



# SPEC CPU®2017 Integer Speed Result

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## Hewlett Packard Enterprise

(Test Sponsor: HPE)

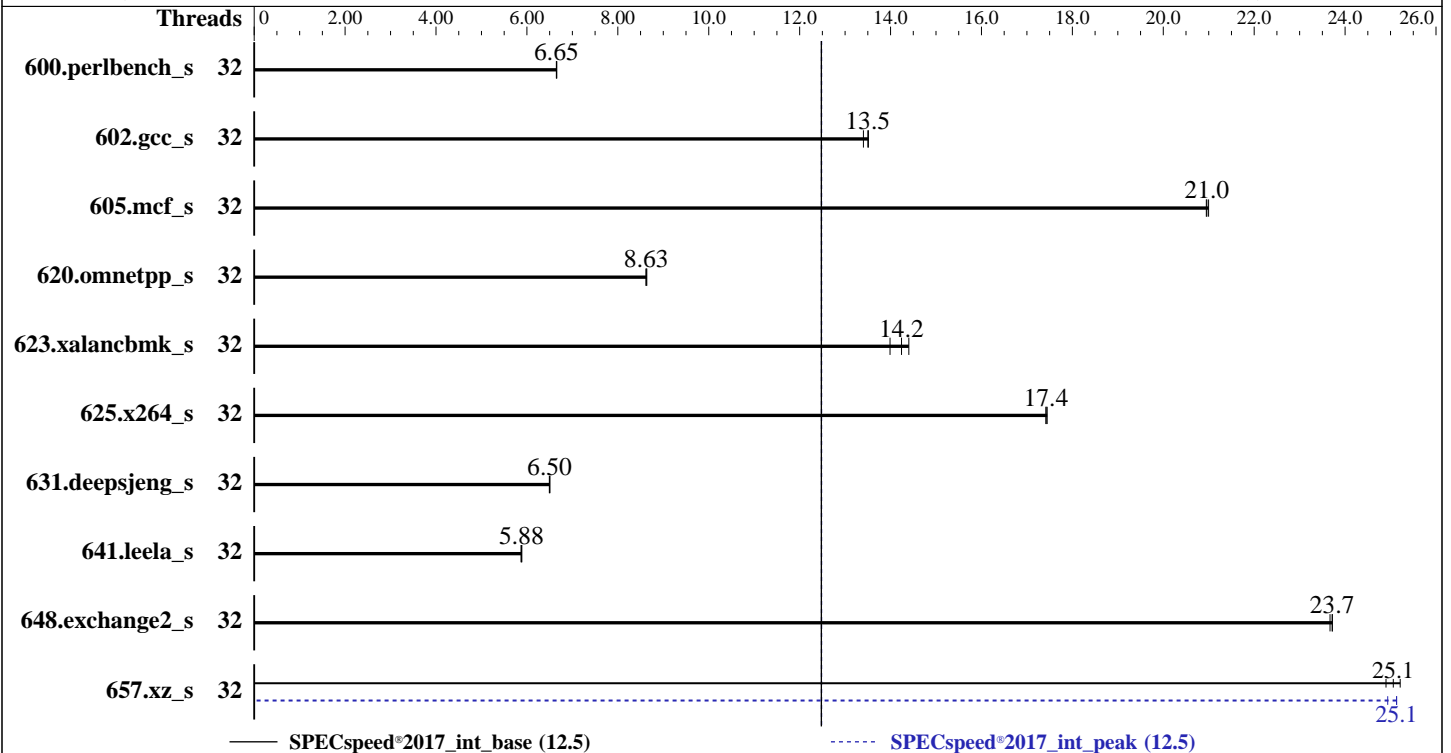
ProLiant DL385 Gen10 Plus v2  
(3.00 GHz, AMD EPYC 7313)

SPECspeed®2017\_int\_base = 12.5

SPECspeed®2017\_int\_peak = 12.5

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

Test Date: Apr-2021  
Hardware Availability: Apr-2021  
Software Availability: Mar-2021



### Hardware

CPU Name: AMD EPYC 7313  
 Max MHz: 3700  
 Nominal: 3000  
 Enabled: 32 cores, 2 chips  
 Orderable: 1, 2 chip(s)  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 512 KB I+D on chip per core  
 L3: 128 MB I+D on chip per chip, 32 MB shared / 4 cores  
 Other: None  
 Memory: 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)  
 Storage: 1 x 182 GB SATA SSD, RAID 0  
 Other: None

### Software

OS: Ubuntu 20.04.1 LTS (x86\_64)  
 Kernel 5.4.0-42-generic  
 Compiler: C/C++/Fortran: Version 3.0.0 of AOCC  
 Parallel: Yes  
 Firmware: HPE BIOS Version A42 v2.40 02/15/2021 released Feb-2021  
 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



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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	32	267	6.66	267	6.65	<b>267</b>	<b>6.65</b>	32	267	6.66	267	6.65	<b>267</b>	<b>6.65</b>
602.gcc_s	32	<b>295</b>	<b>13.5</b>	295	13.5	297	13.4	32	<b>295</b>	<b>13.5</b>	295	13.5	297	13.4
605.mcf_s	32	225	21.0	225	20.9	<b>225</b>	<b>21.0</b>	32	225	21.0	225	20.9	<b>225</b>	<b>21.0</b>
620.omnetpp_s	32	189	8.64	<b>189</b>	<b>8.63</b>	189	8.62	32	189	8.64	<b>189</b>	<b>8.63</b>	189	8.62
623.xalancbmk_s	32	<b>99.5</b>	<b>14.2</b>	98.4	14.4	101	14.0	32	<b>99.5</b>	<b>14.2</b>	98.4	14.4	101	14.0
625.x264_s	32	<b>101</b>	<b>17.4</b>	101	17.4	101	17.4	32	<b>101</b>	<b>17.4</b>	101	17.4	101	17.4
631.deepsjeng_s	32	220	6.51	221	6.49	<b>220</b>	<b>6.50</b>	32	220	6.51	221	6.49	<b>220</b>	<b>6.50</b>
641.leela_s	32	291	5.87	<b>290</b>	<b>5.88</b>	290	5.89	32	291	5.87	<b>290</b>	<b>5.88</b>	290	5.89
648.exchange2_s	32	<b>124</b>	<b>23.7</b>	124	23.7	124	23.7	32	<b>124</b>	<b>23.7</b>	124	23.7	124	23.7
657.xz_s	32	245	25.2	248	24.9	<b>247</b>	<b>25.1</b>	32	246	25.1	248	24.9	<b>246</b>	<b>25.1</b>

SPECspeed®2017\_int\_base = **12.5**

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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  
'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>  
'echo 8 > /proc/sys/vm/dirty\_ratio' run as root to limit dirty cache to 8% of memory.  
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.  
'echo 1 > /proc/sys/vm/zone\_reclaim\_mode' run as root to free node-local memory and avoid remote memory usage.  
'sync; echo 3 > /proc/sys/vm/drop\_caches' run as root to reset filesystem caches.  
'sysctl -w kernel.randomize\_va\_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.

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## Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent\_hugepage/enabled' and  
'echo always > /sys/kernel/mm/transparent\_hugepage/defrag' run as root to enable  
Transparent Hugepages (THP) for this run.  
'echo madvise > /sys/kernel/mm/transparent\_hugepage/enabled' run as root for peak  
runs of 628.pop2\_s and 638.imagick\_s to enable THP only on request.

## Environment Variables Notes

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

GOMP\_CPU\_AFFINITY = "0-31"

LD\_LIBRARY\_PATH =

"/home/cpu2017\_B1/amd\_speed\_aocc300\_milan\_B\_lib/64:/home/cpu2017\_B1/amd\_  
speed\_aocc300\_milan\_B\_lib/32:"

MALLOC\_CONF = "retain:true"

OMP\_DYNAMIC = "false"

OMP\_SCHEDULE = "static"

OMP\_STACKSIZE = "128M"

OMP\_THREAD\_LIMIT = "32"

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

GOMP\_CPU\_AFFINITY = "0-31"

## 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

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

AMD SMT Option set to Disabled

Determinism Control set to Manual

Performance Determinism set to Power Deterministic

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## Platform Notes (Continued)

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  
Workload Profile set to Custom  
Infinity Fabric Power Management set to Disabled  
Infinity Fabric Performance State set to P0  
Power Regulator set to OS Control Mode

Sysinfo program /home/cpu2017\_B1/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
running on dl385g10v2 Wed Apr 21 02:58:42 2021

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 7313 16-Core Processor  
2 "physical id"s (chips)  
32 "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 : 16  
siblings : 16  
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:  
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): 32  
On-line CPU(s) list: 0-31  
Thread(s) per core: 1  
Core(s) per socket: 16  
Socket(s): 2  
NUMA node(s): 8  
Vendor ID: AuthenticAMD  
CPU family: 25  
Model: 1  
Model name: AMD EPYC 7313 16-Core Processor  
Stepping: 1  
Frequency boost: enabled  
CPU MHz: 1795.819  
CPU max MHz: 3000.0000  
CPU min MHz: 1500.0000

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## Platform Notes (Continued)

```

BogoMIPS:                5988.59
Virtualization:          AMD-V
L1d cache:               1 MiB
L1i cache:               1 MiB
L2 cache:                 16 MiB
L3 cache:                 256 MiB
NUMA node0 CPU(s):      0-3
NUMA node1 CPU(s):      4-7
NUMA node2 CPU(s):      8-11
NUMA node3 CPU(s):      12-15
NUMA node4 CPU(s):      16-19
NUMA node5 CPU(s):      20-23
NUMA node6 CPU(s):      24-27
NUMA node7 CPU(s):      28-31
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 disabled, 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

```

```
/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
node 0 size: 257800 MB

```

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## Platform Notes (Continued)

```

node 0 free: 257603 MB
node 1 cpus: 4 5 6 7
node 1 size: 258046 MB
node 1 free: 257819 MB
node 2 cpus: 8 9 10 11
node 2 size: 258022 MB
node 2 free: 257869 MB
node 3 cpus: 12 13 14 15
node 3 size: 245935 MB
node 3 free: 245670 MB
node 4 cpus: 16 17 18 19
node 4 size: 258046 MB
node 4 free: 257927 MB
node 5 cpus: 20 21 22 23
node 5 size: 258046 MB
node 5 free: 257919 MB
node 6 cpus: 24 25 26 27
node 6 size: 258046 MB
node 6 free: 257923 MB
node 7 cpus: 28 29 30 31
node 7 size: 258044 MB
node 7 free: 257927 MB
node distances:
node   0   1   2   3   4   5   6   7
  0:  10  11  11  11  32  32  32  32
  1:  11  10  11  11  32  32  32  32
  2:  11  11  10  11  32  32  32  32
  3:  11  11  11  10  32  32  32  32
  4:  32  32  32  32  10  11  11  11
  5:  32  32  32  32  11  10  11  11
  6:  32  32  32  32  11  11  10  11
  7:  32  32  32  32  11  11  11  10

```

From /proc/meminfo

```

MemTotal:      2101239016 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 20.04.1 LTS

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## Platform Notes (Continued)

From /etc/\*release\* /etc/\*version\*

debian\_version: bullseye/sid

os-release:

NAME="Ubuntu"

VERSION="20.04.1 LTS (Focal Fossa)"

ID=ubuntu

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 dl385g10v2 5.4.0-42-generic #46-Ubuntu SMP Fri Jul 10 00:24:02 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:  
disabled, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling):

Not affected

CVE-2019-11135 (TSX Asynchronous Abort):

Not affected

run-level 5 Apr 21 02:40

SPEC is set to: /home/cpu2017\_B1

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/ubuntu--vg-ubuntu--lv	ext4	182G	43G	131G	25%	/

From /sys/devices/virtual/dmi/id

Vendor: HPE

Product: ProLiant DL385 Gen10 Plus

Product Family: ProLiant

Serial: CN79340HC3

Additional information from dmidecode follows. WARNING: Use caution when you interpret

(Continued on next page)



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## Platform Notes (Continued)

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:

16x UNKNOWN M386AAG40AM3-CWE 128 GB 4 rank 3200  
16x UNKNOWN NOT AVAILABLE

BIOS:

BIOS Vendor: HPE  
BIOS Version: A42  
BIOS Date: 02/15/2021  
BIOS Revision: 2.40  
Firmware Revision: 2.40

(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 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on  
LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/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 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on  
LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin  
=====
```

```
=====  
Fortran | 648.exchange2_s(base, peak)  
=====
```

```
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on  
LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu
```

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## Compiler Version Notes (Continued)

Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/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  
641.leela\_s: -DSPEC\_LP64  
648.exchange2\_s: -DSPEC\_LP64  
657.xz\_s: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:  
-m64 -mno-adx -mno-sse4a -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 -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

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## Base Optimization Flags (Continued)

C benchmarks (continued):

```
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc  
-lflang -lflangrti
```

C++ benchmarks:

```
-m64 -std=c++98 -mno-adx -mno-sse4a  
-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 -O3 -march=znver3  
-fveclib=AMDLIBM -ffast-math -flto -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 -mllvm -do-block-reorder=aggressive  
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP  
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang  
-lflangrti
```

Fortran benchmarks:

```
-m64 -mno-adx -mno-sse4a -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 -flto -z muldefs  
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP  
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang  
-lflangrti
```

## 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
```



# SPEC CPU®2017 Integer Speed Result

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**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL385 Gen10 Plus v2  
(3.00 GHz, AMD EPYC 7313)

SPECspeed®2017\_int\_base = 12.5

SPECspeed®2017\_int\_peak = 12.5

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

**Test Date:** Apr-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Mar-2021

## 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: basepeak = yes

625.x264\_s: basepeak = yes

657.xz\_s: -m64 -mno-adx -mno-sse4a -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 -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  
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

C++ benchmarks:

(Continued on next page)



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## Peak Optimization Flags (Continued)

620.omnetpp\_s: basepeak = yes

623.xalancbmk\_s: basepeak = yes

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

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-revP.html>

<http://www.spec.org/cpu2017/flags/aocc300-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-revP.xml>

<http://www.spec.org/cpu2017/flags/aocc300-flags-A1.xml>

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