## SPEC CPU®2017 Floating Point Speed Result

### Hewlett Packard Enterprise
(3) Test Sponsor: HPE
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>164</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>167</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: AMD EPYC 7713P</td>
<td></td>
</tr>
<tr>
<td>Max MHz: 3675</td>
<td></td>
</tr>
<tr>
<td>Nominal: 2000</td>
<td></td>
</tr>
<tr>
<td>Enabled: 64 cores, 1 chip, 2 threads/core</td>
<td></td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td></td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>L2: 512 KB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td>L3: 256 MB I+D on chip per chip, 32 MB shared / 8 cores</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
<tr>
<td>Memory: 1 TB (8 x 128 GB 4Rx4 PC4-3200AA-L)</td>
<td></td>
</tr>
<tr>
<td>Storage: 1 x 800 GB SAS SSD, RAID 0</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
<tr>
<td>OS: Ubuntu 20.04.1 LTS (x86_64)</td>
<td></td>
</tr>
<tr>
<td>Kernel 5.4.0-54-generic</td>
<td></td>
</tr>
<tr>
<td>Compiler: C/C++/Fortran: Version 3.0.0 of AOCC</td>
<td></td>
</tr>
<tr>
<td>Parallel: Yes</td>
<td></td>
</tr>
<tr>
<td>Firmware: HPE BIOS Version A43 v2.42 04/15/2021 released Apr-2021</td>
<td></td>
</tr>
<tr>
<td>File System: ext4</td>
<td></td>
</tr>
<tr>
<td>System State: Run level 5 (multi-user, GUI disabled)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Other: jemalloc: jemalloc memory allocator library v5.1.0</td>
<td></td>
</tr>
<tr>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base (164)</th>
<th>SPECspeed®2017_fp_peak (167)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>64</td>
<td>269</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
<td>74.6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>64</td>
<td>75.0</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>64</td>
<td>189</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>64</td>
<td>109</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>81.5</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>64</td>
<td>249</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>64</td>
<td>351</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>64</td>
<td>75.2</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
<td>161</td>
</tr>
</tbody>
</table>

CPU2017 License: 3
Tested by: HPE
Test Date: Jul-2021
Hardware Availability: Jun-2021
Software Availability: Mar-2021
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</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>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>64</td>
<td>150</td>
<td>393</td>
<td>64</td>
<td>150</td>
<td>393</td>
<td>64</td>
<td>150</td>
<td>393</td>
<td></td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
<td>62.0</td>
<td>269</td>
<td>64</td>
<td>61.5</td>
<td>271</td>
<td>64</td>
<td>61.3</td>
<td>272</td>
<td></td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>64</td>
<td>70.2</td>
<td>74.6</td>
<td>64</td>
<td>70.2</td>
<td>74.6</td>
<td>64</td>
<td>69.9</td>
<td>75.0</td>
<td>69.9</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>64</td>
<td>69.4</td>
<td>191</td>
<td>64</td>
<td>70.1</td>
<td>189</td>
<td>64</td>
<td>70.7</td>
<td>187</td>
<td>69.7</td>
</tr>
<tr>
<td>627.ccm4_s</td>
<td>64</td>
<td>81.6</td>
<td>109</td>
<td>64</td>
<td>81.4</td>
<td>109</td>
<td>64</td>
<td>80.6</td>
<td>110</td>
<td>80.8</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>146</td>
<td>81.5</td>
<td>64</td>
<td>145</td>
<td>81.6</td>
<td>64</td>
<td>145</td>
<td>81.6</td>
<td>147</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>64</td>
<td>58.0</td>
<td>249</td>
<td>64</td>
<td>57.2</td>
<td>252</td>
<td>64</td>
<td>58.0</td>
<td>249</td>
<td>57.2</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>64</td>
<td>49.8</td>
<td>351</td>
<td>64</td>
<td>49.7</td>
<td>351</td>
<td>64</td>
<td>49.8</td>
<td>351</td>
<td>46.1</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>64</td>
<td>121</td>
<td>75.4</td>
<td>64</td>
<td>121</td>
<td>75.1</td>
<td>64</td>
<td>121</td>
<td>75.1</td>
<td>121</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
<td>98.1</td>
<td>161</td>
<td>64</td>
<td>97.8</td>
<td>161</td>
<td>64</td>
<td>89.4</td>
<td>176</td>
<td>89.5</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
'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.
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root to enable

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

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.

The real test date is Jul-2021. The clock was mistakenly set to 2020 before the benchmark was run.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-127"
LD_LIBRARY_PATH = 
    "/cpu2017/amd_speed_aocc300_milan_B_lib/64;/cpu2017/amd_speed_aocc300_milan_B_lib/32:" 
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

Environment variables set by runcpu during the 607.cactuBSSN_s peak run:
GOMP_CPU_AFFINITY = "0-63"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-63"

Environment variables set by runcpu during the 621.wrf_s peak run:
GOMP_CPU_AFFINITY = "0-63"

Environment variables set by runcpu during the 627.cam4_s peak run:
GOMP_CPU_AFFINITY = "0-63"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 64 1 65 2 66 3 67 4 68 5 69 6 70 7 71 8 72 9 73 10 74 11 75 12 76 13 77 14 78 15 79 16 80 17 81 18 82 19 83 20 84 21 85 22 86 23 87 24 88 25 89 26 90 27 91 28 92 29 93 30 94 31 95 32 96 33 97 34 98 35 99 36 100 37 101 38 102 39 103 40 104 41 105 42 106 43 107 44 108 45 109 46 110 47 111 48 112 49 113 50 114 51 115 52 116 53 117 54 118 55 119 56 120 57 121 58 122 59 123 60 124 61 125 62 126 63 127"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-63"
SPEC CPU®2017 Floating Point Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Test Date: Jul-2021
Hardware Availability: Jun-2021
Software Availability: Mar-2021

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

Submitted by: "Bucek, James" <james.bucek@hpe.com>
Submitted: Wed Jul 14 18:08:06 EDT 2021
Submission: cpu2017-20210714-28139.sub

Platform Notes

The system ROM used for this result contains AMD microcode version 0xa00111d for the AMD EPYC 7713P processor.

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
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 /cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on dl325gen10plus Wed Apr  1 12:29:59 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 7713P 64-Core Processor
    1 "physical id"s (chips)
    128 "processors"

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

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpu cores</td>
<td>64</td>
</tr>
<tr>
<td>siblings</td>
<td>128</td>
</tr>
<tr>
<td>physical 0:</td>
<td>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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63</td>
</tr>
</tbody>
</table>

From lscpu from util-linux 2.34:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>x86_64</td>
</tr>
<tr>
<td>CPU op-mode(s)</td>
<td>32-bit, 64-bit</td>
</tr>
<tr>
<td>Byte Order</td>
<td>Little Endian</td>
</tr>
<tr>
<td>Address sizes</td>
<td>48 bits physical, 48 bits virtual</td>
</tr>
<tr>
<td>CPU(s)</td>
<td>128</td>
</tr>
<tr>
<td>On-line CPU(s) list</td>
<td>0-127</td>
</tr>
<tr>
<td>Thread(s) per core</td>
<td>2</td>
</tr>
<tr>
<td>Core(s) per socket</td>
<td>64</td>
</tr>
<tr>
<td>Socket(s)</td>
<td>1</td>
</tr>
<tr>
<td>NUMA node(s)</td>
<td>8</td>
</tr>
<tr>
<td>Vendor ID</td>
<td>AuthenticAMD</td>
</tr>
<tr>
<td>CPU family</td>
<td>25</td>
</tr>
<tr>
<td>Model</td>
<td>1</td>
</tr>
<tr>
<td>Model name</td>
<td>AMD EPYC 7713P 64-Core Processor</td>
</tr>
<tr>
<td>Stepping</td>
<td>1</td>
</tr>
<tr>
<td>Frequency boost</td>
<td>enabled</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>1668.349</td>
</tr>
<tr>
<td>CPU max MHz</td>
<td>2000.0000</td>
</tr>
<tr>
<td>CPU min MHz</td>
<td>1500.0000</td>
</tr>
<tr>
<td>BogoMIPS</td>
<td>3992.41</td>
</tr>
<tr>
<td>Virtualization</td>
<td>AMD-V</td>
</tr>
<tr>
<td>L1d cache</td>
<td>2 MiB</td>
</tr>
<tr>
<td>L1i cache</td>
<td>2 MiB</td>
</tr>
<tr>
<td>L2 cache</td>
<td>32 MiB</td>
</tr>
<tr>
<td>L3 cache</td>
<td>256 MiB</td>
</tr>
<tr>
<td>NUMA node0 CPU(s)</td>
<td>0-7,64-71</td>
</tr>
<tr>
<td>NUMA node1 CPU(s)</td>
<td>8-15,72-79</td>
</tr>
<tr>
<td>NUMA node2 CPU(s)</td>
<td>16-23,80-87</td>
</tr>
<tr>
<td>NUMA node3 CPU(s)</td>
<td>24-31,88-95</td>
</tr>
<tr>
<td>NUMA node4 CPU(s)</td>
<td>32-39,96-103</td>
</tr>
<tr>
<td>NUMA node5 CPU(s)</td>
<td>40-47,104-111</td>
</tr>
<tr>
<td>NUMA node6 CPU(s)</td>
<td>48-55,112-119</td>
</tr>
<tr>
<td>NUMA node7 CPU(s)</td>
<td>56-63,120-127</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 Spec store bypass</td>
<td>Mitigation; Speculative Store Bypass disabled via</td>
</tr>
</tbody>
</table>

(Continued on next page)
Platform Notes (Continued)

prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user
pointer sanitation
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
    pdelgb rdtscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid
    aperfmperp fni pclmulqdq monitor ssse3 fma cx16 pclid sse4_1 sse4_2 movbe popcnt aes
    xsave avx f16c rdrand lahf_lm cmp_legacy svm extatic cr8 Legacy abm sse4a
    misalignsse 3dnowprefetch osuw ibs skinit wdt tce topoext perfctr_core perfctr_nb
    bpext perfcr_l1c mwaitx cpb cat_l3 cdp_l3 invpcid-single hw_pstate ssbd mba ibrs
    ibpb stibp vmmcall fsgsbase bmip avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap
clflushopt clwb sha_ni xsaveopt xsave xsetbv1 xsavec xsaves cqm_llc cqm_occurllc
cqm_mbml_total cqm_mbml_local clzero iperf xsaverptr wbnoinvd arat npt lbrv svm_lock
    nrip_save tsc_scale vmcb_clean flushbyasid decodeassist pxththreshold v_vmseg_vmmload vgif
    umip pku ospe vaes vpc1mulqdq rpdpid overflow_recover succor smca

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d</td>
<td>32K</td>
<td>2M</td>
<td>8</td>
<td>Data</td>
<td>1</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>2M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
</tr>
<tr>
<td>L2</td>
<td>512K</td>
<td>32M</td>
<td>8</td>
<td>Unified</td>
<td>2</td>
</tr>
<tr>
<td>L3</td>
<td>32M</td>
<td>256M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
</tr>
</tbody>
</table>

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 4 5 6 7 64 65 66 67 68 69 70 71
node 0 size: 128749 MB
node 0 free: 128472 MB
node 1 cpus: 8 9 10 11 12 13 14 15 72 73 74 75 76 77 78 79
node 1 size: 129020 MB
node 1 free: 128855 MB
node 2 cpus: 16 17 18 19 20 21 22 23 80 81 82 83 84 85 86 87
node 2 size: 129020 MB
node 2 free: 128288 MB
node 3 cpus: 24 25 26 27 28 29 30 31 88 89 90 91 92 93 94 95
node 3 size: 129020 MB
node 3 free: 128823 MB
node 4 cpus: 32 33 34 35 36 37 38 39 96 97 98 99 100 101 102 103
node 4 size: 129020 MB

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Platform Notes (Continued)

node 4 free: 128849 MB
node 5 cpus: 40 41 42 43 44 45 46 47 104 105 106 107 108 109 110 111
node 5 size: 129020 MB
node 5 free: 128518 MB
node 6 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 104 105 106 107 108 109 110 111
node 6 size: 129020 MB
node 6 free: 128800 MB
node 7 cpus: 56 57 58 59 60 61 62 63 120 121 122 123 124 125 126 127
node 7 size: 116906 MB
node 7 free: 116736 MB

node distances:
node 0 1 2 3 4 5 6 7
0: 10 11 11 11 11 11 11
1: 11 10 11 11 11 11 11
2: 11 11 10 11 11 11 11
3: 11 11 11 10 11 11 11
4: 11 11 11 11 10 11 11
5: 11 11 11 11 11 10 11
6: 11 11 11 11 11 11 10
7: 11 11 11 11 11 11 10

From /proc/meminfo
MemTotal: 1044252936 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/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
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 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

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Platform Notes (Continued)

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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapsgs barriers and __user pointer sanitation
CVE-2017-5753 (Spectre variant 1): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2019-11135 (TSX Asynchronous Abort): Not affected
CVE-2017-5715 (Spectre variant 2): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Apr 1 12:23
SPEC is set to: /cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 ext4 733G 27G 668G 4% /

From /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL325 Gen10 Plus
Product Family: ProLiant
Serial: CN7929OFKQ

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

BIOS:
BIOS Vendor: HPE
BIOS Version: A43
BIOS Date: 04/15/2021
BIOS Revision: 2.42
Firmware Revision: 2.40

(End of data from sysinfo program)
Hewlett Packard Enterprise
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

Compiler Version Notes

-----------------------------
C   619.lbm_s(base, peak) 638.imagick_s(base, peak)
    644.nab_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++, C, Fortran | 607.cactuBSSN_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
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
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         603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
    654.roms_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, C      621.wrf_s(base, peak) 627.cam4_s(base, peak)
    628.pop2_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)
Hewlett Packard Enterprise
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECSpeed®2017_fp_base = 164
SPECSpeed®2017_fp_peak = 167

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

Compiler Version Notes (Continued)

LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
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

Base Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
Hewlett Packard Enterprise
(ProLiant DL325 Gen10 Plus v2)
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Base Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -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-lcm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-lcm-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 -Hz,1,0x1 -O3
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop
-mllvm -enable-lcm-vrp -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti

Benchmarks using both Fortran and C:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-lcm-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-lcm-vrp -mllvm -reduce-array-computations=3 -Hz,1,0x1
-Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti

Benchmarks using Fortran, C, and C++:
-m64 -mno-adx -mno-sse4a -std=c++98
-Wl,-mllvm -Wl,-x86-use-vzeroupper=false
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize

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

Benchmarks using Fortran, C, and C++ (continued):
- 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
- freemap-arrays -mllvm -function-specialize -flv-function-specialization
- mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
- mllvm -enable-lcim-vrp -mllvm -reduce-array-computations=3
- mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100
- finline-aggressive -mllvm -loop-unswitch-threshold=200000
- mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
- mllvm -extra-vectorizer-passes -mllvm -convert-pow-exp-to-int=false
- Hz,1,0x1 -Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops
- mllvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp
- fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti

Base Other Flags

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

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

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument -Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

(Continued on next page)
Peak Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: -m64 -mno-adx -mno-sse4a
-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

638.imagick_s: basepeak = yes

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl, -mllvm -Wl, -region-vectorize
-Wl, -mllvm -Wl, -function-specialize -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

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

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

654.roms_s: -m64 -mno-adx -mno-sse4a
- Wl,-mlllvm -Wl,-enable-X86-prefetching
- Wl,-mlllvm -Wl,-enable-lcm-vrp
- Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
- mlllvm -reduce-array-computations=3
- mlllvm -global-vectorize-slp=true -mlllvm -enable-lcm-vrp
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
- ljemalloc -lflang

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -mno-adx -mno-sse4a
- Wl,-mlllvm -Wl,-enable-X86-prefetching
- Wl,-mlllvm -Wl,-enable-lcm-vrp
- Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver3 -fveclib=AMDLIBM -ffast-math -flto
- fstruct-layout=5 -mlllvm -unroll-threshold=50
- fremap-arrays -flv-function-specialization
- mlllvm -inline-threshold=1000 -mlllvm -enable-gvn-hoist
- mlllvm -global-vectorize-slp=true
- mlllvm -function-specialize -mlllvm -enable-lcm-vrp
- mlllvm -reduce-array-computations=3 -Hz,1,0x1 -O3
- Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops
- mlllvm -extra-vectorizer-passes -mlllvm -lsr-in-nested-loop
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
- ljemalloc -lflang

627.cam4_s: -m64 -mno-adx -mno-sse4a
- Wl,-mlllvm -Wl,-enable-X86-prefetching
- Wl,-mlllvm -Wl,-enable-lcm-vrp
- Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
- march=znver3 -fveclib=AMDLIBM -ffast-math -flto
- fstruct-layout=5 -mlllvm -unroll-threshold=50
- fremap-arrays -flv-function-specialization
- mlllvm -inline-threshold=1000 -mlllvm -enable-gvn-hoist
- mlllvm -global-vectorize-slp=true
- mlllvm -function-specialize -mlllvm -enable-lcm-vrp
- mlllvm -reduce-array-computations=3 -Mrecursive
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.00 GHz, AMD EPYC 7713P)

SPECspeed®2017_fp_base = 164
SPECspeed®2017_fp_peak = 167

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

Test Date: Jul-2021
Hardware Availability: Jun-2021
Software Availability: Mar-2021

Peak Optimization Flags (Continued)

627.cam4_s (continued):
-lljemalloc -lflang

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:
- m64 -mno-adx -mno-sse4a -std=c++98
- Wl,-mlllvm -Wl,-x86-use-vzeroupper=false -Wl,-mlllvm -Wl,-enable-licm-vrp
- Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-align-all-nofallthr-thr-blocks=6
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver3
- fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- mlllvm -unroll-threshold=50 -fremap-arrays -fll-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
- finline-aggressive -mlllvm -unroll-threshold=100 -mlllvm -reroll-loops
- mlllvm -aggressive-loop-unswitch -Mrecursive -DSPEC_OPENMP -fopenmp
- fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Peak Other Flags

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

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

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument -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-revQ.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-revQ.xml
Hewlett Packard Enterprise  
[Test Sponsor: HPE]  
ProLiant DL325 Gen10 Plus v2  
[2.00 GHz, AMD EPYC 7713P]  

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 164</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_peak = 167</td>
</tr>
</tbody>
</table>

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

SPEC CPU and SPECspeed are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 13:29:59-0400.  
Report generated on 2021-08-04 18:39:36 by CPU2017 PDF formatter v6442.  
Originally published on 2021-08-03.