## SPEC CPU®2017 Integer Speed Result

**Dell Inc.**

**PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)**

### SPECspeed®2017_int_base = 9.30

### SPECspeed®2017_int_peak = 9.65

<table>
<thead>
<tr>
<th>Software</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 15 SP1</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++/Fortran: Version 2.0.0 of AOCC</td>
</tr>
<tr>
<td>Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware</td>
<td>Version 1.3.0 released Jan-2020</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Power Management</td>
<td>BIOS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>AMD EPYC 7F32</td>
</tr>
<tr>
<td>Max MHz</td>
<td>3900</td>
</tr>
<tr>
<td>Nominal</td>
<td>3700</td>
</tr>
<tr>
<td>Enabled</td>
<td>8 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>512 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>128 MB I+D on chip per chip, 16 MB per core</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
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### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base (9.30)</th>
<th>SPECspeed®2017_int_peak (9.65)</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8</td>
<td>10.5</td>
<td>16.0</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>8</td>
<td>10.5</td>
<td>16.0</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>8</td>
<td>10.7</td>
<td>17.3</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>8</td>
<td>10.7</td>
<td>17.3</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>8</td>
<td>10.7</td>
<td>17.3</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>8</td>
<td>11.5</td>
<td>14.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>8</td>
<td>14.3</td>
<td>17.9</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>8</td>
<td>14.6</td>
<td>18.6</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>8</td>
<td>14.6</td>
<td>18.6</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>8</td>
<td>14.8</td>
<td>19.3</td>
</tr>
</tbody>
</table>

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

PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)

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

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>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8</td>
<td>324</td>
<td>5.48</td>
<td>342</td>
<td>5.19</td>
<td>340</td>
<td>5.22</td>
<td>305</td>
<td>5.82</td>
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<tr>
<td>602.gcc_s</td>
<td>8</td>
<td>379</td>
<td>10.5</td>
<td>392</td>
<td>10.2</td>
<td>381</td>
<td>10.5</td>
<td>379</td>
<td>10.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>8</td>
<td>295</td>
<td>16.0</td>
<td>296</td>
<td>16.0</td>
<td>295</td>
<td>16.0</td>
<td>273</td>
<td>17.3</td>
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<tr>
<td>620.omnetpp_s</td>
<td>8</td>
<td>322</td>
<td>5.06</td>
<td>324</td>
<td>5.03</td>
<td>325</td>
<td>5.02</td>
<td>321</td>
<td>5.08</td>
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<tr>
<td>623.xalanchmk_s</td>
<td>8</td>
<td>133</td>
<td>10.7</td>
<td>133</td>
<td>10.7</td>
<td>132</td>
<td>10.8</td>
<td>123</td>
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<tr>
<td>625.x264_s</td>
<td>8</td>
<td>123</td>
<td>14.3</td>
<td>122</td>
<td>14.4</td>
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<td>631.deepsjeng_s</td>
<td>8</td>
<td>266</td>
<td>5.39</td>
<td>266</td>
<td>5.39</td>
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<td>5.40</td>
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<td>5.52</td>
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<tr>
<td>641.leela_s</td>
<td>8</td>
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<td>350</td>
<td>4.88</td>
<td>347</td>
<td>4.91</td>
<td>348</td>
<td>4.90</td>
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<tr>
<td>648.exchange2_s</td>
<td>8</td>
<td>158</td>
<td>18.6</td>
<td>159</td>
<td>18.5</td>
<td>158</td>
<td>18.6</td>
<td>153</td>
<td>19.3</td>
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<tr>
<td>657.xz_s</td>
<td>8</td>
<td>428</td>
<td>14.4</td>
<td>424</td>
<td>14.6</td>
<td>423</td>
<td>14.6</td>
<td>427</td>
<td>14.5</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 9.30
SPECspeed®2017_int_peak = 9.65

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 R7515 (AMD EPYC 7F32, 3.70 GHz)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_peak</th>
<th>SPECspeed®2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.65</td>
<td>9.30</td>
</tr>
</tbody>
</table>

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**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Jan-2020  
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### Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- GOMP_CPU_AFFINITY = "0-15"
- 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 = "16"

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

Environment variables set by runcpu during the 602.gcc_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 = "0-7"

### General Notes

**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.
SPEC CPU®2017 Integer Speed Result

Dell Inc.

PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)

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

---

### General Notes (Continued)

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 5.1.0 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 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
- Memory Freq set to 3200
- Fan Speed = Maximum

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on linux-g3ob Mon Jan 20 20:25:44 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 7F32 8-Core Processor
- 1 "physical id"s (chips)
- 16 "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 : 8
- siblings : 16
- physical 0: cores 0 4 8 12 16 20 24 28

(Continued on next page)
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Platform Notes (Continued)

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): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 1
NUMA node(s): 8
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7F32 8-Core Processor
Stepping: 0
CPU MHz: 3692.931
BogoMIPS: 7385.86
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0,8
NUMA node1 CPU(s): 1,9
NUMA node2 CPU(s): 2,10
NUMA node3 CPU(s): 3,11
NUMA node4 CPU(s): 4,12
NUMA node5 CPU(s): 5,13
NUMA node6 CPU(s): 6,14
NUMA node7 CPU(s): 7,15
Flags: fpu vmx 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 aperfmperf pni
pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx
f16c rdrand lahf_lm cmp_legacy svm extatic cr8_legacy abm ssse4 misalignsse
3nowprefetch osvw ibr sinit wdt tce topoext perfctr_core perfctr_nb bptxt
perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sel ibrs stibp vmmcall
fsgsbase bml1 avx2 smep bmi2 cmv rdtx_a rdseed adx smap clflushopt clwb sha ni
xsavesopt xsaveopt xgetbv1 xsaves cmq_llc cmq_occup_llc cmq_mbb_total cmq_mbb_local
clzero irperfxsavepr arat npt lbrv svm_lock nrip_save tsc_scale vmbcb_clean
flushbyasid decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgif umip
rdpid overflow_recover succor smca

/proc/cpuinfo cache data
  cache size: 512 KB

(Continued on next page)
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SPECspeed®2017_int_base = 9.30  
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Platform Notes (Continued)

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 8
   node 0 free: 31564 MB
   node 1 cpus: 1 9
   node 1 free: 32205 MB
   node 2 cpus: 2 10
   node 2 free: 32189 MB
   node 3 cpus: 3 11
   node 3 free: 32208 MB
   node 4 cpus: 4 12
   node 4 free: 32255 MB
   node 5 cpus: 5 13
   node 5 free: 32148 MB
   node 6 cpus: 6 14
   node 6 free: 32118 MB
   node 7 cpus: 7 15
   node 7 free: 32242 MB
   node distances:
   node 0 1 2 3 4 5 6 7
   0: 10 11 12 12 12 12 12 12
   1: 11 10 12 12 12 12 12 12
   2: 12 12 10 11 12 12 12 12
   3: 12 12 11 10 12 12 12 12
   4: 12 12 12 12 10 11 12 12
   5: 12 12 12 12 11 10 12 12
   6: 12 12 12 12 12 12 12 12
   7: 12 12 12 12 12 12 11 10

From /proc/meminfo
   MemTotal: 263599604 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"

(Continued on next page)
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<th>Test Date: Jan-2020</th>
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<tbody>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Apr-2020</td>
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</tr>
</tbody>
</table>

**Platform Notes (Continued)**

```plaintext
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 Nov 25 13:13 last=5
```

```
SPEC is set to: /root/cpu2017-1.1.0
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 440G 36G 405G 9% /
```

From /sys/devices/virtual/dmi/id
- BIOS: Dell Inc. 1.3.0 01/14/2020
- Vendor: Dell Inc.
- Product: PowerEdge R7515
- Product Family: PowerEdge
- Serial: SGMPH13

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 80AD80B380AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
  8x Not Specified Not Specified
```

(End of data from sysinfo program)
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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 InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
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C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
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</tr>
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<td>Tested by</td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

** SPECspeed®2017_int_base = 9.30 **

** SPECspeed®2017_int_peak = 9.65 **

### 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 R7515 (AMD EPYC 7F32, 3.70 GHz)

Dell Inc.

SPEC CPU®2017 Integer Speed Result

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
- -freemap-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
- -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
- -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 -fopenmp=libomp
- -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

Base Other Flags

C benchmarks:
- -Wno-return-type

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

Fortran benchmarks:
- -Wno-return-type
# SPEC CPU®2017 Integer Speed Result

## Dell Inc.

**PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)**

| SPECspeed®2017_int_base = 9.30 |
| ---------------------------------
| SPECspeed®2017_int_peak = 9.65 |

### CPU2017 License:
55

### Test Sponsor:
Dell Inc.

### Tested by:
Dell Inc.

### Test Date:
Jan-2020

### Hardware Availability:
Apr-2020

### Software Availability:
Aug-2019

## Peak Compiler Invocation

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

## Peak Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>-DSPEC_LINUX_X64 -DSPEC_LP64</td>
</tr>
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<td>602.gcc_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>-DSPEC_LINUX -D_FILE_OFFSET_BITS=64</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

## Peak Optimization Flags

- **C benchmarks:**

(Continued on next page)
Dell Inc.

PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)

Peak Optimization Flags (Continued)

602.gcc_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 -z muldefs -DSPEC_OPENMP
- fopenmp -fgnu89-inline -fopenmp=libomp -lomp -lpthread
- ld1 -ljemalloc

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 -z muldefs -DSPEC_OPENMP -fopenmp
- lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ld1
- 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
- mllvm -vector-library=LIBMVEC
- mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
- flv-function-specialization -DSPEC_OPENMP -fopenmp

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

Dell Inc.

PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)

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

SPECspeed®2017_int_base = 9.30
SPECspeed®2017_int_peak = 9.65

Test Date: Jan-2020
Hardware Availability: Apr-2020
Software Availability: Aug-2019

Peak Optimization Flags (Continued)

657.xz_s (continued):
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

C++ benchmarks:

620.omnetpp_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unschedule
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

623.xalancbmk_s: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unschedule
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lflang

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: basepeak = yes

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
-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang
SPEC CPU®2017 Integer Speed Result

Dell Inc.
PowerEdge R7515 (AMD EPYC 7F32, 3.70 GHz)

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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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