SPEC CPU®2017 Integer Rate Result

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

$SPECrate®2017\_int\_base = 572$
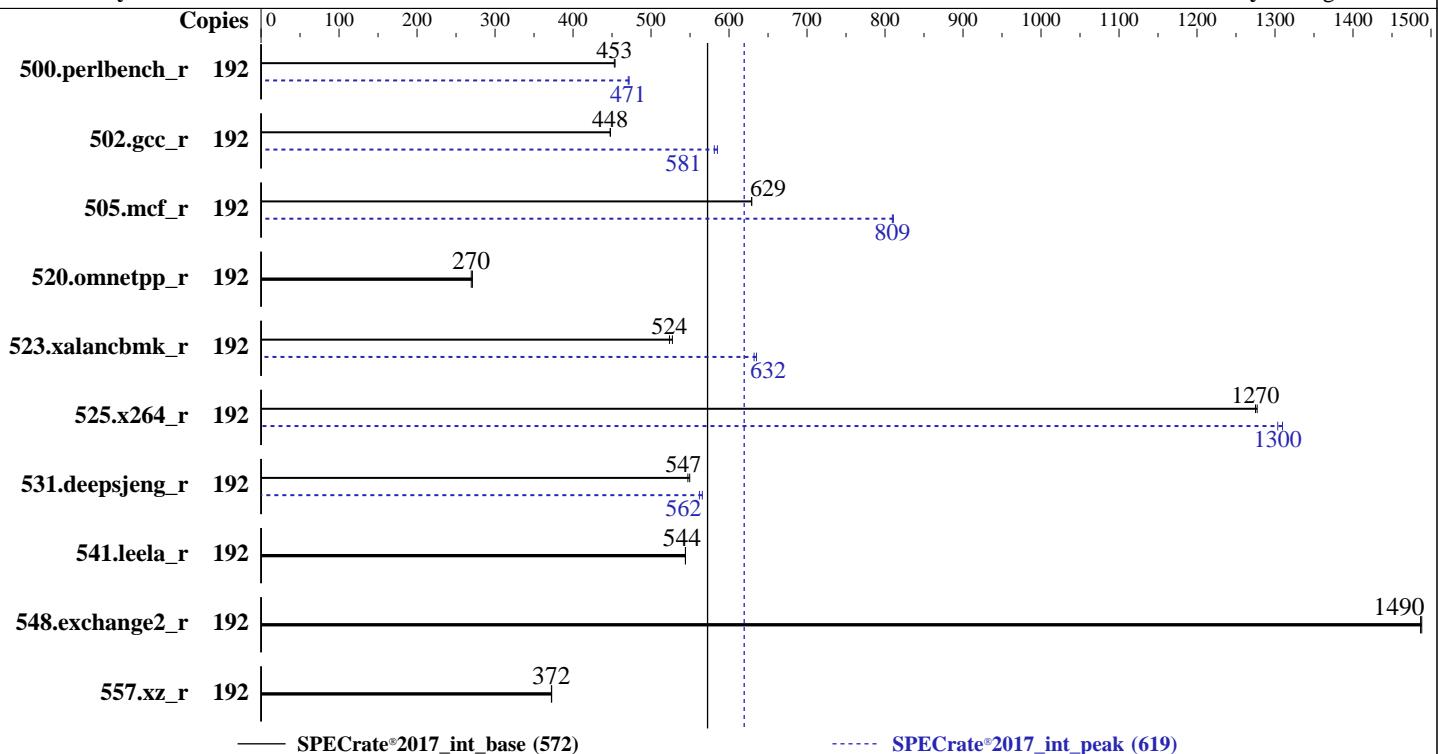
$SPECrate®2017\_int\_peak = 619$

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019

Benchmark	Copies	base	peak
500.perlbench_r	192	453	471
502.gcc_r	192	448	581
505.mcf_r	192	629	809
520.omnetpp_r	192	270	
523.xalancbmk_r	192	524	632
525.x264_r	192	1270	1300
531.deepsjeng_r	192	547	562
541.leela_r	192	544	
548.exchange2_r	192	1490	
557.xz_r	192	372	

SPECrate®2017_int_base (572)   SPECrate®2017_int_peak (619)

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 chip, 16 MB shared / 3 cores

  Other: None

Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)

Storage: 2 x 960 GB SAS 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: No

Firmware: Version 1.2.5 released Nov-2019

File System: xfs

System State: Run level 5 (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.

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	192	**675**	**453**	673	454			192	648	472	**649**	**471**		
502.gcc_r	192	**607**	**448**	607	448			192	**468**	**581**	465	585		
505.mcf_r	192	493	629	**493**	**629**			192	**383**	**809**	383	811		
520.omnetpp_r	192	930	271	**935**	**270**			192	930	271	**935**	**270**		
523.xalancbmk_r	192	384	527	**387**	**524**			192	**321**	**632**	319	635		
525.x264_r	192	**264**	**1270**	263	1280			192	**258**	**1300**	257	1310		
531.deepsjeng_r	192	400	550	**402**	**547**			192	389	566	**391**	**562**		
541.leela_r	192	584	544	**584**	**544**			192	584	544	**584**	**544**		
548.exchange2_r	192	338	1490	**338**	**1490**			192	338	1490	**338**	**1490**		
557.xz_r	192	**557**	**372**	556	373			192	**557**	**372**	556	373		

SPECrate®2017_int_base = 572

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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).

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Operating System Notes (Continued)

Transparent huge pages set to 'always' for this run (OS default)

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/root/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/64;/root/cpu2017-1.1.0/
     amd_rate_aocc200_rome_C_lib/32:"
MALLOC_CONF = "retain:true"
```

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
```

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
```

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Platform Notes (Continued)

```
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on linux-g3ob Tue Nov 19 10:57:48 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
      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
```

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Platform Notes (Continued)

```
      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 rdtscp lm
    constant_tsc rep_good nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni
    pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
    rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
    osvw ibs 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 1 2 96 97 98
```

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Platform Notes (Continued)

```
         node 0 size: 15548 MB
         node 0 free: 15453 MB
         node 1 cpus: 3 4 5 99 100 101
         node 1 size: 16126 MB
         node 1 free: 16065 MB
         node 2 cpus: 6 7 8 102 103 104
         node 2 size: 16126 MB
         node 2 free: 16058 MB
         node 3 cpus: 9 10 11 105 106 107
         node 3 size: 16125 MB
         node 3 free: 16027 MB
         node 4 cpus: 12 13 14 108 109 110
         node 4 size: 16126 MB
         node 4 free: 16070 MB
         node 5 cpus: 15 16 17 111 112 113
         node 5 size: 16097 MB
         node 5 free: 16035 MB
         node 6 cpus: 18 19 20 114 115 116
         node 6 size: 16126 MB
         node 6 free: 16067 MB
         node 7 cpus: 21 22 23 117 118 119
         node 7 size: 16125 MB
         node 7 free: 16061 MB
         node 8 cpus: 24 25 26 120 121 122
         node 8 size: 16126 MB
         node 8 free: 16070 MB
         node 9 cpus: 27 28 29 123 124 125
         node 9 size: 16126 MB
         node 9 free: 16069 MB
         node 10 cpus: 30 31 32 126 127 128
         node 10 size: 16126 MB
         node 10 free: 16053 MB
         node 11 cpus: 33 34 35 129 130 131
         node 11 size: 16125 MB
         node 11 free: 16063 MB
         node 12 cpus: 36 37 38 132 133 134
         node 12 size: 16126 MB
         node 12 free: 16042 MB
         node 13 cpus: 39 40 41 135 136 137
         node 13 size: 16126 MB
         node 13 free: 16072 MB
         node 14 cpus: 42 43 44 138 139 140
         node 14 size: 16126 MB
         node 14 free: 16068 MB
         node 15 cpus: 45 46 47 141 142 143
         node 15 size: 16113 MB
         node 15 free: 16049 MB
```

(Continued on next page)

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Platform Notes (Continued)

```
     node 16 cpus: 48 49 50 144 145 146
     node 16 size: 16126 MB
     node 16 free: 15873 MB
     node 17 cpus: 51 52 53 147 148 149
     node 17 size: 16126 MB
     node 17 free: 16007 MB
     node 18 cpus: 54 55 56 150 151 152
     node 18 size: 16126 MB
     node 18 free: 16009 MB
     node 19 cpus: 57 58 59 153 154 155
     node 19 size: 16125 MB
     node 19 free: 16010 MB
     node 20 cpus: 60 61 62 156 157 158
     node 20 size: 16126 MB
     node 20 free: 15990 MB
     node 21 cpus: 63 64 65 159 160 161
     node 21 size: 16126 MB
     node 21 free: 15801 MB
     node 22 cpus: 66 67 68 162 163 164
     node 22 size: 16126 MB
     node 22 free: 15952 MB
     node 23 cpus: 69 70 71 165 166 167
     node 23 size: 16125 MB
     node 23 free: 16028 MB
     node 24 cpus: 72 73 74 168 169 170
     node 24 size: 16126 MB
     node 24 free: 16040 MB
     node 25 cpus: 75 76 77 171 172 173
     node 25 size: 16126 MB
     node 25 free: 16036 MB
     node 26 cpus: 78 79 80 174 175 176
     node 26 size: 16126 MB
     node 26 free: 16041 MB
     node 27 cpus: 81 82 83 177 178 179
     node 27 size: 16125 MB
     node 27 free: 16031 MB
     node 28 cpus: 84 85 86 180 181 182
     node 28 size: 16126 MB
     node 28 free: 16040 MB
     node 29 cpus: 87 88 89 183 184 185
     node 29 size: 16126 MB
     node 29 free: 16042 MB
     node 30 cpus: 90 91 92 186 187 188
     node 30 size: 16126 MB
     node 30 free: 16043 MB
     node 31 cpus: 93 94 95 189 190 191
     node 31 size: 16124 MB
```

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Platform Notes (Continued)

```
     node 31 free: 16025 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
      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
```

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Platform Notes (Continued)

```
    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  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  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  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  12  12  11  11  11  10


 From /proc/meminfo
    MemTotal:       527796228 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
```

(Continued on next page)

Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

Platform Notes (Continued)

```
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 5 Nov 19 10:55

SPEC is set to: /root/cpu2017-1.1.0
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   440G   35G  405G   8% /

From /sys/devices/virtual/dmi/id
    BIOS:    Dell Inc. 1.2.5 11/14/2019
    Vendor:  Dell Inc.
    Product: PowerEdge R7525
    Product Family: PowerEdge
    Serial:  1234567


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:
     7x 802C80B3802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
     8x 802C869D802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
     1x 80AD80B380AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
     16x Not Specified Not Specified

(End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C      | 502.gcc_r(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      | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
```

Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

Compiler Version Notes (Continued)

```
        | 525.x264_r(base, peak) 557.xz_r(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       | 502.gcc_r(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       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
        | 525.x264_r(base, peak) 557.xz_r(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++     | 523.xalancbmk_r(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++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
        | 531.deepsjeng_r(base, peak) 541.leela_r(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
```

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

Compiler Version Notes (Continued)

```
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
----------------------------------------------------------------------


==============================================================================
C++     | 523.xalancbmk_r(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++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
        | 531.deepsjeng_r(base, peak) 541.leela_r(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
------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(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
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

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

Base Portability Flags

500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

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

Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

Peak Compiler Invocation

C benchmarks:
```
clang
```

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Peak Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LINUX -D_FILE_OFFSET_BITS=64`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `-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 -lmvec -lamdlibm -ljemalloc`
`-lflang`

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

Peak Optimization Flags (Continued)

502.gcc_r: `-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 -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 -fgnu89-inline -ljemalloc`

505.mcf_r: `-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 -lmvec -lamdlibm -ljemalloc`
`-lflang`

525.x264_r: Same as 500.perlbench_r

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: `-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 -ljemalloc`

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Dell Inc.

PowerEdge R7525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_base = 572

SPECrate®2017_int_peak = 619

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

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

Peak Optimization Flags (Continued)

531.deepsjeng_r: `-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 -lmvec -lamdlibm -ljemalloc`
`-lflang`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

Peak Other Flags

C benchmarks:

502.gcc_r: `-L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32`

C++ benchmarks:

523.xalancbmk_r: `-L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc200-flags-B1-speed-Dell.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE7.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc200-flags-B1-speed-Dell.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-revE7.xml

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

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