**Dell Inc.**

PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>CPU2017 License: 55</th>
<th>Test Date: Oct-2019</th>
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</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Threads**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Cores</th>
<th>SPECspeed&lt;sup&gt;®2017_int_base&lt;/sup&gt;</th>
<th>SPECspeed&lt;sup&gt;®2017_int_peak&lt;/sup&gt;</th>
</tr>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>96</td>
<td>4.70</td>
<td>8.78</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>96</td>
<td>4.54</td>
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</tr>
<tr>
<td>605.mcf_s</td>
<td>96</td>
<td>4.73</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>96</td>
<td>4.73</td>
<td></td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>96</td>
<td>9.20</td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>96</td>
<td>9.80</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>96</td>
<td>4.77</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>96</td>
<td>4.15</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>96</td>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>96</td>
<td>20.6</td>
<td></td>
</tr>
</tbody>
</table>

**SPECspeed<sup>®2017_int_base</sup> = 8.60**

**SPECspeed<sup>®2017_int_peak</sup> = 8.78**

---

**Hardware**

- **CPU Name:** AMD EPYC 7642
- **Max MHz:** 3300
- **Nominal:** 2300
- **Enabled:** 96 cores, 2 chips, 2 threads/core
- **Orderable:** 1.2 chips
- **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 core, 16 MB shared / 3 cores
- **Other:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 480 GB SAS SSD

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP1
- **Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC
- **Parallel:** Yes
- **Firmware:** Version 1.0.1 released Sep-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 v5.2.0
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
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SPECspeed®2017_int_base = 8.60
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Results Table

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<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>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>96</td>
<td>378</td>
<td>4.70</td>
<td>378</td>
<td>4.70</td>
<td>378</td>
<td>4.70</td>
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<td>360</td>
<td>4.93</td>
<td>360</td>
<td>4.93</td>
<td>358</td>
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<tr>
<td>605.mcf_s</td>
<td>96</td>
<td>324</td>
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<td>326</td>
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<td>1</td>
<td>305</td>
<td>15.5</td>
<td>305</td>
<td>15.5</td>
<td>304</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>96</td>
<td>344</td>
<td>4.73</td>
<td>338</td>
<td>4.83</td>
<td>346</td>
<td>4.71</td>
<td>96</td>
<td>344</td>
<td>4.73</td>
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<td>4.83</td>
<td>346</td>
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<tr>
<td>625.x264_s</td>
<td>96</td>
<td>146</td>
<td>12.1</td>
<td>148</td>
<td>11.9</td>
<td>148</td>
<td>11.9</td>
<td>1</td>
<td>144</td>
<td>12.3</td>
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<td>12.2</td>
<td>145</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>4.16</td>
<td>96</td>
<td>413</td>
<td>4.13</td>
<td>411</td>
<td>4.15</td>
<td>410</td>
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<tr>
<td>648.exchange2_s</td>
<td>96</td>
<td>181</td>
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<td>16.3</td>
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<td>180</td>
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<tr>
<td>657.xz_s</td>
<td>96</td>
<td>299</td>
<td>20.7</td>
<td>300</td>
<td>20.6</td>
<td>299</td>
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<td>96</td>
<td>300</td>
<td>20.5</td>
<td>299</td>
<td>20.7</td>
<td>299</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)
## SPEC CPU®2017 Integer Speed Result

### Dell Inc.

**PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)**

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<td>Aug-2019</td>
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### Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
GOMP_CPU_AFFINITY = "0-191"  
LD_LIBRARY_PATH = 
"/root/cpu2017-1.0.5/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/64;/root/cpu2017-1.0.5/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 = "192"

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 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 657.xz_s peak run:  
GOMP_CPU_AFFINITY = "0-95"

### 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) 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 5.2.0 is available here:  
https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.tar.bz2
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CPU2017 License: 55  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.

**Platform Notes**

BIOS settings:
- NUMA Nodes Per Socket set to 4
- 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
- Memory Interleaving set to Disabled

Sysinfo program /root/cpu2017-1.0.5/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbl6e646a485a0011
running on linux-g3ob Sat Oct 26 06:33:46 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
- 2 "physical id"s (chips)
- 192 "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 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
- physical 1: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30 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: 43 bits physical, 48 bits virtual
- CPU(s): 192
- On-line CPU(s) list: 0-191
- Thread(s) per core: 2
- Core(s) per socket: 48
- Socket(s): 2
- NUMA node(s): 32

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

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Test Date: Oct-2019
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Platform Notes (Continued)

Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7642 48-Core Processor
Stepping: 0
CPU MHz: 2295.709
BogoMIPS: 4591.41
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-2, 96-98
NUMA node1 CPU(s): 3-5, 99-101
NUMA node2 CPU(s): 6-8, 102-104
NUMA node3 CPU(s): 9-11, 105-107
NUMA node4 CPU(s): 12-14, 108-110
NUMA node5 CPU(s): 15-17, 111-113
NUMA node6 CPU(s): 18-20, 114-116
NUMA node7 CPU(s): 21-23, 117-119
NUMA node8 CPU(s): 24-26, 120-122
NUMA node9 CPU(s): 27-29, 123-125
NUMA node10 CPU(s): 30-32, 126-128
NUMA node11 CPU(s): 33-35, 129-131
NUMA node12 CPU(s): 36-38, 132-134
NUMA node13 CPU(s): 39-41, 135-137
NUMA node14 CPU(s): 42-44, 138-140
NUMA node15 CPU(s): 45-47, 141-143
NUMA node16 CPU(s): 48-50, 144-146
NUMA node17 CPU(s): 51-53, 147-149
NUMA node18 CPU(s): 54-56, 150-152
NUMA node19 CPU(s): 57-59, 153-155
NUMA node20 CPU(s): 60-62, 156-158
NUMA node21 CPU(s): 63-65, 159-161
NUMA node22 CPU(s): 66-68, 162-164
NUMA node23 CPU(s): 69-71, 165-167
NUMA node24 CPU(s): 72-74, 168-170
NUMA node25 CPU(s): 75-77, 171-173
NUMA node26 CPU(s): 78-80, 174-176
NUMA node27 CPU(s): 81-83, 177-179
NUMA node28 CPU(s): 84-86, 180-182
NUMA node29 CPU(s): 87-89, 183-185
NUMA node30 CPU(s): 90-92, 186-188
NUMA node31 CPU(s): 93-95, 189-191
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 rdtsscp lm
constant_tsc rep_good nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni

(Continued on next page)
Platform Notes (Continued)

pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxext perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall fsqsave base bmi1 avx2 smep bmi2 cqm rdt_a rdseed adx smap clflushopt clwb sha ni xsaveopt xsaves xsave cqm_llc cqm_occuppy llc cqm_mbb_total cqm_mbb_local clzero irperf xsaves xsaveopt praat npt lbrv kvm_lock nrip_save tsc_scale vmbc_clean flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgxf umip rdpid overflow_recov succor smca

/proc/cpuinfo cache data
cache size : 512 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 32 nodes (0-31)
node 0 cpus: 0 1 2 96 97 98
node 0 size: 15676 MB
node 0 free: 15615 MB
node 1 cpus: 3 4 5 99 100 101
node 1 size: 16126 MB
node 1 free: 16081 MB
node 2 cpus: 6 7 8 102 103 104
node 2 size: 16126 MB
node 2 free: 16088 MB
node 3 cpus: 9 10 11 105 106 107
node 3 size: 16125 MB
node 3 free: 15948 MB
node 4 cpus: 12 13 14 108 109 110
node 4 size: 16126 MB
node 4 free: 15948 MB
node 5 cpus: 15 16 17 111 112 113
node 5 size: 16126 MB
node 5 free: 16039 MB
node 6 cpus: 18 19 20 114 115 116
node 6 size: 16126 MB
node 6 free: 16084 MB
node 7 cpus: 21 22 23 117 118 119
node 7 size: 16125 MB
node 7 free: 16022 MB
node 8 cpus: 24 25 26 120 121 122
node 8 size: 16126 MB
node 8 free: 16056 MB
node 9 cpus: 27 28 29 123 124 125
node 9 size: 16126 MB
node 9 free: 16084 MB
node 10 cpus: 30 31 32 126 127 128

(Continued on next page)
Dell Inc.

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Platform Notes (Continued)

node 10 size: 16126 MB
node 10 free: 16087 MB
node 11 cpus: 33 34 35 129 130 131
node 11 size: 16125 MB
node 11 free: 16077 MB
node 12 cpus: 36 37 38 132 133 134
node 12 size: 16126 MB
node 12 free: 16087 MB
node 13 cpus: 39 40 41 135 136 137
node 13 size: 16126 MB
node 13 free: 16088 MB
node 14 cpus: 42 43 44 138 139 140
node 14 size: 16126 MB
node 14 free: 16087 MB
node 15 cpus: 45 46 47 141 142 143
node 15 size: 16113 MB
node 15 free: 16074 MB
node 16 cpus: 48 49 50 144 145 146
node 16 size: 16126 MB
node 16 free: 16088 MB
node 17 cpus: 51 52 53 147 148 149
node 17 size: 16126 MB
node 17 free: 16087 MB
node 18 cpus: 54 55 56 150 151 152
node 18 size: 16126 MB
node 18 free: 16087 MB
node 19 cpus: 57 58 59 153 154 155
node 19 size: 16096 MB
node 19 free: 16057 MB
node 20 cpus: 60 61 62 156 157 158
node 20 size: 16126 MB
node 20 free: 16087 MB
node 21 cpus: 63 64 65 159 160 161
node 21 size: 16126 MB
node 21 free: 16088 MB
node 22 cpus: 66 67 68 162 163 164
node 22 size: 16126 MB
node 22 free: 16088 MB
node 23 cpus: 69 70 71 165 166 167
node 23 size: 16125 MB
node 23 free: 16086 MB
node 24 cpus: 72 73 74 168 169 170
node 24 size: 16126 MB
node 24 free: 16085 MB
node 25 cpus: 75 76 77 171 172 173
node 25 size: 16126 MB
node 25 free: 16089 MB

(Continued on next page)
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---

**Platform Notes (Continued)**

```
node 26 cpus: 78 79 80 174 175 176
node 26 size: 16126 MB
node 26 free: 16088 MB
node 27 cpus: 81 82 83 177 178 179
node 27 size: 16125 MB
node 27 free: 16088 MB
node 28 cpus: 84 85 86 180 181 182
node 28 size: 16126 MB
node 28 free: 16087 MB
node 29 cpus: 90 91 92 186 187 188
node 29 size: 16126 MB
node 29 free: 16087 MB
node 30 cpus: 93 94 95 189 190 191
node 30 size: 16124 MB
node 30 free: 16084 MB
node 31 cpus: 96 97 98 192 193 194
node 31 size: 16078 MB
node 31 free: 16080 MB
node distances:
```

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

**Dell Inc.**

**PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)**

**Copyright 2017-2019 Standard Performance Evaluation Corporation**

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## Platform Notes (Continued)

| 13: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 14: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 15: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 16: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 17: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 18: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 19: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 20: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 21: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 22: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 23: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 24: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 25: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 26: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 27: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 28: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 29: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 30: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 31: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |

---

**From /proc/meminfo**

- MemTotal: 527927004 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

- os-release:
  - NAME="SLES"

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

Dell Inc.

PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

SPECspeed®2017_int_base = 8.60

SPECspeed®2017_int_peak = 8.78

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

Platform Notes (Continued)

```
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 retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Oct 24 12:29

```
SPEC is set to: /root/cpu2017-1.0.5/cpu2017-1.1.0
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 440G 32G 409G 8% /
```

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 1.0.1 09/21/2019
Vendor: Dell Inc.
Product: PowerEdge C6525
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:
  4x 802C80B3802C 36ASF4G72FZ-3G2E2 32 GB 2 rank 3200
  4x 802C80B3802C 36ASF4G72FZ-3G2E2 32 GB 2 rank 3200
  8x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
```

(End of data from sysinfo program)
**Dell Inc.**

**PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)**

**SPEC CPU®2017 Integer Speed Result**

**SPECspeed®2017_int_base = 8.60**

**SPECspeed®2017_int_peak = 8.78**

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

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

---

**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++     | 623.xalancbmk_s(base)
------------------------------------------------------------------------------
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
------------------------------------------------------------------------------
```  

```
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: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------
```  

(Continued on next page)
spec

Dell Inc.
PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>8.60</th>
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<tbody>
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</tr>
</tbody>
</table>

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

Compiler Version Notes (Continued)

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++

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
Dell Inc.

PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

**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 -lflang`

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 -lflang`

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,-isr-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 -DUSE_OPENMP`
- `-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

**Base Other Flags**

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

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

(Continued on next page)
Dell Inc.
PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

SPECspeed®2017_int_base = 8.60
SPECspeed®2017_int_peak = 8.78

Base Other Flags (Continued)

Fortran benchmarks:
- 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
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

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

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

600.perlbench_s (continued):
-mlvm -unroll-threshold=50 -fremap-arrays
-mlvm -vector-library=LIBMVEC
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp -mlvm -inline-threshold=1000
-llvm-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang

602.gcc_s: basepeak = yes

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

625.x264_s: Same as 600.perlbench_s

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

C++ benchmarks:

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.
PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

<table>
<thead>
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<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Aug-2019</td>
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</tbody>
</table>

SPECspeed®2017_int_base = 8.60
SPECspeed®2017_int_peak = 8.78

Peak Optimization Flags (Continued)

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m32 -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 -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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc

631.deepsjeng_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 -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
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang

641.leela_s: basepeak = yes

Fortran benchmarks:
648.exchange2_s: basepeak = yes

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

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

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: