## SPEC CPU®2017 Integer Speed Result

### Hardware

- **CPU Name:** AMD EPYC 7413  
  - **Max MHz:** 3600  
  - **Nominal:** 2650  
  - **Enabled:** 24 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:** 128 MB I+D on chip per chip, 32 MB shared / 6 cores  
  - **Other:** None  

- **Memory:** 1 TB (8 x 128 GB 4Rx4 PC4-3200AA-L)  
  - **Storage:** 1 x 800 GB SAS SSD, RAID 0  
  - **Other:** None

### Software

- **OS:** Ubuntu 20.04.1 LTS (x86_64)  
  - **Kernel:** 5.4.0-54-generic  
- **Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC  
- **Parallel:** Yes  
- **Firmware:** HPE BIOS Version A43 v2.40 02/15/2021 released Mar-2021  
- **File System:** ext4  
- **System State:** Run level 5 (multi-user, GUI disabled)  
- **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

### Test Details

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

### Result

<table>
<thead>
<tr>
<th>SPECbench</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>24</td>
<td>6.50</td>
<td>12.2</td>
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<tr>
<td>gcc</td>
<td>24</td>
<td>8.47</td>
<td>20.5</td>
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<td>mcf</td>
<td>24</td>
<td>6.34</td>
<td>16.9</td>
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<tr>
<td>omnetpp</td>
<td>24</td>
<td>5.71</td>
<td></td>
</tr>
<tr>
<td>xalancbmk</td>
<td>24</td>
<td></td>
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</tr>
<tr>
<td>x264</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deepsjeng</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leela</td>
<td>24</td>
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<tr>
<td>exchange2</td>
<td>24</td>
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<td></td>
</tr>
<tr>
<td>xz</td>
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</tbody>
</table>

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Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL325 Gen10 Plus v2  
(2.65 GHz, AMD EPYC 7413)
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.65 GHz, AMD EPYC 7413)

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HPE

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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbnc_s</td>
<td>24</td>
<td>273</td>
<td>6.51</td>
<td>273</td>
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<td>6.49</td>
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<td>262</td>
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<td>602.gcc_s</td>
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<td>303</td>
<td>13.2</td>
<td>303</td>
<td>13.1</td>
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<td>13.2</td>
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<td>303</td>
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<td>605.mcf_s</td>
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<td>231</td>
<td>20.5</td>
<td>230</td>
<td>20.5</td>
<td>233</td>
<td>20.3</td>
<td>24</td>
<td>231</td>
<td>20.5</td>
<td>230</td>
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<td>620.omnetpp_s</td>
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<td>8.47</td>
<td>190</td>
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<td>8.47</td>
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<td>623.xlanchmk_s</td>
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<td>101</td>
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<td>102</td>
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<td>104</td>
<td>16.9</td>
<td>104</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>226</td>
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<td>226</td>
<td>6.35</td>
<td>226</td>
<td>6.33</td>
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<td>6.34</td>
<td>226</td>
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<tr>
<td>641.leela_s</td>
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<td>299</td>
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<td>299</td>
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<td>298</td>
<td>5.72</td>
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<td>299</td>
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<td>298</td>
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<tr>
<td>648.exchange2_s</td>
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<td>127</td>
<td>23.1</td>
<td>127</td>
<td>23.1</td>
<td>128</td>
<td>23.0</td>
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<tr>
<td>657.xz_s</td>
<td>24</td>
<td>270</td>
<td>22.9</td>
<td>270</td>
<td>22.9</td>
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<td>22.9</td>
<td>24</td>
<td>269</td>
<td>22.9</td>
<td>271</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/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 Apr-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 = "0-23"
- `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 = "24"

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

Environment variables set by runcpu during the 657.xz_s peak run:
- `GOMP_CPU_AFFINITY = "0-23"

## 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
SPEC CPU®2017 Integer Speed Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.65 GHz, AMD EPYC 7413)

SPECspeed®2017_int_base = 12.1
SPECspeed®2017_int_peak = 12.2

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

Test Date: Apr-2021
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 `/cpu2017/bin/sysinfo`
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on dl325gen10plus Wed Apr 1 18:24:04 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 7413 24-Core Processor
    1 "physical id"s (chips)
    24 "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 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29

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): 24
  On-line CPU(s) list: 0-23
  Thread(s) per core: 1
  Core(s) per socket: 24
  Socket(s): 1
  NUMA node(s): 4
  Vendor ID: AuthenticAMD
  CPU family: 25
  Model: 1
  Model name: AMD EPYC 7413 24-Core Processor
  Stepping: 1

(Continued on next page)
spec

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

Platform Notes (Continued)

Frequency boost: enabled
CPU MHz: 1964.047
CPU max MHz: 2650.0000
CPU min MHz: 1500.0000
BogoMIPS: 5289.89
Virtualization: AMD-V
L1d cache: 768 KiB
L1i cache: 768 KiB
L2 cache: 12 MiB
L3 cache: 128 MiB
NUMA node0 CPU(s): 0-5
NUMA node1 CPU(s): 6-11
NUMA node2 CPU(s): 12-17
NUMA node3 CPU(s): 18-23
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 sanitation
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBPB conditional, IBRS-fw, STIBF disabled, RSB filling
Vulnerability Srbd: Not affected
Vulnerability Tsx 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 pclid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misaligned dsnoiwprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_ltc mwaitx cpb cat_l3 cdpl3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsqsb base bml1 avx2 smep bmi2 invpcid cmq rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsaves xgetbv1 xsaves cmq_llc cmq_occip llc cmq_mbs_total cmq_mbs_local clzero irperf xsaveevent wbooinvd arat npt lbv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassist pausefilter pfthreshold v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq 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: 0 1 2 3 4 5
node 0 size: 257799 MB

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

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ProLiant DL325 Gen10 Plus v2  
(2.65 GHz, AMD EPYC 7413)  

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<th>SPECspeed®2017_int_base = 12.1</th>
<th>SPECspeed®2017_int_peak = 12.2</th>
</tr>
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<tr>
<td>CPU2017 License: 3</td>
<td>Test Date: Apr-2021</td>
</tr>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Mar-2021</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

node 0 free: 257533 MB  
node 1 cpus: 6 7 8 9 10 11  
node 1 size: 258022 MB  
node 1 free: 257642 MB  
node 2 cpus: 12 13 14 15 16 17  
node 2 size: 258046 MB  
node 2 free: 257802 MB  
node 3 cpus: 18 19 20 21 22 23  
node 3 size: 245935 MB  
node 3 free: 245664 MB  
node distances:  
  node 0  1  2  3  
  0: 10 11 11 11  
  1: 11 10 11 11  
  2: 11 10 11 11  
  3: 11 11 11 10  

From /proc/meminfo  
  MemTotal: 1044279200 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  

Kernel self-reported vulnerability status:  
  CVE-2018-12207 (iTLB Multihit): Not affected  

(Continued on next page)
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SPECspeed®2017_int_base = 12.1
SPECspeed®2017_int_peak = 12.2

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

Platform Notes (Continued)

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Mitigation: Speculative Store
CVE-2018-3639 (Speculative Store Bypass): Bypass disabled via prctl and
seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapsgs
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 1 17:23
SPEC is set to: /cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 ext4 733G 23G 673G 4% /

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

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 UNKNOWN M386AAG40AM3-CWE 128 GB 4 rank 3200
8x UNKNOWN NOT AVAILABLE

BIOS:
BIOS Vendor: HPE
BIOS Version: A43
BIOS Date: 02/15/2021
BIOS Revision: 2.40
Firmware Revision: 2.40

(End of data from sysinfo program)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.65 GHz, AMD EPYC 7413)

SPECspeed®2017_int_base = 12.1
SPECspeed®2017_int_peak = 12.2

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

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
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
------------------------------------------------------------------------------
Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL325 Gen10 Plus v2  
(2.65 GHz, AMD EPYC 7413)  

CPU2017 License: 3  
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SPECspeed®2017_int_base = 12.1  
SPECspeed®2017_int_peak = 12.2  

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

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-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 -z muldefs  
- 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  

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SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL325 Gen10 Plus v2
(2.65 GHz, AMD EPYC 7413)

| SPECspeed®2017_int_base = 12.1 |
| SPECspeed®2017_int_peak = 12.2 |

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

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

**Base Optimization Flags (Continued)**

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`

**Peak Compiler Invocation**

C benchmarks:
- `clang`

C++ benchmarks:
- `clang++`

Fortran benchmarks:
- `flang`

**Peak Portability Flags**

Same as Base Portability Flags
**SPEC CPU®2017 Integer Speed Result**

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(Test Sponsor: HPE)  
ProLiant DL325 Gen10 Plus v2  
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### SPECspeed®2017_int_base = 12.1
### SPECspeed®2017_int_peak = 12.2

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

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

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### Peak Optimization Flags

**C benchmarks:**

600.perlbench_s: -m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition  
-Wis -mllvm -Wl,-enable-licm-vrp  
-Wis -mllvm -Wl,-function-specialize  
-Wis -mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wis -mllvm -Wl,-reduce-array-computations=3 -Ofast  
-march=zvner3 -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

602.gcc_s: basepeak = yes

605.mcf_s: basepeak = yes

625.x264_s: basepeak = yes

657.xz_s: Same as 600.perlbench_s

**C++ benchmarks:**

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

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### Peak Other Flags

**C benchmarks:**

-Wno-unused-command-line-argument -Wno-return-type

(Continued on next page)
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Software Availability: Mar-2021

Peak Other Flags (Continued)

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

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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