**SPEC CPU®2017 Integer Speed Result**

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**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL325 Gen10 Plus  
(2.30 GHz, AMD EPYC 7642)

<table>
<thead>
<tr>
<th>Test Sponsor:</th>
<th>HPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by:</td>
<td>HPE</td>
</tr>
<tr>
<td>CPU2017 License:</td>
<td>3</td>
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<tr>
<td>Test Date:</td>
<td>Feb-2020</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Dec-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Aug-2019</td>
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</tbody>
</table>

### SPECspeed®2017_int_base = 8.55
### SPECspeed®2017_int_peak = 8.79

**Threads**

<table>
<thead>
<tr>
<th>Benchmark</th>
<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</td>
<td>48</td>
<td>4.59</td>
<td>8.79</td>
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<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>9.46</td>
<td>15.4</td>
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<td>605.mcf_s</td>
<td>48</td>
<td>5.03</td>
<td>12.1</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>8.93</td>
<td>20.3</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>9.67</td>
<td>15.9</td>
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<tr>
<td>625.x264_s</td>
<td>48</td>
<td>4.72</td>
<td>12.5</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>4.86</td>
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<tr>
<td>641.leela_s</td>
<td>48</td>
<td>4.03</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** AMD EPYC 7642
- **Max MHz:** 3300
- **Nominal:** 2300
- **Enabled:** 48 cores, 1 chip
- **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:** 256 MB I+D on chip per chip, 16 MB shared / 3 cores
- **Other:** None
- **Memory:** 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 480 GB SATA SSD, RAID 0
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 15 (x86_64) SP1
- **Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC
- **Parallel:** Yes
- **Firmware:** HPE BIOS Version A43 12/12/2019 released Dec-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc: jemalloc memory allocator library v5.1.0
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>324</td>
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<td>5.04</td>
<td>48</td>
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<td>324</td>
<td>5.04</td>
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<td>8.93</td>
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<td>625.x264_s</td>
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<td>12.1</td>
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<td>12.0</td>
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<td>142</td>
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<td>294</td>
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<td>648.exchange2_s</td>
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<td>20.3</td>
<td>305</td>
<td>20.3</td>
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<td>20.3</td>
</tr>
</tbody>
</table>

### 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>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory sync then drop_caches=3 to reset caches before invoking runcpu
dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages set to 'always' for this run (OS default)
Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-47"
LD_LIBRARY_PATH = "/home/cpu2017/amd_speed_aocc200_rome_C_lib/64;/home/cpu2017/amd_speed_aocc200_rome_C_lib/32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "48"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"
OMP_STACKSIZE = "128M"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_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 7601 CPU + 512GB Memory using Fedora 26

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)
General Notes (Continued)

is mitigated in the system as tested and documented.

jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
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
Thermal Configuration set to Maximum Cooling
AMD SMT Mode set to Disabled
Determinism Control set to Manual
Performance Determinism set to Power Deterministic
Minimum Processor Idle Power core C-State set to C6 State
Memory Patrol Scrubbing set to Disabled
Workload Profile set to General Peak Frequency Compute
NUMA memory domains per socket set to Four memory domains per socket
C-State Efficiency mode set to Disabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7eddb1e6e46a485a0011
running on linux-q10k Thu Feb 14 09:23:45 2019

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 7642 48-Core Processor
  1 "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 : 48
siblings : 48
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
  32 33 34 36 37 38 40 41 42 44 45 46 48 49 50 52 53 54 56 57 58 60 61 62

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

(Continued on next page)
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CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

SPECspeed®2017_int_base = 8.55
SPECspeed®2017_int_peak = 8.79

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Aug-2019

Platform Notes (Continued)

On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 48
Socket(s): 1
NUMA node(s): 4
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7642 48-Core Processor
Stepping: 0
CPU MHz: 2295.764
BogoMIPS: 4591.52
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-11
NUMA node1 CPU(s): 12-23
NUMA node2 CPU(s): 24-35
NUMA node3 CPU(s): 36-47

Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm constant_tsc rep_good nontime perfctr_nb perfctr_core perfctr_l2 mwait xsave axxex1 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abi sse4a misalignsse 3dnowprefetch osvw iber sinit wdt tce topoext perfctr_core perfctr_nb perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate ssbd ibrs ibpb stibp vmmcall fsbsbase bmi1 avx2 smep bmi2 cmq rdt_a rdseed adx smap clflushopt clwb sha ni xsaveopt xsavec xgetbv1 xsaveas cmq_l1c cmq_occup_llc cmq_mbm_total cmq_mbm_local clzero irperf xsaveerptr arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeaissists pausefilter pfthreshold avic v_vmsave_vmload vgif umip rdpid overflow_recov succor smca

From numactl --hardware

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

available: 4 nodes (0-3)
node 0 cpus: 1 0 3 4 5 6 7 8 9 10 11
node 0 size: 128682 MB
node 0 free: 128426 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23
node 1 size: 129020 MB
node 1 free: 128861 MB
node 2 cpus: 24 25 26 27 28 29 30 31 32 33 34 35
node 2 size: 129020 MB

(Continued on next page)
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SPECspeed®2017_int_base = 8.55
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Platform Notes (Continued)

node 2 free: 128714 MB
node 3 cpus: 36 37 38 39 40 41 42 43 44 45 46 47
node 3 size: 129007 MB
node 3 free: 128844 MB
node distances:
node 0 1 2 3
0: 10 12 12 12
1: 12 10 12 12
2: 12 12 10 12
3: 12 12 12 10

From /proc/meminfo
MemTotal: 528108544 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux linux-q10k 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
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: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB:
conditional, IBRS_FW, STIBP: disabled, RSB filling

run-level 3 Feb 14 09:23

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on

(Continued on next page)
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**SPECspeed®2017_int_base = 8.55**  
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**Platform Notes (Continued)**

/dev/sda3   xfs  155G  10G  146G  7% /home

From /sys/devices/virtual/dmi/id
BIOS:  HPE A43 12/12/2019
Vendor:  HPE
Product:  ProLiant DL325 Gen10 Plus
Product Family:  ProLiant
Serial:  CN792906TF

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 frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:
  8x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200
  8x UNKNOWN NOT AVAILABLE

(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)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

--- C++ ---
620.omnetpp_s(base, peak) 623.xalancbmk_s(peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

--- C++ ---
620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
631.deepsjeng_s(base, peak) 641.leela_s(base, peak)

(Continued on next page)```
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SPECspeed®2017_int_base = 8.55  
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Compiler Version Notes (Continued)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
   AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++     | 623.xalancbmk_s(peak)
          ________________________________________________________________
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
   AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
          | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)  
          ________________________________________________________________
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
   AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Fortran | 648.exchange2_s(base, peak)
          ________________________________________________________________
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
   AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Base Compiler Invocation

C benchmarks:
   clang

C++ benchmarks:
   clang++

(Continued on next page)
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SPECspeed®2017_int_base = 8.55
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Base Compiler Invocation (Continued)

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:
-ffast-math
-march=znver2
-mllvm -unroll-threshold=50
-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamlidbm -ljemalloc
-lflang

C++ benchmarks:
-ffast-math
-march=znver2
-flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamlidbm -ljemalloc
-lflang
Base Optimization Flags (Continued)

Fortran benchmarks:
- fptv -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
- Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
- Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
- mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
- mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
- lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

Base Other Flags

C benchmarks:
- Wno-return-type -DUSE_OPENMP

C++ benchmarks:
- Wno-return-type -DUSE_OPENMP

Fortran benchmarks:
- DUSE_OPENMP -Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak 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

(Continued on next page)
## Peak Portability Flags (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>623.xalancbmk_s</td>
<td>-DSPEC_LINUX -D_FILE_OFFSET_BITS=64</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

## Peak Optimization Flags

### C benchmarks:

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</table>

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus
(2.30 GHz, AMD EPYC 7642)

SPEC CPU®2017 Integer Speed Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus
(2.30 GHz, AMD EPYC 7642)

SPECspeed®2017_int_base = 8.55
SPECspeed®2017_int_peak = 8.79

Peak Optimization Flags (Continued)

605.mcf_s: -flto -W1,-mllvm -W1,-function-specialize
-W1,-mllvm -W1,-region-vectorize
-W1,-mllvm -W1,-vector-library=LIBMVEC
-W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

657.xz_s: -flto -W1,-mllvm -W1,-function-specialize
-W1,-mllvm -W1,-region-vectorize
-W1,-mllvm -W1,-vector-library=LIBMVEC
-W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m32 -flto -W1,-mllvm -W1,-function-specialize
-W1,-mllvm -W1,-region-vectorize
-W1,-mllvm -W1,-vector-library=LIBMVEC
-W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp

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**SPEC CPU®2017 Integer Speed Result**

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus
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</table>

**CPU2017 License:** 3
**Test Sponsor:** HPE
**Test Date:** Feb-2020
**Tested by:** HPE
**Hardware Availability:** Dec-2019
**Software Availability:** Aug-2019

### Peak Optimization Flags (Continued)

623.xalancbmk_s (continued):
- fopenmp=libomp -lomp -lpthread -ldl -ljemalloc

631.deepsjeng_s: -flto -Wl,-mllvm -Wl,-function-specialize
- W1,-mllvm -Wl,-region-vectorize
- W1,-mllvm -Wl,-vector-library=LIBMVEC
- W1,-mllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver2 -flv-function-specialization
- mllvm -unroll-threshold=100
- mllvm -enable-partial-unswitch
- mllvm -loop-unswitch-threshold=200000
- mllvm -vector-library=LIBMVEC
- mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
- fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
- ljemalloc -lflang

641.leela_s: basepeak = yes

Fortran benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- W1,-mllvm -Wl,-region-vectorize -W1,-mllvm -Wl,-vector-library=LIBMVEC
- W1,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
- W1,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
- W1,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- -Mrecursive -mllvm -vector-library=LIBMVEC
- -mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
- -mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
- -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

### Peak Other Flags

C benchmarks:
- Wno-return-type -DUSE_OPENMP

C++ benchmarks (except as noted below):
- Wno-return-type -DUSE_OPENMP

623.xalancbmk_s: -Wno-return-type -DUSE_OPENMP
- L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32

Fortran benchmarks:
- DUSE_OPENMP -Wno-return-type
Hewlett Packard Enterprise  
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus  
(2.30 GHz, AMD EPYC 7642)

SPECspeed®2017_int_base = 8.55
SPECspeed®2017_int_peak = 8.79

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

Test Date: Feb-2020
Hardware Availability: Dec-2019
Software Availability: Aug-2019

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-revH.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-revH.xml

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