise
(Test Sponsor: HPE)

SPECspeed®2017_int_base = 12.6

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Peak Optimization Flags (Continued)

620.omnetpp_s: -m64 -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-flv-function-specialization -mllvm -enable-licm-vrp
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang

623.xalancbmk_s: -m64 -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-flv-function-specialization -mllvm -enable-licm-vrp
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

C++ benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen10 Plus v2
(2.80 GHz, AMD EPYC 7573X)

SPECspeed®2017_int_base = 12.6

SPECspeed®2017_int_peak = 12.8

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

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Peak Other Flags (Continued)

Fortran benchmarks:

`-Wno-return-type`

The flags files that were used to format this result can be browsed at

`http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revR.html`
`http://www.spec.org/cpu2017/flags/aocc320-flags-A1.html`

You can also download the XML flags sources by saving the following links:

`http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revR.xml`
`http://www.spec.org/cpu2017/flags/aocc320-flags-A1.xml`

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

Tested with SPEC CPU®2017 v1.1.8 on 2020-04-01 13:26:38-0400.
Report generated on 2022-03-22 10:11:51 by CPU2017 PDF formatter v6442.
Originally published on 2022-03-21.