SPEC CPU®2017 Integer Speed Result

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Dell Inc.

$SPECspeed®2017\_int\_base = 9.92$

PowerEdge R6525 (AMD EPYC 7F52, 3.50 GHz)

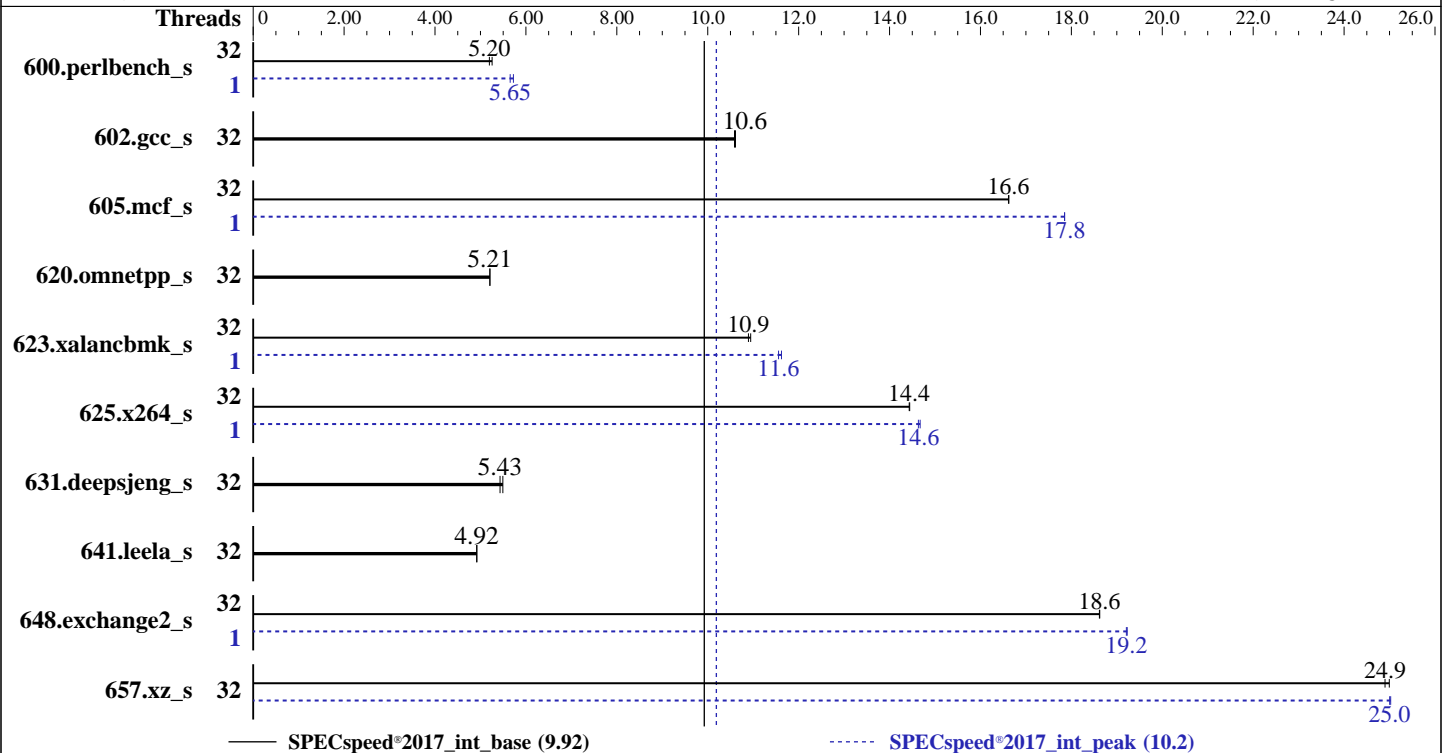$SPECspeed®2017\_int\_peak = 10.2$

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

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

Threads / benchmark results chart:

- 600.perlbench_s — 32: 5.20, 1: 5.65
- 602.gcc_s — 32: 10.6
- 605.mcf_s — 32: 16.6, 1: 17.8
- 620.omnetpp_s — 32: 5.21
- 623.xalancbmk_s — 32: 10.9, 1: 11.6
- 625.x264_s — 32: 14.4, 1: 14.6
- 631.deepsjeng_s — 32: 5.43
- 641.leela_s — 32: 4.92
- 648.exchange2_s — 32: 18.6, 1: 19.2
- 657.xz_s — 32: 24.9, 1: 25.0

—— SPECspeed®2017_int_base (9.92)   ------ SPECspeed®2017_int_peak (10.2)

Hardware

CPU Name: AMD EPYC 7F52
 Max MHz: 3900
 Nominal: 3500
Enabled: 32 cores, 2 chips
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 chip, 16 MB per core
 Other: None
Memory: 512 GB (16 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
 kernel 4.12.14-195-default
Compiler: C/C++/Fortran: Version 2.0.0 of AOCC
Parallel: Yes
Firmware: Version 1.2.9 released Dec-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.

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	32	338	5.26	**342**	**5.20**			1	310	5.72	**314**	**5.65**		
602.gcc_s	32	**376**	**10.6**	375	10.6			32	**376**	**10.6**	375	10.6		
605.mcf_s	32	284	16.6	**284**	**16.6**			1	264	17.9	**264**	**17.8**		
620.omnetpp_s	32	313	5.21	**313**	**5.21**			32	313	5.21	**313**	**5.21**		
623.xalancbmk_s	32	**130**	**10.9**	129	10.9			1	122	11.6	**123**	**11.6**		
625.x264_s	32	122	14.4	**122**	**14.4**			1	120	14.7	**121**	**14.6**		
631.deepsjeng_s	32	**264**	**5.43**	261	5.49			32	**264**	**5.43**	261	5.49		
641.leela_s	32	**347**	**4.92**	347	4.92			32	**347**	**4.92**	347	4.92		
648.exchange2_s	32	**158**	**18.6**	158	18.6			1	**153**	**19.2**	153	19.2		
657.xz_s	32	**248**	**24.9**	247	25.0			32	247	25.0	**247**	**25.0**		
SPECspeed®2017_int_base =		**9.92**												
SPECspeed®2017_int_peak =		**10.2**												

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

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-31"
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 = "32"

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 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-31"
```

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 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
```

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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
 Logical Processor Disabled


Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
running on linux-g3ob Wed Feb  5 04:18:25 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 7F52 16-Core Processor
      2  "physical id"s (chips)
      32 "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 : 16
      siblings  : 16
      physical 0: cores 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60
      physical 1: cores 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60

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):              32
      On-line CPU(s) list: 0-31
      Thread(s) per core:  1
      Core(s) per socket:  16
      Socket(s):           2
      NUMA node(s):        32
      Vendor ID:           AuthenticAMD
      CPU family:          23
```

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Platform Notes (Continued)

```
      Model:                 49
      Model name:            AMD EPYC 7F52 16-Core Processor
      Stepping:              0
      CPU MHz:               3493.382
      BogoMIPS:              6986.76
      Virtualization:        AMD-V
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              512K
      L3 cache:              16384K
      NUMA node0 CPU(s):     0
      NUMA node1 CPU(s):     1
      NUMA node2 CPU(s):     2
      NUMA node3 CPU(s):     3
      NUMA node4 CPU(s):     4
      NUMA node5 CPU(s):     5
      NUMA node6 CPU(s):     6
      NUMA node7 CPU(s):     7
      NUMA node8 CPU(s):     8
      NUMA node9 CPU(s):     9
      NUMA node10 CPU(s):    10
      NUMA node11 CPU(s):    11
      NUMA node12 CPU(s):    12
      NUMA node13 CPU(s):    13
      NUMA node14 CPU(s):    14
      NUMA node15 CPU(s):    15
      NUMA node16 CPU(s):    16
      NUMA node17 CPU(s):    17
      NUMA node18 CPU(s):    18
      NUMA node19 CPU(s):    19
      NUMA node20 CPU(s):    20
      NUMA node21 CPU(s):    21
      NUMA node22 CPU(s):    22
      NUMA node23 CPU(s):    23
      NUMA node24 CPU(s):    24
      NUMA node25 CPU(s):    25
      NUMA node26 CPU(s):    26
      NUMA node27 CPU(s):    27
      NUMA node28 CPU(s):    28
      NUMA node29 CPU(s):    29
      NUMA node30 CPU(s):    30
      NUMA node31 CPU(s):    31
      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 aperfmperf pni
    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
```

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Platform Notes (Continued)

```
    3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext
    perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sev ibrs ibpb stibp vmmcall
    fsgsbase bmi1 avx2 smep bmi2 cqm rdt_a rdseed adx smap clflushopt clwb sha_ni
    xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
    clzero irperf xsaveerptr arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean
    flushbyasid decodeassists pausefilter pfthreshold 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: 32 nodes (0-31)
   node 0 cpus: 0
   node 0 size: 15677 MB
   node 0 free: 15647 MB
   node 1 cpus: 1
   node 1 size: 16127 MB
   node 1 free: 16103 MB
   node 2 cpus: 2
   node 2 size: 16127 MB
   node 2 free: 16113 MB
   node 3 cpus: 3
   node 3 size: 16126 MB
   node 3 free: 16113 MB
   node 4 cpus: 4
   node 4 size: 16127 MB
   node 4 free: 16109 MB
   node 5 cpus: 5
   node 5 size: 16127 MB
   node 5 free: 16114 MB
   node 6 cpus: 6
   node 6 size: 16127 MB
   node 6 free: 16113 MB
   node 7 cpus: 7
   node 7 size: 16126 MB
   node 7 free: 16113 MB
   node 8 cpus: 8
   node 8 size: 16127 MB
   node 8 free: 16114 MB
   node 9 cpus: 9
   node 9 size: 16127 MB
   node 9 free: 16110 MB
   node 10 cpus: 10
   node 10 size: 16127 MB
   node 10 free: 16115 MB
```

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Platform Notes (Continued)

```
node 11 cpus: 11
node 11 size: 16126 MB
node 11 free: 16110 MB
node 12 cpus: 12
node 12 size: 16127 MB
node 12 free: 16000 MB
node 13 cpus: 13
node 13 size: 16127 MB
node 13 free: 16114 MB
node 14 cpus: 14
node 14 size: 16127 MB
node 14 free: 16110 MB
node 15 cpus: 15
node 15 size: 16114 MB
node 15 free: 16101 MB
node 16 cpus: 16
node 16 size: 16127 MB
node 16 free: 16100 MB
node 17 cpus: 17
node 17 size: 16127 MB
node 17 free: 16112 MB
node 18 cpus: 18
node 18 size: 16127 MB
node 18 free: 16113 MB
node 19 cpus: 19
node 19 size: 16126 MB
node 19 free: 16110 MB
node 20 cpus: 20
node 20 size: 16127 MB
node 20 free: 16104 MB
node 21 cpus: 21
node 21 size: 16127 MB
node 21 free: 16097 MB
node 22 cpus: 22
node 22 size: 16127 MB
node 22 free: 16109 MB
node 23 cpus: 23
node 23 size: 16126 MB
node 23 free: 16111 MB
node 24 cpus: 24
node 24 size: 16127 MB
node 24 free: 16115 MB
node 25 cpus: 25
node 25 size: 16127 MB
node 25 free: 16114 MB
node 26 cpus: 26
node 26 size: 16127 MB
```

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Platform Notes (Continued)

```
    node 26 free: 16112 MB
    node 27 cpus: 27
    node 27 size: 16126 MB
    node 27 free: 15987 MB
    node 28 cpus: 28
    node 28 size: 16127 MB
    node 28 free: 16009 MB
    node 29 cpus: 29
    node 29 size: 16127 MB
    node 29 free: 16102 MB
    node 30 cpus: 30
    node 30 size: 16127 MB
    node 30 free: 16113 MB
    node 31 cpus: 31
    node 31 size: 16096 MB
    node 31 free: 16080 MB
    node distances:
    node   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
      0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      1:  11  10  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      2:  11  11  10  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      3:  11  11  11  10  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      4:  12  12  12  12  10  11  11  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      5:  12  12  12  12  11  10  11  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      6:  12  12  12  12  11  11  10  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      7:  12  12  12  12  11  11  11  10  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      8:  12  12  12  12  12  12  12  12  10  11  11  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     11:  12  12  12  12  12  12  12  12  11  11  11  10  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     12:  12  12  12  12  12  12  12  12  12  12  12  12  10  11  11  11  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     13:  12  12  12  12  12  12  12  12  12  12  12  12  11  10  11  11  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
```

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Standard Performance Evaluation Corporation (info@spec.org)

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Platform Notes (Continued)

```
  14:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  10  11  32  32  32  32
      32  32  32  32  32  32  32  32  32  32  32  32
  15:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  11  10  32  32  32  32
      32  32  32  32  32  32  32  32  32  32  32  32
  16:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  11
      12  12  12  12  12  12  12  12  12  12  12  12
  17:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11
      12  12  12  12  12  12  12  12  12  12  12  12
  18:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11
      12  12  12  12  12  12  12  12  12  12  12  12
  19:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10
      12  12  12  12  12  12  12  12  12  12  12  12
  20:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      10  11  11  11  12  12  12  12  12  12  12  12
  21:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      11  10  11  11  12  12  12  12  12  12  12  12
  22:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      11  11  10  11  12  12  12  12  12  12  12  12
  23:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      11  11  11  10  12  12  12  12  12  12  12  12
  24:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  10  11  11  11  12  12  12  12
  25:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  11  10  11  11  12  12  12  12
  26:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  11  11  10  11  12  12  12  12
  27:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  11  11  11  10  12  12  12  12
  28:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  12  12  10  11  11  11
  29:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  12  12  11  10  11  11
  30:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  12  12  11  11  10  11
  31:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
      12  12  12  12  12  12  11  11  11  10

From /proc/meminfo
   MemTotal:       527958508 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP1"
      VERSION_ID="15.1"
```

(Continued on next page)

Dell Inc.

PowerEdge R6525 (AMD EPYC 7F52, 3.50 GHz)

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SPECspeed®2017_int_peak = 10.2

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

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

Platform Notes (Continued)

```
        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: disabled, RSB
                                       filling


run-level 3 Feb 5 04:12

SPEC is set to: /root/cpu2017-1.1.0
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda2       xfs   440G   42G  399G  10% /

From /sys/devices/virtual/dmi/id
    BIOS:     Dell Inc. 1.2.9 12/14/2019
    Vendor:   Dell Inc.
    Product:  PowerEdge R6525
    Product Family: PowerEdge
    Serial:   C3JVPX2


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
      16x 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
--------------------------------------------------------------------------------


================================================================================
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++      | 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
--------------------------------------------------------------------------------


================================================================================
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
```

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SPEC CPU®2017 Integer Speed Result

Dell Inc.

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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
------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_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
------------------------------------------------------------------------
```

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`

SPEC CPU®2017 Integer Speed Result

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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
-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,-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 -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
```

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SPEC CPU®2017 Integer Speed Result

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

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

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Peak Optimization Flags (Continued)

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`
`-lmvec -lamdlibm -fopenmp=libomp -lomp -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`
`-mllvm -vector-library=LIBMVEC`
`-mllvm -reduce-array-computations=3`
`-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000`
`-flv-function-specialization -DSPEC_OPENMP -fopenmp`
`-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm`
`-ljemalloc -lflang`

C++ benchmarks:

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`

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Peak Optimization Flags (Continued)

623.xalancbmk_s (continued):
```
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -ljemalloc
```

631.deepsjeng_s: basepeak = yes

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
```

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

http://www.spec.org/cpu2017/flags/aocc200-flags-C3.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE9.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc200-flags-C3.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE9.xml

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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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