### Dell Inc.

**PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 8.54</th>
<th>SPECspeed®2017_int_peak = 8.72</th>
</tr>
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</table>

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Oct-2019  
**Hardware Availability:** Feb-2020  
**Software Availability:** Aug-2019

#### Hardware

- **CPU Name:** AMD EPYC 7552  
- **Max MHz:** 3300  
- **Nominal:** 2200  
- **Enabled:** 48 cores, 1 chip, 2 threads/core  
- **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:** 192 MB I+D on chip per chip, 16 MB shared / 4 cores  
- **Other:** None  
- **Memory:** 256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R, running at 3200)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

#### Software

- **OS:** SUSE Linux Enterprise Server 15 SP1  
- **Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC  
- **Parallel:** Yes  
- **Firmware:** Version 1.1.6 released Oct-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.

---

**Threads**

<table>
<thead>
<tr>
<th>Spec Benchmark</th>
<th>8.72</th>
<th>8.54</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>4.66</td>
<td>4.69</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>9.28</td>
<td>14.6</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>4.69</td>
<td>4.73</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>9.14</td>
<td>15.5</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>9.80</td>
<td>12.1</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>4.75</td>
<td>7.46</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>4.80</td>
<td>12.1</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.99</td>
<td>12.1</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16.1</td>
<td>20.1</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>20.1</td>
<td>20.1</td>
</tr>
</tbody>
</table>

---

**SPECspeed®2017_int_base (8.54)**  
**SPECspeed®2017_int_peak (8.72)**
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>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>48</td>
<td>382</td>
<td>4.64</td>
<td>380</td>
<td>4.67</td>
<td>381</td>
<td>4.66</td>
<td>1</td>
<td>365</td>
<td>4.87</td>
<td>361</td>
<td>4.92</td>
<td>360</td>
<td>4.94</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
<td>323</td>
<td>14.6</td>
<td>323</td>
<td>14.6</td>
<td>323</td>
<td>14.6</td>
<td>1</td>
<td>305</td>
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<td>15.5</td>
<td>305</td>
<td>15.5</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
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<td>348</td>
<td>4.69</td>
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<td>4.39</td>
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<td>344</td>
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<td>4.73</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
<td>146</td>
<td>12.1</td>
<td>146</td>
<td>12.1</td>
<td>146</td>
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<td>146</td>
<td>12.1</td>
<td>145</td>
<td>12.2</td>
<td>146</td>
<td>12.1</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>301</td>
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<td>641.leela_s</td>
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<td>417</td>
<td>4.09</td>
<td>412</td>
<td>4.14</td>
<td>450</td>
<td>3.79</td>
<td>48</td>
<td>417</td>
<td>4.09</td>
<td>412</td>
<td>4.14</td>
<td>450</td>
<td>3.79</td>
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<td>648.exchange2_s</td>
<td>48</td>
<td>183</td>
<td>16.1</td>
<td>181</td>
<td>16.2</td>
<td>183</td>
<td>16.1</td>
<td>1</td>
<td>183</td>
<td>16.0</td>
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<td>182</td>
<td>16.1</td>
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<tr>
<td>657.xz_s</td>
<td>48</td>
<td>309</td>
<td>20.0</td>
<td>308</td>
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<td>309</td>
<td>20.0</td>
<td>307</td>
<td>20.1</td>
<td>307</td>
<td>20.1</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>

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)
Dell Inc.

PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

| SPECspeed®2017_int_base = 8.54 |
| SPECspeed®2017_int_peak = 8.72 |

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-95"
LD_LIBRARY_PATH =
"/root/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/64;/root/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "96"

Environment variables set by runcpu during the 600.perlbench_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 620.omnetpp_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)
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

SPECspeed®2017_int_base = 8.54
SPECspeed®2017_int_peak = 8.72

CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: Oct-2019
Tested by: Dell Inc.
Hardware Availability: Feb-2020
Software Availability: Aug-2019

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 settings:
NUMA Nodes Per Socket set to 2
CCX as NUMA Domain set to Enabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost Enabled
Cstates set to Enabled
Memory Patrol Scrub Disabled
Memory Refresh Rate set to 1x
PCI ASPM L1 Link Power Management Disabled
Determinism Slider set to Power Determinism
Efficiency Optimized Mode Disabled

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1b6e6e46a485a0011
running on linux-g3ob Fri Oct 11 04:51:34 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 7552 48-Core Processor
  1 "physical id"s (chips)
  96 "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 : 96
physical 0: 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

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian

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

Dell Inc.

PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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<tr>
<td></td>
<td>Software Availability: Aug-2019</td>
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</tbody>
</table>

Platform Notes (Continued)

Address sizes: 43 bits physical, 48 bits virtual
CPU(s): 96
On-line CPU(s) list: 0-95
Thread(s) per core: 2
Core(s) per socket: 48
Socket(s): 1
NUMA node(s): 12
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7552 48-Core Processor
Stepping: 0
CPU MHz: 2195.819
BogoMIPS: 4391.63
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-3,48-51
NUMA node1 CPU(s): 4-7,52-55
NUMA node2 CPU(s): 8-11,56-59
NUMA node3 CPU(s): 12-15,60-63
NUMA node4 CPU(s): 16-19,64-67
NUMA node5 CPU(s): 20-23,68-71
NUMA node6 CPU(s): 24-27,72-75
NUMA node7 CPU(s): 28-31,76-79
NUMA node8 CPU(s): 32-35,80-83
NUMA node9 CPU(s): 36-39,84-87
NUMA node10 CPU(s): 40-43,88-91
NUMA node11 CPU(s): 44-47,92-95
Flags: fpu vme vmx pae mce cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm constant_tsc rep_good nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw ibs kinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sibp ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 cmq rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsave cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsavingptr arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgif umip rdpid overflow_recover succor smca

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a

(Continued on next page)
### Dell Inc. PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

<table>
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<td>SPECspeed®2017_int_peak</td>
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#### CPU2017 License: 55

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<tr>
<td>Software Availability: Aug-2019</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tested by: Dell Inc.</th>
</tr>
</thead>
</table>

### Platform Notes (Continued)

- **physical chip.**
- **available:** 12 nodes (0-11)
- **node 0 cpus:** 0 1 2 3 48 49 50 51
- **node 0 size:** 20923 MB
- **node 0 free:** 20762 MB
- **node 1 cpus:** 4 5 6 7 52 53 54 55
- **node 1 size:** 21501 MB
- **node 1 free:** 21439 MB
- **node 2 cpus:** 8 9 10 11 56 57 58 59
- **node 2 size:** 21503 MB
- **node 2 free:** 21388 MB
- **node 3 cpus:** 12 13 14 15 60 61 62 63
- **node 3 size:** 21501 MB
- **node 3 free:** 21345 MB
- **node 4 cpus:** 16 17 18 19 64 65 66 67
- **node 4 size:** 21501 MB
- **node 4 free:** 21410 MB
- **node 5 cpus:** 20 21 22 23 68 69 70 71
- **node 5 size:** 21502 MB
- **node 5 free:** 21401 MB
- **node 6 cpus:** 24 25 26 27 72 73 74 75
- **node 6 size:** 21501 MB
- **node 6 free:** 21372 MB
- **node 7 cpus:** 28 29 30 31 76 77 78 79
- **node 7 size:** 21501 MB
- **node 7 free:** 21453 MB
- **node 8 cpus:** 32 33 34 35 80 81 82 83
- **node 8 size:** 21503 MB
- **node 8 free:** 21456 MB
- **node 9 cpus:** 36 37 38 39 84 85 86 87
- **node 9 size:** 21501 MB
- **node 9 free:** 21412 MB

- **node 10 cpus:** 40 41 42 43 88 89 90 91
- **node 10 size:** 21472 MB
- **node 10 free:** 21425 MB
- **node 11 cpus:** 44 45 46 47 92 93 94 95
- **node 11 size:** 21488 MB
- **node 11 free:** 21443 MB

#### node distances:

- **node 0:** 10 11 11 11 11 11 12 12 12 12 12 12
- **node 1:** 11 10 11 11 11 11 12 12 12 12 12 12
- **node 2:** 11 11 10 11 11 11 12 12 12 12 12 12
- **node 3:** 11 11 11 10 11 11 12 12 12 12 12 12
- **node 4:** 11 11 11 11 10 11 12 12 12 12 12 12
- **node 5:** 11 11 11 11 11 10 12 12 12 12 12 12
- **node 6:** 12 12 12 12 12 12 10 11 11 11 11 11

(Continued on next page)
Dell Inc.  
PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)  

SPECperformance®2017_int_base = 8.54  
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CPU2017 License: 55  
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Platform Notes (Continued)

7:  12 12 12 12 12 12 11 10 11 11 11 11
8:  12 12 12 12 12 12 11 11 11 10 11 11
9:  12 12 12 12 12 12 11 11 11 11 11 11
10: 12 12 12 12 12 12 11 11 11 11 11 10
11: 12 12 12 12 12 12 11 11 11 11 11 10

From /proc/meminfo
MemTotal:       263581804 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-g3ob 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 retpopline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Oct 11 04:49 last=5

SPEC is set to: /root/cpu2017-1.1.0

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>xfs</td>
<td>440G</td>
<td>50G</td>
<td>391G</td>
<td>12%</td>
<td>/</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 1.1.6 10/02/2019
Vendor: Dell Inc.

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

Product: PowerEdge R6515  
Product Family: PowerEdge

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 80AD863280AD HMA84GR7CRC-XN 32 GB 2 rank 3200
- 8x Not Specified Not Specified

(End of data from sysinfo program)

### Compiler Version Notes

<table>
<thead>
<tr>
<th>C</th>
<th>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)</th>
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</tr>
</tbody>
</table>

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

(Continued on next page)
Dell Inc.

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SPECspeed®2017_int_base = 8.54
SPECspeed®2017_int_peak = 8.72

Compiler Version Notes (Continued)

==============================================================================
| C++     | 623.xalancbm_k_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.xalancbm_k_s(base) 
631.deepsjeng_s(base, peak) 641.leela_s(base, peak) 
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==============================================================================
| Fortran | 648.exchange2_s(base, peak) 
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InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
==============================================================================

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang
Dell Inc. PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

Dell Inc. Test Sponsor: Dell Inc. Tested by: Dell Inc.

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

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:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
- fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
- mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
- flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
- ljemalloc -liflag

C++ benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3
- Wl,-mllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
- mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
- mllvm -unroll-threshold=100 -flv-function-specialization
- mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
- ljemalloc -liflag

Fortran benchmarks:
- flto -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

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# SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

**PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>Oct-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Oct-2019</td>
</tr>
</tbody>
</table>

| Test Date: | Oct-2019 |
| Hardware Availability: | Feb-2020 |
| Software Availability: | Aug-2019 |

| CPU2017 License: | 55 |
| Test Sponsor: | Dell Inc. |
| Tested by: | Dell Inc. |

## Base Optimization Flags (Continued)

For Fortran benchmarks (continued):
```
-mlirv -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc
-llflang
```

## Base Other Flags

- C benchmarks:
  - `-Wno-return-type`
- C++ benchmarks:
  - `-Wno-return-type`
- Fortran benchmarks:
  - `-Wno-return-type`

## Peak Compiler Invocation

- C benchmarks:
  - `clang`
- C++ benchmarks:
  - `clang++`
- Fortran benchmarks:
  - `flang`

## Peak Portability Flags

- `600.perlbmk_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 -D_FILE_OFFSET_BITS=64`
- `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`
Dell Inc.

PowerEdge R6515 (AMD EPYC 7552, 2.20 GHz)

SPECspeed®2017_int_base = 8.54
SPECspeed®2017_int_peak = 8.72

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -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
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lopmp
-lpthread -ldl -ljemalloc -lflang

602.gcc_s: basepeak = yes

605.mcf_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-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
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lopmp
-lpthread -ldl -ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-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

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### Peak Optimization Flags (Continued)

#### C++ benchmarks:

- **657.xz_s**: -flto -Wl,-ml1vm -Wl,-function-specialize
- **620.omnetpp_s**: -flto -Wl,-ml1vm -Wl,-function-specialize
- **623.xalanchmk_s**: -m32 -flto -Wl,-ml1vm -Wl,-function-specialize
- **621.deepsjeng_s**: Same as 620.omnetpp_s

#### Fortran benchmarks:

- **641.leela_s**: basepeak = yes

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### Peak Optimization Flags (Continued)

Fortran benchmarks (continued):
- `-Mrecursive` 
- `-mllvm` 
- `-vector-library=LIBMVEC` 
- `-mllvm` 
- `-disable-indvar-simplify` 
- `-mllvm` 
- `-unroll-aggressive` 
- `-mllvm` 
- `-unroll-threshold=150` 
- `-DSPEC_OPENMP` 
- `-fopenmp` 
- `-DUSE_OPENMP` 
- `-fopenmp=libomp` 
- `-lomp` 
- `-lpthread` 
- `-ldl` 
- `-lmvec` 
- `-lamdlibm` 
- `-ljemalloc` 
- `-lflang`

### Peak Other Flags

C benchmarks:
- `-Wno-return-type`

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

623.xalancbmk.s: `-Wno-return-type`

- `-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32`

Fortran benchmarks:
- `-Wno-return-type`

The flags files that were used to format this result can be browsed at:

You can also download the XML flags sources by saving the following links: