# SPEC CPU® 2017 Integer Speed Result

## Dell Inc.

PowerEdge R6525 (AMD EPYC 7542, 2.90 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 8.74</th>
<th>SPECspeed®2017_int_peak = 8.92</th>
</tr>
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<tbody>
<tr>
<td><strong>CPU2017 License:</strong> 55</td>
<td><strong>Test Date:</strong> Jan-2020</td>
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<td><strong>Hardware Availability:</strong> Feb-2020</td>
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<td><strong>Software Availability:</strong> Aug-2019</td>
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</table>

### Hardware

- **CPU Name:** AMD EPYC 7542
- **Max MHz:** 3400
- **Nominal:** 2900
- **Enabled:** 64 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:** 128 MB I+D on chip per chip, 16 MB shared / 4 cores
- **Other:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 3200)
- **Storage:** 1 x 480 GB SAS 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 1.2.2 released Nov-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.

---

### Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>64</td>
<td>4.76</td>
<td>8.92</td>
</tr>
<tr>
<td>gcc_s</td>
<td>64</td>
<td>5.03</td>
<td></td>
</tr>
<tr>
<td>mcf_s</td>
<td>64</td>
<td>4.76</td>
<td></td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>64</td>
<td>4.76</td>
<td></td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>64</td>
<td>9.45</td>
<td></td>
</tr>
<tr>
<td>x264_s</td>
<td>64</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>64</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>leela_s</td>
<td>64</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>exchange2_s</td>
<td>64</td>
<td>21.0</td>
<td></td>
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<tr>
<td>xz_s</td>
<td>64</td>
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</table>
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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>64</td>
<td>370</td>
<td>4.80</td>
<td>375</td>
<td>4.73</td>
<td>373</td>
<td>4.76</td>
<td>1</td>
<td>353</td>
<td>5.03</td>
<td>372</td>
<td>4.77</td>
<td>352</td>
<td>5.04</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>64</td>
<td>422</td>
<td>9.45</td>
<td>428</td>
<td>9.31</td>
<td>420</td>
<td>9.48</td>
<td>64</td>
<td>422</td>
<td>9.45</td>
<td>428</td>
<td>9.31</td>
<td>420</td>
<td>9.48</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>64</td>
<td>328</td>
<td>14.4</td>
<td>331</td>
<td>14.2</td>
<td>326</td>
<td>14.5</td>
<td>1</td>
<td>306</td>
<td>15.5</td>
<td>306</td>
<td>15.4</td>
<td>305</td>
<td>15.5</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>64</td>
<td>350</td>
<td>4.67</td>
<td>342</td>
<td>4.76</td>
<td>341</td>
<td>4.79</td>
<td>64</td>
<td>350</td>
<td>4.67</td>
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<tr>
<td>623.xalancmk_s</td>
<td>64</td>
<td>151</td>
<td>9.36</td>
<td>152</td>
<td>9.33</td>
<td>150</td>
<td>9.43</td>
<td>1</td>
<td>143</td>
<td>9.91</td>
<td>141</td>
<td>10.0</td>
<td>142</td>
<td>9.95</td>
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<tr>
<td>625.x264_s</td>
<td>64</td>
<td>142</td>
<td>12.4</td>
<td>142</td>
<td>12.5</td>
<td>141</td>
<td>12.6</td>
<td>1</td>
<td>140</td>
<td>12.6</td>
<td>140</td>
<td>12.6</td>
<td>140</td>
<td>12.6</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>64</td>
<td>297</td>
<td>4.82</td>
<td>299</td>
<td>4.79</td>
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<td>4.82</td>
<td>1</td>
<td>295</td>
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<td>4.87</td>
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<td>4.86</td>
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<tr>
<td>641.leela_s</td>
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<td>401</td>
<td>4.25</td>
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<td>401</td>
<td>4.26</td>
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<td>401</td>
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<td>401</td>
<td>4.26</td>
<td>401</td>
<td>4.26</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>64</td>
<td>176</td>
<td>16.7</td>
<td>177</td>
<td>16.6</td>
<td>176</td>
<td>16.7</td>
<td>64</td>
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<td>16.7</td>
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<td>16.6</td>
<td>176</td>
<td>16.7</td>
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<tr>
<td>657.xz_s</td>
<td>64</td>
<td>294</td>
<td>21.1</td>
<td>294</td>
<td>21.0</td>
<td>299</td>
<td>20.7</td>
<td>64</td>
<td>294</td>
<td>21.1</td>
<td>294</td>
<td>21.0</td>
<td>299</td>
<td>20.7</td>
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**Results 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)
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**SPECspeed®2017_int_base = 8.74**

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**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:
- `GOMP_CPU_AFFINITY = "0-127"
- `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 = "128"

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"

**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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Test Date: Jan-2020
Hardware Availability: Feb-2020
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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/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbe6e46a485a0011
running on linux-g3ob Wed Jan 15 11:10:26 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 7542 32-Core Processor
- 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: 32
  - siblings: 64
- 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
- physical 1: 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

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): 128
- On-line CPU(s) list: 0-127
- Thread(s) per core: 2
- Core(s) per socket: 32
- Socket(s): 2
- NUMA node(s): 16

(Continued on next page)
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CPU2017 License: 55
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Platform Notes (Continued)

Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7542 32-Core Processor
Stepping: 0
CPU MHz: 2894.560
BogoMIPS: 5789.12
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-3, 64-67
NUMA node1 CPU(s): 4-7, 68-71
NUMA node2 CPU(s): 8-11, 72-75
NUMA node3 CPU(s): 12-15, 76-79
NUMA node4 CPU(s): 16-19, 80-83
NUMA node5 CPU(s): 20-23, 84-87
NUMA node6 CPU(s): 24-27, 88-91
NUMA node7 CPU(s): 28-31, 92-95
NUMA node8 CPU(s): 32-35, 96-99
NUMA node9 CPU(s): 36-39, 100-103
NUMA node10 CPU(s): 40-43, 104-107
NUMA node11 CPU(s): 44-47, 108-111
NUMA node12 CPU(s): 48-51, 112-115
NUMA node13 CPU(s): 52-55, 116-119
NUMA node14 CPU(s): 56-59, 120-123
NUMA node15 CPU(s): 60-63, 124-127
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 xtopology nonstop_tsc cpuid extd_apicid aperfmpref perf mping mavin perf
pmlmulqdq 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
3nowprefetch osww ibs kinit wdt tce topoext perfctr_core perfctr_nb bpext
perfcrt_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall
fsqsbase bmil avx2 mep bmil2 cgm rdt_a rdseed adx smap clflushopt clwb sha ni
xsavenept xsavenc xgetbv1 xsaves cqm_llc cqm_occupa llc cqm_mbb_total cqm_mbb_local
cizer irperf xsaveeprtr arat npt lbrv svm_lock nrip_save tsc_scale vmbc_clean
flushbyasid decodeassists pausefilter pffreshold avic v_vmsave_vmload vgif 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: 16 nodes (0-15)

(Continued on next page)
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Test Date: Jan-2020
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Platform Notes (Continued)

node 0 cpus: 0 1 2 3 64 65 66 67
node 0 size: 31804 MB
node 0 free: 31448 MB
node 1 cpus: 4 5 6 7 68 69 70 71
node 1 size: 32253 MB
node 1 free: 32151 MB
node 2 cpus: 8 9 10 11 72 73 74 75
node 2 size: 32254 MB
node 2 free: 32145 MB
node 3 cpus: 12 13 14 15 76 77 78 79
node 3 size: 32253 MB
node 3 free: 32132 MB
node 4 cpus: 16 17 18 19 80 81 82 83
node 4 size: 32254 MB
node 4 free: 32152 MB
node 5 cpus: 20 21 22 23 84 85 86 87
node 5 size: 32253 MB
node 5 free: 32075 MB
node 6 cpus: 24 25 26 27 88 89 90 91
node 6 size: 32254 MB
node 6 free: 32152 MB
node 7 cpus: 28 29 30 31 92 93 94 95
node 7 size: 32241 MB
node 7 free: 32142 MB
node 8 cpus: 32 33 34 35 96 97 98 99
node 8 size: 32254 MB
node 8 free: 32151 MB
node 9 cpus: 36 37 38 39 100 101 102 103
node 9 size: 32253 MB
node 9 free: 32156 MB
node 10 cpus: 40 41 42 43 104 105 106 107
node 10 size: 32224 MB
node 10 free: 32130 MB
node 11 cpus: 44 45 46 47 108 109 110 111
node 11 size: 32253 MB
node 11 free: 32157 MB
node 12 cpus: 48 49 50 51 112 113 114 115
node 12 size: 32254 MB
node 12 free: 32157 MB
node 13 cpus: 52 53 54 55 116 117 118 119
node 13 size: 32253 MB
node 13 free: 32156 MB
node 14 cpus: 56 57 58 59 120 121 122 123
node 14 size: 32254 MB
node 14 free: 32157 MB
node 15 cpus: 60 61 62 63 124 125 126 127
node 15 size: 32252 MB

(Continued on next page)
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Platform Notes (Continued)

node 15 free: 32157 MB
node distances:
node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
0:  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
1:  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
2:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
3:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
4:  12  12  12  12  10  11  12  12  32  32  32  32  32  32  32  32
5:  12  12  12  12  11  10  12  12  32  32  32  32  32  32  32  32
6:  12  12  12  12  12  10  11  10  32  32  32  32  32  32  32  32
7:  12  12  12  12  12  12  11  10  32  32  32  32  32  32  32  32
8:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
9:  32  32  32  32  32  32  32  32  11  10  12  12  12  12  12  12
10: 32  32  32  32  32  32  32  32  12  10  11  12  12  12  12  12
11: 32  32  32  32  32  32  32  32  12  12  11  10  12  12  12  12
12: 32  32  32  32  32  32  32  32  12  12  12  12  10  11  12  12
13: 32  32  32  32  32  32  32  32  12  12  12  12  11  10  12  12
14: 32  32  32  32  32  32  32  32  12  12  12  12  12  10  11  11
15: 32  32  32  32  32  32  32  32  12  12  12  12  12  11  10  10

From /proc/meminfo
MemTotal:       527946684 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

(Continued on next page)
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Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1):
Mitigation: __user pointer sanitization

CVE-2017-5715 (Spectre variant 2):
Mitigation: Full AMD retropoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Jan 14 11:00

SPEC is set to: /root/cpu2017-1.1.0

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 xfs 440G 34G 407G 8% /

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 1.2.2 11/13/2019
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:
16x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200

(End of data from sysinfo program)

Compiler Version Notes

C
| 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)

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

C++
| 623.xalancbmk_s(peak)

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
 AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: i386-unknown-linux-gnu
Thread model: posix

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

Dell Inc.

PowerEdge R6525 (AMD EPYC 7542, 2.90 GHz)

SPECspeed®2017_int_base = 8.74
SPECspeed®2017_int_peak = 8.92

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

Compiler Version Notes (Continued)

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
  AOCCLLVM.2.0.0.191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
C++  | 623.xalancbmk_s(peak)
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCCLLVM.2.0.0.191) (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
  AOCCLLVM.2.0.0.191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
Fortran | 648.exchange2_s(base, peak)
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
  AOCCLLVM.2.0.0.191) (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
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge R6525 (AMD EPYC 7542, 2.90 GHz)

| SPECspeed®2017_int_base = 8.74 |
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CPU2017 License: 55
Test Sponsor: Dell Inc.
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Hardware Availability: Feb-2020
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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

Base Optimization Flags

C benchmarks:
-flto -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
-march=znver2 -fstruct-layout=3 -mlllvm -unroll-threshold=50
-fremap-arrays -mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -reduce-array-computations=3 -mlllvm -global-vectorize-slp
-mlllvm -vector-library=LIBMVEC -mlllvm -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,-mlllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
-mlllvm -loop-unswitch-threshold=200000 -mlllvm -vector-library=LIBMVEC

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### SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

PowerEdge R6525 (AMD EPYC 7542, 2.90 GHz)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
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**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Jan-2020  
**Hardware Availability:** Feb-2020  
**Software Availability:** Aug-2019

#### Base Optimization Flags (Continued)

C++ benchmarks (continued):
-`-mllvm -unroll-threshold=100 -flv-function-specialization`
-`-mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp`
-`-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvecl -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,-lsr-in-nested-loop`
-`-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops`
-`-Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs`
-`-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive`
-`-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP`
-`-fopenmp=libomp -lomp -lpthread -ldl -lmvecl -lamdlibm -ljemalloc -lflang`

#### 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`
# Dell Inc.

**PowerEdge R6525 (AMD EPYC 7542, 2.90 GHz)**

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---

**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, -mlibvm -Wl, -function-specialize
-Wl, -mlibvm -Wl, -region-vectorize
-Wl, -mlibvm -Wl, -vector-library=LIBMVEC
-Wl, -mlibvm -Wl, -reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -Ofast -march=znver2
-mlibvm -fstruct-layout=5
-mlibvm -vectorize-memory-aggressively
-mlibvm -function-specialize -mlibvm -enable-gvn-hoist
-mlibvm -unroll-threshold=50 -fremap-arrays
-mlibvm -vector-library=LIBMVEC
-mlibvm -reduce-array-computations=3
-mlibvm -global-vectorize-slp -mlibvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-llthread -ldl -ljemalloc -lflang

602.gcc_s: basepeak = yes

605.mcf_s: -flto -Wl, -mlibvm -Wl, -function-specialize
-Wl, -mlibvm -Wl, -region-vectorize
-Wl, -mlibvm -Wl, -vector-library=LIBMVEC
-Wl, -mlibvm -Wl, -reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlibvm -vectorize-memory-aggressively
-mlibvm -function-specialize -mlibvm -enable-gvn-hoist
-mlibvm -unroll-threshold=50 -fremap-arrays
-mlibvm -vector-library=LIBMVEC
-mlibvm -reduce-array-computations=3

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### Peak Optimization Flags (Continued)

605.mcf_s (continued):
-mlvm -global-vectorize-slp -mlllvm -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: basepeak = yes

#### C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m32 -flto -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -llvm-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lljemalloc

631.deepsjeng_s: -flto -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -llvm-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-llmvec -llamdlibm -lljemalloc -lfmflang

641.leela_s: basepeak = yes

#### Fortran benchmarks:

648.exchange2_s: basepeak = yes
SPEC CPU®2017 Integer Speed Result

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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:

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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