



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_int_base = 557

PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_peak = 602

CPU2017 License: 55

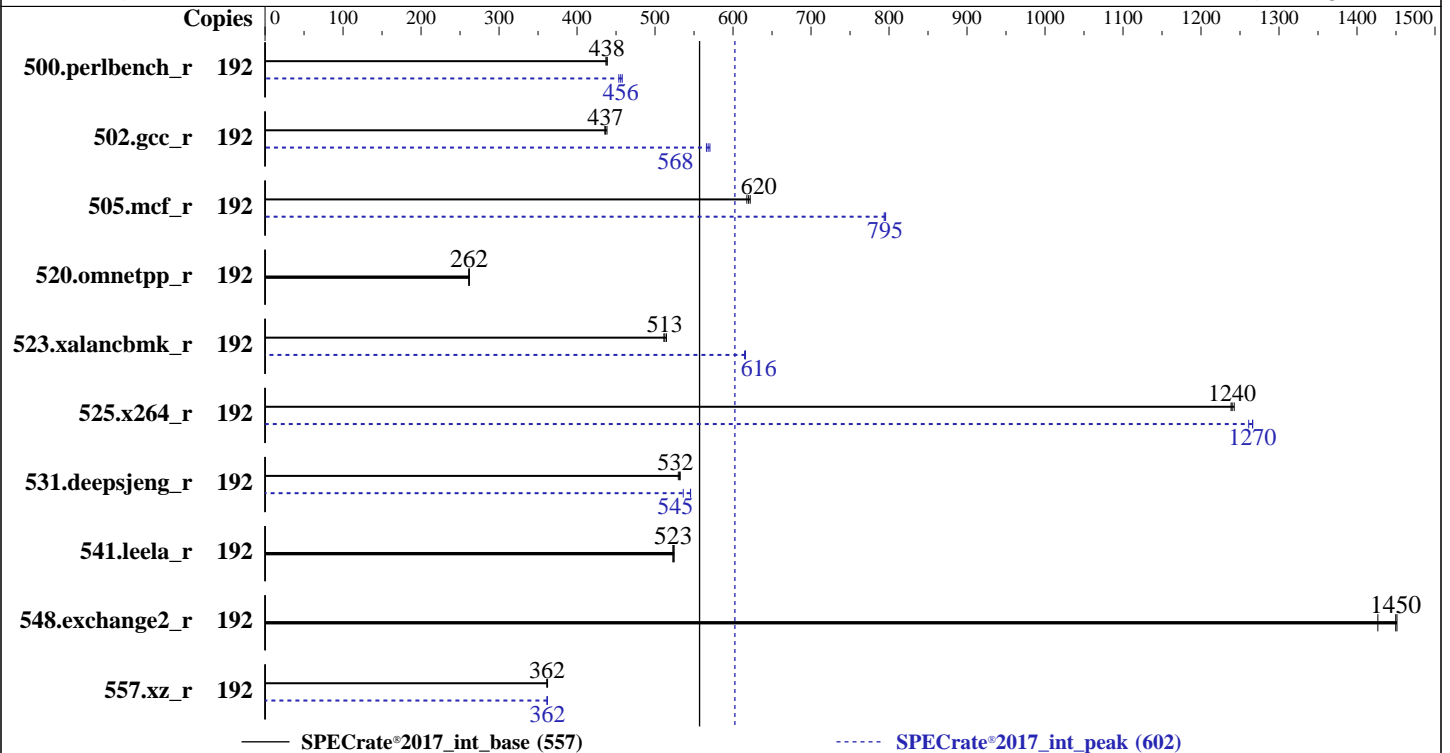
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019



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: 1 x 480 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 1.0.1 released Sep-2019
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other: jemalloc: jemalloc memory allocator library v5.2.0
 Power Management: BIOS set to prefer performance at the cost of additional power usage.



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	192	697	439	699	437	697	438	192	674	454	667	458	670	456
502.gcc_r	192	624	436	620	438	623	437	192	480	566	477	570	479	568
505.mcf_r	192	502	618	499	622	500	620	192	391	794	390	796	390	795
520.omnetpp_r	192	963	262	964	261	962	262	192	963	262	964	261	962	262
523.xalancbmk_r	192	396	513	394	515	396	511	192	329	616	329	616	330	615
525.x264_r	192	271	1240	271	1240	271	1240	192	267	1260	266	1270	265	1270
531.deepsjeng_r	192	414	532	413	532	415	530	192	403	546	410	536	403	545
541.leela_r	192	606	525	608	523	607	523	192	606	525	608	523	607	523
548.exchange2_r	192	347	1450	347	1450	353	1430	192	347	1450	347	1450	353	1430
557.xz_r	192	574	362	572	362	574	361	192	573	362	573	362	574	361

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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/cpu2017-1.0.5/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/64:/root/  
    cpu2017-1.0.5/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/32:"  
MALLOCONF = "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 -fltto
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/cpu2017-1.0.5/cpu2017-1.1.0/bin/sysinfo

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Platform Notes (Continued)

Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on linux-g3ob Thu Oct 24 12:45:47 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 x2apic movbe popcnt aes xsave avx
f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse
3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpevt
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)

```

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Platform Notes (Continued)

```

node 0 cpus: 0 1 2 96 97 98
node 0 size: 15676 MB
node 0 free: 15572 MB
node 1 cpus: 3 4 5 99 100 101
node 1 size: 16126 MB
node 1 free: 16036 MB
node 2 cpus: 6 7 8 102 103 104
node 2 size: 16126 MB
node 2 free: 16030 MB
node 3 cpus: 9 10 11 105 106 107
node 3 size: 16125 MB
node 3 free: 16050 MB
node 4 cpus: 12 13 14 108 109 110
node 4 size: 16126 MB
node 4 free: 16031 MB
node 5 cpus: 15 16 17 111 112 113
node 5 size: 16126 MB
node 5 free: 15998 MB
node 6 cpus: 18 19 20 114 115 116
node 6 size: 16126 MB
node 6 free: 15747 MB
node 7 cpus: 21 22 23 117 118 119
node 7 size: 16125 MB
node 7 free: 16024 MB
node 8 cpus: 24 25 26 120 121 122
node 8 size: 16126 MB
node 8 free: 16061 MB
node 9 cpus: 27 28 29 123 124 125
node 9 size: 16126 MB
node 9 free: 16063 MB
node 10 cpus: 30 31 32 126 127 128
node 10 size: 16126 MB
node 10 free: 16063 MB
node 11 cpus: 33 34 35 129 130 131
node 11 size: 16125 MB
node 11 free: 16055 MB
node 12 cpus: 36 37 38 132 133 134
node 12 size: 16126 MB
node 12 free: 16055 MB
node 13 cpus: 39 40 41 135 136 137
node 13 size: 16126 MB
node 13 free: 16060 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

```

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Platform Notes (Continued)

```

node 15 free: 16053 MB
node 16 cpus: 48 49 50 144 145 146
node 16 size: 16126 MB
node 16 free: 16076 MB
node 17 cpus: 51 52 53 147 148 149
node 17 size: 16126 MB
node 17 free: 16079 MB
node 18 cpus: 54 55 56 150 151 152
node 18 size: 16126 MB
node 18 free: 16081 MB
node 19 cpus: 57 58 59 153 154 155
node 19 size: 16096 MB
node 19 free: 16051 MB
node 20 cpus: 60 61 62 156 157 158
node 20 size: 16126 MB
node 20 free: 16082 MB
node 21 cpus: 63 64 65 159 160 161
node 21 size: 16126 MB
node 21 free: 16079 MB
node 22 cpus: 66 67 68 162 163 164
node 22 size: 16126 MB
node 22 free: 16077 MB
node 23 cpus: 69 70 71 165 166 167
node 23 size: 16125 MB
node 23 free: 16075 MB
node 24 cpus: 72 73 74 168 169 170
node 24 size: 16126 MB
node 24 free: 16032 MB
node 25 cpus: 75 76 77 171 172 173
node 25 size: 16126 MB
node 25 free: 16073 MB
node 26 cpus: 78 79 80 174 175 176
node 26 size: 16126 MB
node 26 free: 16069 MB
node 27 cpus: 81 82 83 177 178 179
node 27 size: 16125 MB
node 27 free: 16071 MB
node 28 cpus: 84 85 86 180 181 182
node 28 size: 16126 MB
node 28 free: 16076 MB
node 29 cpus: 87 88 89 183 184 185
node 29 size: 16126 MB
node 29 free: 16081 MB
node 30 cpus: 90 91 92 186 187 188
node 30 size: 16126 MB
node 30 free: 16075 MB
node 31 cpus: 93 94 95 189 190 191

```

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Platform Notes (Continued)

node 31 size: 16124 MB

node 31 free: 16073 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	0:	10	11	11	11	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	32	32	32	32	32	32	32	32
	1:	11	10	11	11	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	32	32	32	32	32	32	32	32
	2:	11	11	10	11	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	32	32	32	32	32	32	32	32
	3:	11	11	11	10	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	32	32	32	32	32	32	32	32
	4:	12	12	12	12	10	11	11	11	12	12	12	12	12	12	12	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	32	32	32	32
	32	32	32	32	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	12	11	10	11	11	32	32
	32	32	32	32	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	12	11	11	10	11	32	32
	32	32	32	32	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	12	11	11	11	10	32	32
	32	32	32	32	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
	12	12	12	12	12	12	12	12	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	32	11	10
	12	12	12	12	12	12	12	12	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	32	11	11
	12	12	12	12	12	12	12	12	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	32	11	11
	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10
	20:	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	12	12
	10	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

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Platform Notes (Continued)

```

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  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:      527927004 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

```

(Continued on next page)



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PowerEdge C6525 (AMD EPYC 7642, 2.30 GHz)

SPECrate®2017_int_peak = 602

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2019

Hardware Availability: Feb-2020

Software Availability: Aug-2019

Platform Notes (Continued)

CVE-2017-5754 (Meltdown): Not affected
 CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
 CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Oct 24 12:29

SPEC is set to: /root/cpu2017-1.0.5/cpu2017-1.1.0

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda2	xfs	440G	32G	409G	8%	/

From /sys/devices/virtual/dmi/id

```

BIOS: Dell Inc. 1.0.1 09/21/2019
Vendor: Dell Inc.
Product: PowerEdge C6525
Product Family: PowerEdge
  
```

Additional information from dmidecode follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:

```

4x 802C80B3802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
4x 802C869D802C 36ASF4G72PZ-3G2E2 32 GB 2 rank 3200
8x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200
  
```

(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)
      | 525.x264_r(base, peak) 557.xz_r(base, peak)
  
```

(Continued on next page)



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Compiler Version Notes (Continued)

```
-----
AOCCLLVM.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)
-----
```

```
AOCCLLVM.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)
-----
```

```
AOCCLLVM.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)
-----
```

```
AOCCLLVM.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)
-----
```

```
AOCCLLVM.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
-----
```

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Compiler Version Notes (Continued)

InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

C++ | 523.xalanbmk_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.xalanbmk_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



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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
-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 -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
```



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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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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: Same as 505.mcf_r

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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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>

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