## SPEC CPU®2017 Integer Speed Result

### Test Information
- **Test Sponsor**: HPE
- **Hardware**: ProLiant DL385 Gen10 Plus (3.20 GHz, AMD EPYC 74F3)
- **Software**: Ubuntu 20.04.1 LTS (x86_64), Kernel 5.4.0-42-generic, C/C++/Fortran: Version 3.0.0 of AOCC
- **System State**: Run level 5 (multi-user)

### Result
- **SPECspeed®2017_int_base** = 13.3
- **SPECspeed®2017_int_peak** = 13.3

### Benchmark Scores

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>7.16</td>
<td></td>
</tr>
<tr>
<td>gcc_s</td>
<td></td>
<td>14.3</td>
</tr>
<tr>
<td>mcf_s</td>
<td></td>
<td>22.2</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>8.89</td>
<td>8.95</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td></td>
<td>15.4</td>
</tr>
<tr>
<td>x264_s</td>
<td></td>
<td>18.6</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td></td>
<td>6.89</td>
</tr>
<tr>
<td>leela_s</td>
<td></td>
<td>6.32</td>
</tr>
<tr>
<td>exchange2_s</td>
<td></td>
<td>25.5</td>
</tr>
<tr>
<td>xz_s</td>
<td></td>
<td>27.7</td>
</tr>
</tbody>
</table>

**Notes:**

- CPUs: 48 cores, 2 chips
- Memory: 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
- Storage: 1 x 182 GB SATA SSD, RAID 0

### Software Details
- **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 v2.42 04/29/2021 released Apr-2021
- **File System**: ext4
- **System State**: Run level 5 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: 64-bit
- **Power Management**: BIOS set to prefer performance at the cost of additional power usage
HPE - ProLiant DL385 Gen10 Plus (3.20 GHz, AMD EPYC 74F3)

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RESULTS TABLE

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<table>
<thead>
<tr>
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<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
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<tr>
<td>602.gcc_s</td>
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<td>279</td>
<td>14.3</td>
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<td>620.omnetpp_s</td>
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<td>8.83</td>
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HPE - ProLiant DL385 Gen10 Plus (3.20 GHz, AMD EPYC 74F3)

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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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.
'label' 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.

(Continued on next page)
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 = "0-47"
LD_LIBRARY_PATH =
"/home/cpu2017_B1/amd_speed_aocc300_milan_B_lib/64;/home/cpu2017_B1/amd_ speed_aocc300_milan_B_lib/32;"
MALLOCS_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "48"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-47"

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

Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Mon Jun 21 10:29:46 EDT 2021
Submission: cpu2017-20210621-27586.sub
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.20 GHz, AMD EPYC 74F3)

SPECspeed®2017_int_base = 13.3
SPECspeed®2017_int_peak = 13.3

CPU2017 License: 3
Test Sponsor: HPE
Test Date: Apr-2021
Tested by: HPE
Hardware Availability: Apr-2021
Software Availability: Mar-2021

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
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 1 12:26:23 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 74F3 24-Core Processor
  2 "physical id"s (chips)
  48 "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 : 24
siblings : 24
physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30
physical 1: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

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):                48
On-line CPU(s) list:    0-47
Thread(s) per core:    1
Core(s) per socket:     24
Socket(s):              2
NUMA node(s):          16
Vendor ID:              AuthenticAMD
CPU family:            25
Model:                 1
Model name:            AMD EPYC 74F3 24-Core Processor

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

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Apr-2021</th>
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</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Mar-2021</td>
</tr>
</tbody>
</table>

**Stepping:**
1

**Frequency boost:**
enabled

**CPU MHz:**
3412.166

**CPU max MHz:**
3200.0000

**CPU min MHz:**
1500.0000

**BogoMIPS:**
6388.22

**Virtualization:**
AMD-V

**L1d cache:**
1.5 MiB

**L1i cache:**
1.5 MiB

**L2 cache:**
24 MiB

**L3 cache:**
512 MiB

**NUMA node0 CPU(s):**
0-2

**NUMA node1 CPU(s):**
3-5

**NUMA node2 CPU(s):**
6-8

**NUMA node3 CPU(s):**
9-11

**NUMA node4 CPU(s):**
12-14

**NUMA node5 CPU(s):**
15-17

**NUMA node6 CPU(s):**
18-20

**NUMA node7 CPU(s):**
21-23

**NUMA node8 CPU(s):**
24-26

**NUMA node9 CPU(s):**
27-29

**NUMA node10 CPU(s):**
30-32

**NUMA node11 CPU(s):**
33-35

**NUMA node12 CPU(s):**
36-38

**NUMA node13 CPU(s):**
39-41

**NUMA node14 CPU(s):**
42-44

**NUMA node15 CPU(s):**
45-47

**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:**

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

Platform Notes (Continued)

clfushopt clwb sha ni xsaveopt xsave xgetbv1 xsaves cqm llc cqm_occ llc
cqm_mbm_total cqm_mbm_local clzero irperf xsaverptr wbenoinvd arat npt lbrv svm_lock
nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pfthreshold
v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_reco 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: 16 nodes (0-15)
  node 0 cpus: 0 1 2
  node 0 size: 128776 MB
  node 0 free: 128648 MB
  node 1 cpus: 3 4 5
  node 1 size: 129023 MB
  node 1 free: 128921 MB
  node 2 cpus: 6 7 8
  node 2 size: 129023 MB
  node 2 free: 128915 MB
  node 3 cpus: 9 10 11
  node 3 size: 129023 MB
  node 3 free: 128891 MB
  node 4 cpus: 12 13 14
  node 4 size: 129023 MB
  node 4 free: 128888 MB
  node 5 cpus: 15 16 17
  node 5 size: 129023 MB
  node 5 free: 128915 MB
  node 6 cpus: 18 19 20
  node 6 size: 129023 MB
  node 6 free: 128891 MB
  node 7 cpus: 21 22 23
  node 7 size: 116910 MB
  node 7 free: 116819 MB
  node 8 cpus: 24 25 26
  node 8 size: 129023 MB
  node 8 free: 128944 MB
  node 9 cpus: 27 28 29
  node 9 size: 129023 MB
  node 9 free: 128958 MB
  node 10 cpus: 30 31 32
  node 10 size: 129023 MB
  node 10 free: 128955 MB
  node 11 cpus: 33 34 35
  node 11 size: 129023 MB
  node 11 free: 128883 MB

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

```
node 12 cpus: 36 37 38
node 12 size: 129023 MB
node 12 free: 128957 MB
node 13 cpus: 39 40 41
node 13 size: 129023 MB
node 13 free: 128961 MB
node 14 cpus: 42 43 44
node 14 size: 128998 MB
node 14 free: 128924 MB
node 15 cpus: 45 46 47
node 15 size: 129018 MB
node 15 free: 128958 MB
node distances:

node      0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
0:  10 11 11 11 11 11 11 32 32 32 32 32 32 32 32 32
1:  11 10 11 11 11 11 11 32 32 32 32 32 32 32 32 32
5:  11 11 11 11 11 10 11 32 32 32 32 32 32 32 32 32
7:  11 11 11 11 11 11 10 32 32 32 32 32 32 32 32 32

From /proc/meminfo
MemTotal:       2101229572 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

From /etc/*release* /etc/*version*
debian_version: bullseye/sid

(Continued on next page)
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Platform Notes (Continued)

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):
CVE-2018-3620 (L1 Terminal Fault):
Microarchitectural Data Sampling:
CVE-2017-5754 (Meltdown):
CVE-2018-3639 (Speculative Store Bypass):
CVE-2017-5753 (Spectre variant 1):
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling):
CVE-2019-11135 (TSX Asynchronous Abort):

run-level 5 Apr 1 12:23

SPEC is set to: /home/cpu2017_B1

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 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

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL385 Gen10 Plus
(3.20 GHz, AMD EPYC 74F3)

SPECspeed®2017_int_base = 13.3
SPECspeed®2017_int_peak = 13.3

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

Platform Notes (Continued)

frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
Memory:
  16x Samsung M386AAG40AM3-CWE 128 GB 4 rank 3200
  16x UNKNOWN NOT AVAILABLE

BIOS:
  BIOS Vendor: HPE
  BIOS Version: A42
  BIOS Date: 04/29/2021
  BIOS Revision: 2.42
  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.xalanchmk_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
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

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

Compiler Version Notes (Continued)

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,-mlllvm -Wl,-enable-lcm-vrp -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-freemap-arrays -mlllvm -function-specialize -flv-function-specialization
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -enable-lcm-vrp -mlllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti

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

**Hewlett Packard Enterprise**  
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ProLiant DL385 Gen10 Plus  
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<table>
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**CPU2017 License:** 3  
**Test Date:** Apr-2021  
**Test Sponsor:** HPE  
**Hardware Availability:** Apr-2021  
**Tested by:** HPE  
**Software Availability:** Mar-2021

### Base Optimization Flags (Continued)

**C++ benchmarks:**
- `-m64 -std=c++98 -mno-adx -mno-sse4a`
- `-W1,-mllvm -W1,-do-block-reorder=aggressive`
- `-W1,-mllvm -W1,-region-vectorize -W1,-mllvm -W1,-function-specialize`
- `-W1,-mllvm -W1,-align-all-nofallthru-blocks=6`
- `-W1,-mllvm -W1,-reduce-array-computations=3 -O3 -march=znver3`
- `fveclib=AMDLIBM -ffast-math -flto -mllvm -enable-partial-unswitch`
- `mllvm -unroll-threshold=100 -finline-aggressive`
- `fivy-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 -W1,-mllvm -W1,-inline-recursion=4`
- `-W1,-mllvm -W1,-lsr-in-nested-loop -W1,-mllvm -W1,-enable-iv-split`
- `-W1,-mllvm -W1,-region-vectorize -W1,-mllvm -W1,-function-specialize`
- `-W1,-mllvm -W1,-align-all-nofallthru-blocks=6`
- `-W1,-mllvm -W1,-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

## Hewlett Packard Enterprise
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| CPU2017 License: | 3 |
| Test Sponsor:   | HPE |
| Tested by:      | HPE |

**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.mcfs_s: basepeak = yes
625.x264_s: basepeak = yes
657.xz_s: -m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-Wl,-mlllvm -Wl,-enable-licm-vrp
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -0fast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mlllvm -unroll-threshold=50
-freemap-arrays -flv-function-specialization
-mlllvm -inline-threshold=1000 -mlllvm -enable-gvn-hoist
-mlllvm -global-vectorize-slp=true
-mlllvm -function-specialize -mlllvm -enable-licm-vrp
-mlllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

C++ benchmarks:

(Continued on next page)
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<td>HPE</td>
<td>Software Availability:</td>
<td>Mar-2021</td>
</tr>
</tbody>
</table>

### Peak Optimization Flags (Continued)

- 620.omnetpp_s: -m64 -std=c++98 -mno-adx -mno-sse4a
- -Wl,-mllvm -Wl,-do-block-reorder=aggressive
- -Wl,-mllvm -Wl,-function-specialize
- -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
- -march=znver3 -ffast-math -flto
- -Wl,-mllvm -Wl,-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 -fopenmp=libomp -lomp -lamdlibm
- -ljemalloc -lflang

- 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

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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

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