SPEC CPU®2017 Integer Speed Result

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Cisco Systems

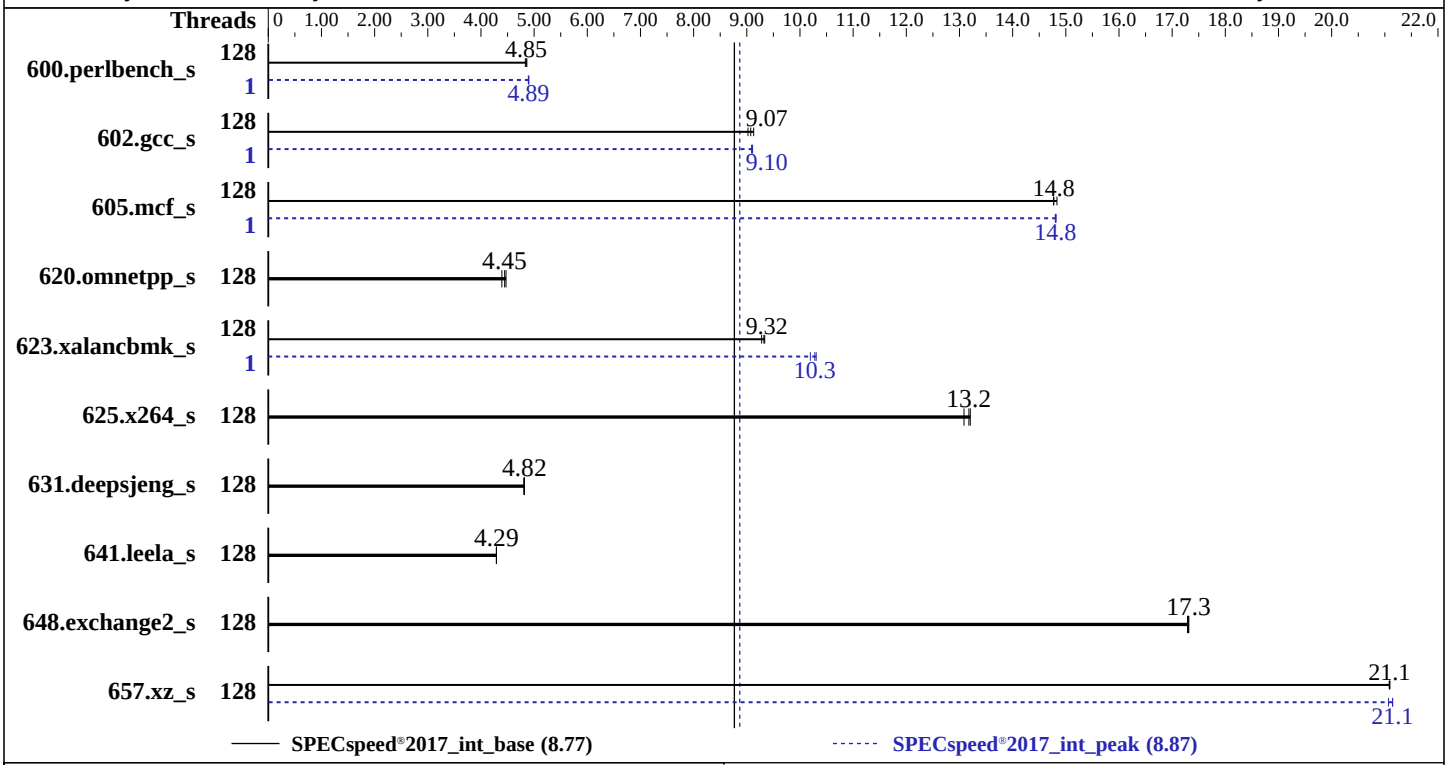
Cisco UCS C225 M6 (AMD EPYC 7662)

SPECspeed®2017_int_base = 8.77

SPECspeed®2017_int_peak = 8.87

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021



Hardware

CPU Name:	AMD EPYC 7662
Max MHz:	3300
Nominal:	2000
Enabled:	128 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 shared / 4 cores
Other:	None
Memory:	2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
Storage:	1 x 960 GB M.2 SSD SATA
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 SP2 (x86_64) kernel version 5.3.18-22-default
Compiler:	C/C++/Fortran: Version 3.2.0 of AOCC
Parallel:	Yes
Firmware:	Version 4.2.2b released May-2022
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit
Other:	jemalloc: jemalloc memory allocator library v5.1.0
Power Management:	BIOS and OS 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	128	365	4.86	367	4.83	**366**	**4.85**	1	362	4.90	**363**	**4.89**	363	4.89
602.gcc_s	128	**439**	**9.07**	436	9.13	441	9.02	1	**438**	**9.10**	438	9.09	437	9.11
605.mcf_s	128	318	14.8	320	14.8	**320**	**14.8**	1	319	14.8	**319**	**14.8**	319	14.8
620.omnetpp_s	128	365	4.47	**367**	**4.45**	371	4.39	128	365	4.47	**367**	**4.45**	371	4.39
623.xalancbmk_s	128	153	9.28	152	9.34	**152**	**9.32**	1	138	10.3	139	10.2	**138**	**10.3**
625.x264_s	128	134	13.2	135	13.1	**134**	**13.2**	128	134	13.2	135	13.1	**134**	**13.2**
631.deepsjeng_s	128	297	4.82	**297**	**4.82**	298	4.81	128	297	4.82	**297**	**4.82**	298	4.81
641.leela_s	128	397	4.29	398	4.29	**398**	**4.29**	128	397	4.29	398	4.29	**398**	**4.29**
648.exchange2_s	128	**170**	**17.3**	170	17.3	170	17.3	128	**170**	**17.3**	170	17.3	170	17.3
657.xz_s	128	293	21.1	293	21.1	**293**	**21.1**	128	293	21.1	292	21.1	**292**	**21.1**

SPECspeed®2017_int_base = **8.77**

SPECspeed®2017_int_peak = **8.87**

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 limit
'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>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,
```

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Operating System Notes (Continued)

```
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-127"
LD_LIBRARY_PATH =
     "/home/cpu2017/amd_speed_aocc320_milanx_A_lib/lib;/home/cpu2017/amd_spee
     d_aocc320_milanx_A_lib/lib32:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "128"

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

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-127"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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.
```

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General Notes (Continued)

```
jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
```

Platform Notes

```
BIOS Configuration
 SMT Mode set to Disabled
 NUMA nodes per socket set to NPS1
 ACPI SRAT L3 Cache As NUMA Domain set to Enabled
 DRAM Scrub Time set to Disabled
 Determinism Slider set to Power
 L1 Stream HW Prefetcher set to Enabled
 APBDIS set to 1

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on localhost Fri Oct  7 08:40:19 2022

 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 7662 64-Core Processor
       2  "physical id"s (chips)
       128 "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 : 64
       siblings  : 64
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
       25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
       53 54 55 56 57 58 59 60 61 62 63
       physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
       25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
       53 54 55 56 57 58 59 60 61 62 63

 From lscpu from util-linux 2.33.1:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      Address sizes:       43 bits physical, 48 bits virtual
      CPU(s):              128
      On-line CPU(s) list: 0-127
```

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Platform Notes (Continued)

```
Thread(s) per core:  1
Core(s) per socket:  64
Socket(s):           2
NUMA node(s):        32
Vendor ID:           AuthenticAMD
CPU family:          23
Model:               49
Model name:          AMD EPYC 7662 64-Core Processor
Stepping:            0
CPU MHz:             1664.615
CPU max MHz:         2000.0000
CPU min MHz:         1500.0000
BogoMIPS:            3992.42
Virtualization:      AMD-V
L1d cache:           32K
L1i cache:           32K
L2 cache:            512K
L3 cache:            16384K
NUMA node0 CPU(s):   0-3
NUMA node1 CPU(s):   4-7
NUMA node2 CPU(s):   8-11
NUMA node3 CPU(s):   12-15
NUMA node4 CPU(s):   16-19
NUMA node5 CPU(s):   20-23
NUMA node6 CPU(s):   24-27
NUMA node7 CPU(s):   28-31
NUMA node8 CPU(s):   32-35
NUMA node9 CPU(s):   36-39
NUMA node10 CPU(s):  40-43
NUMA node11 CPU(s):  44-47
NUMA node12 CPU(s):  48-51
NUMA node13 CPU(s):  52-55
NUMA node14 CPU(s):  56-59
NUMA node15 CPU(s):  60-63
NUMA node16 CPU(s):  64-67
NUMA node17 CPU(s):  68-71
NUMA node18 CPU(s):  72-75
NUMA node19 CPU(s):  76-79
NUMA node20 CPU(s):  80-83
NUMA node21 CPU(s):  84-87
NUMA node22 CPU(s):  88-91
NUMA node23 CPU(s):  92-95
NUMA node24 CPU(s):  96-99
NUMA node25 CPU(s):  100-103
NUMA node26 CPU(s):  104-107
NUMA node27 CPU(s):  108-111
NUMA node28 CPU(s):  112-115
```

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Platform Notes (Continued)

```
      NUMA node29 CPU(s):  116-119
      NUMA node30 CPU(s):  120-123
      NUMA node31 CPU(s):  124-127
      Flags:               fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
      pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
      constant_tsc rep_good nopl 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_llc mwaitx cpb cat_l3
      cdp_l3 hw_pstate sme ssbd mba 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 wbnoinvd
      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 3
  node 0 size: 64325 MB
  node 0 free: 64243 MB
  node 1 cpus: 4 5 6 7
  node 1 size: 64510 MB
  node 1 free: 64389 MB
  node 2 cpus: 8 9 10 11
  node 2 size: 64510 MB
  node 2 free: 64431 MB
  node 3 cpus: 12 13 14 15
  node 3 size: 64510 MB
  node 3 free: 64449 MB
  node 4 cpus: 16 17 18 19
  node 4 size: 64477 MB
  node 4 free: 64376 MB
  node 5 cpus: 20 21 22 23
  node 5 size: 64510 MB
  node 5 free: 64449 MB
  node 6 cpus: 24 25 26 27
  node 6 size: 64510 MB
  node 6 free: 64365 MB
  node 7 cpus: 28 29 30 31
  node 7 size: 64510 MB
  node 7 free: 64457 MB
  node 8 cpus: 32 33 34 35
```

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Platform Notes (Continued)

```
node 8 size: 64510 MB
node 8 free: 64456 MB
node 9 cpus: 36 37 38 39
node 9 size: 64510 MB
node 9 free: 64465 MB
node 10 cpus: 40 41 42 43
node 10 size: 64510 MB
node 10 free: 64463 MB
node 11 cpus: 44 45 46 47
node 11 size: 64510 MB
node 11 free: 64464 MB
node 12 cpus: 48 49 50 51
node 12 size: 64510 MB
node 12 free: 64466 MB
node 13 cpus: 52 53 54 55
node 13 size: 64510 MB
node 13 free: 64465 MB
node 14 cpus: 56 57 58 59
node 14 size: 64510 MB
node 14 free: 64465 MB
node 15 cpus: 60 61 62 63
node 15 size: 52398 MB
node 15 free: 52353 MB
node 16 cpus: 64 65 66 67
node 16 size: 64510 MB
node 16 free: 64462 MB
node 17 cpus: 68 69 70 71
node 17 size: 64510 MB
node 17 free: 64462 MB
node 18 cpus: 72 73 74 75
node 18 size: 64510 MB
node 18 free: 64459 MB
node 19 cpus: 76 77 78 79
node 19 size: 64510 MB
node 19 free: 64465 MB
node 20 cpus: 80 81 82 83
node 20 size: 64510 MB
node 20 free: 64465 MB
node 21 cpus: 84 85 86 87
node 21 size: 64510 MB
node 21 free: 64465 MB
node 22 cpus: 88 89 90 91
node 22 size: 64510 MB
node 22 free: 64466 MB
node 23 cpus: 92 93 94 95
node 23 size: 64510 MB
node 23 free: 64465 MB
```

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Platform Notes (Continued)

```
node 24 cpus: 96 97 98 99
node 24 size: 64510 MB
node 24 free: 64443 MB
node 25 cpus: 100 101 102 103
node 25 size: 64510 MB
node 25 free: 64461 MB
node 26 cpus: 104 105 106 107
node 26 size: 64510 MB
node 26 free: 64362 MB
node 27 cpus: 108 109 110 111
node 27 size: 64510 MB
node 27 free: 64457 MB
node 28 cpus: 112 113 114 115
node 28 size: 64510 MB
node 28 free: 64460 MB
node 29 cpus: 116 117 118 119
node 29 size: 64510 MB
node 29 free: 64412 MB
node 30 cpus: 120 121 122 123
node 30 size: 64510 MB
node 30 free: 64464 MB
node 31 cpus: 124 125 126 127
node 31 size: 64505 MB
node 31 free: 64458 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  11  11  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  1:  11  10  11  11  11  11  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  2:  11  11  10  11  11  11  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  3:  11  11  11  10  11  11  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  4:  11  11  11  11  10  11  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  5:  11  11  11  11  11  10  11  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  6:  11  11  11  11  11  11  10  11  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  7:  11  11  11  11  11  11  11  10  11  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  8:  11  11  11  11  11  11  11  11  10  11  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
  9:  11  11  11  11  11  11  11  11  11  10  11  11  11  11  11  11  32  32  32  32
  32  32  32  32  32  32  32  32  32  32  32  32
```


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Platform Notes (Continued)

```
    10:  11  11  11  11  11  11  11  11  11  11  10  11  11  11  11  11  32  32  32  32
    32  32  32  32  32  32  32  32  32  32  32  32
    11:  11  11  11  11  11  11  11  11  11  11  11  10  11  11  11  11  32  32  32  32
    32  32  32  32  32  32  32  32  32  32  32  32
    12:  11  11  11  11  11  11  11  11  11  11  11  11  10  11  11  11  32  32  32  32
    32  32  32  32  32  32  32  32  32  32  32  32
    13:  11  11  11  11  11  11  11  11  11  11  11  11  11  10  11  11  32  32  32  32
    32  32  32  32  32  32  32  32  32  32  32  32
    14:  11  11  11  11  11  11  11  11  11  11  11  11  11  11  10  11  32  32  32  32
    32  32  32  32  32  32  32  32  32  32  32  32
    15:  11  11  11  11  11  11  11  11  11  11  11  11  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
    11  11  11  11  11  11  11  11  11  11  11  11
    17:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11
    11  11  11  11  11  11  11  11  11  11  11  11
    18:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11
    11  11  11  11  11  11  11  11  11  11  11  11
    19:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10
    11  11  11  11  11  11  11  11  11  11  11  11
    20:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    10  11  11  11  11  11  11  11  11  11  11  11
    21:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  10  11  11  11  11  11  11  11  11  11  11
    22:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  10  11  11  11  11  11  11  11  11  11
    23:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  10  11  11  11  11  11  11  11  11
    24:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  10  11  11  11  11  11  11  11
    25:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  10  11  11  11  11  11  11
    26:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  10  11  11  11  11  11
    27:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  11  10  11  11  11  11
    28:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  11  11  10  11  11  11
    29:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  11  11  11  10  11  11
    30:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  11  11  11  11  10  11
    31:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  11
    11  11  11  11  11  11  11  11  11  11  11  10

 From /proc/meminfo
    MemTotal:       2101254440 kB
```

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Platform Notes (Continued)

```
   HugePages_Total:       0
   Hugepagesize:       2048 kB

 /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
   performance

 From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP2"
      VERSION_ID="15.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15:sp2"

 uname -a:
   Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
   x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2018-12207 (iTLB Multihit):                          Not affected
 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: usercopy/swapgs
                                                          barriers and __user pointer
                                                          sanitization
 CVE-2017-5715 (Spectre variant 2):                       Mitigation: Full AMD retpoline,
                                                        IBPB: conditional, IBRS_FW, STIBP:
                                                          disabled, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):                 Not affected

 run-level 3 Apr 17 06:12

 SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   223G   11G  213G   5% /

 From /sys/devices/virtual/dmi/id
    Vendor:         Cisco Systems Inc
```

(Continued on next page)

Platform Notes (Continued)

```
     Product:        UCSC-C225-M6S
     Serial:         WZP252408JE

 Additional information from dmidecode 3.2 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 0xCE00 M386AAG40AM3-CWE 128 GB 4 rank 3200
     16x Unknown Unknown

 BIOS:
    BIOS Vendor:       Cisco Systems, Inc.
    BIOS Version:      C225M6.4.2.2b.0.0509222122
    BIOS Date:         05/09/2022
    BIOS Revision:     5.14

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base,
        | peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------

==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)
        | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------

==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
```

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Compiler Version Notes (Continued)

```
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/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

Base Optimization Flags

C benchmarks:
-m64 -Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization

(Continued on next page)

Base Optimization Flags (Continued)

C benchmarks (continued):
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

C++ benchmarks:
-m64 -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100
-finline-aggressive -flv-function-specialization
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp=true
-mllvm -convert-pow-exp-to-int=false -z muldefs
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:
-m64 -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Base Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

C++ benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -m64 -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=5 -mllvm -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

602.gcc_s: Same as 600.perlbench_s

605.mcf_s: Same as 600.perlbench_s

625.x264_s: basepeak = yes

657.xz_s: -m64 -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize

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Peak Optimization Flags (Continued)

657.xz_s (continued):
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=5 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays
-mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
-mllvm -do-block-reorder=aggressive -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m64 -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-flv-function-specialization -mllvm -enable-licm-vrp
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

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Peak Other Flags (Continued)

C++ benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

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/aocc320-flags-A1.html
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-v2-revD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc320-flags-A1.xml
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-v2-revD.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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