SPEC CPU®2017 Integer Speed Result

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Cisco Systems

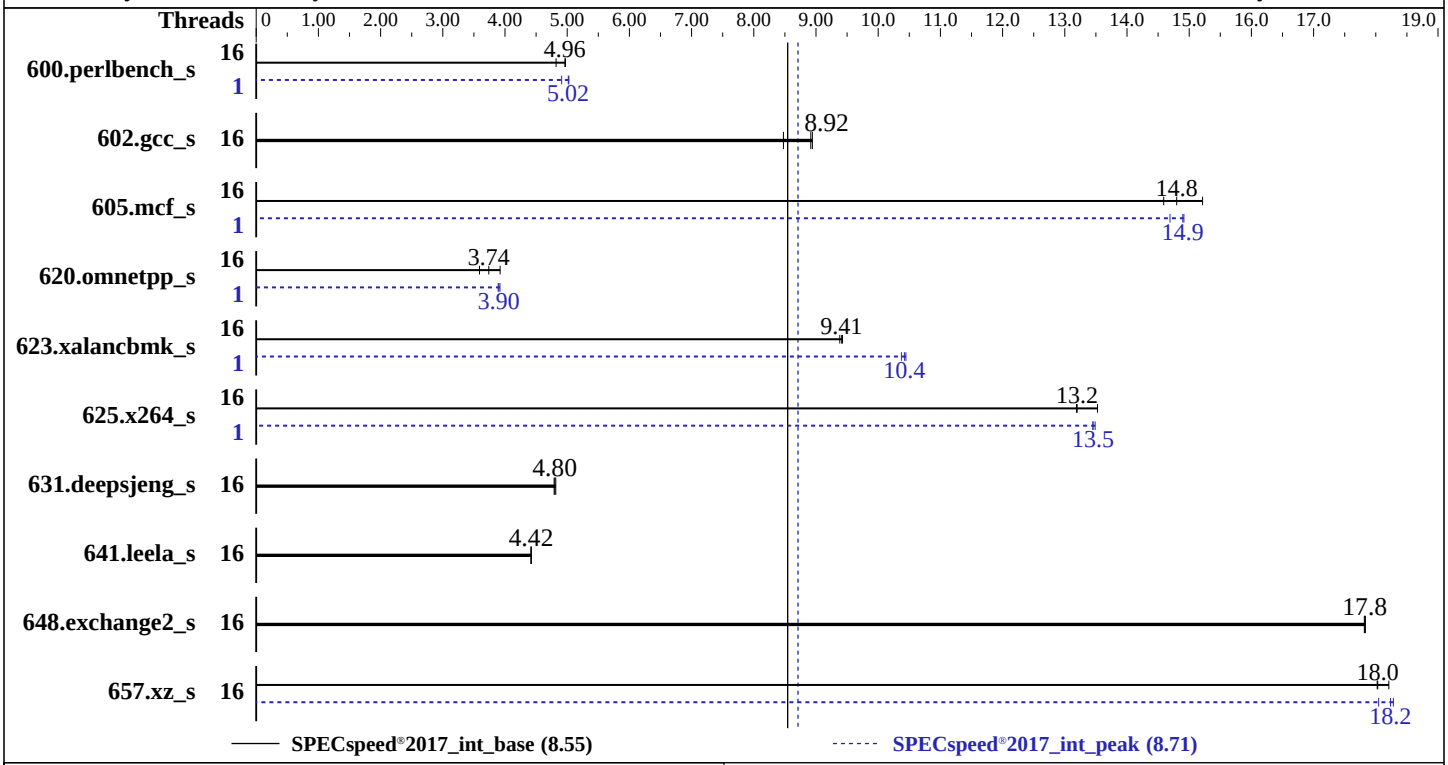
Cisco UCS C225 M6 (AMD EPYC 7262 8-core) Processor)

SPECspeed®2017_int_base = 8.55

SPECspeed®2017_int_peak = 8.71

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

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



Hardware

CPU Name:	AMD EPYC 7262
Max MHz:	3400
Nominal:	3200
Enabled:	16 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:	128 MB I+D on chip per chip, 16 MB per core
Other:	None
Memory:	2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L, running at 1600)
Storage:	1 x 960 GB M.2 SSD SATA
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 SP2 (x86_64) 5.3.18-22-default
Compiler:	C/C++/Fortran: Version 3.2.0 of AOCC
Parallel:	Yes
Firmware:	Version 4.2.1 released Feb-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	16	368	4.82	357	4.97	**358**	**4.96**	1	353	5.03	**354**	**5.02**	361	4.91
602.gcc_s	16	**447**	**8.92**	445	8.94	470	8.48	16	**447**	**8.92**	445	8.94	470	8.48
605.mcf_s	16	**319**	**14.8**	310	15.2	324	14.6	1	321	14.7	317	14.9	**317**	**14.9**
620.omnetpp_s	16	454	3.59	**436**	**3.74**	416	3.92	1	**418**	**3.90**	419	3.89	416	3.92
623.xalancbmk_s	16	**151**	**9.41**	151	9.38	150	9.43	1	137	10.4	**136**	**10.4**	136	10.4
625.x264_s	16	**134**	**13.2**	130	13.5	134	13.2	1	**131**	**13.5**	131	13.5	131	13.5
631.deepsjeng_s	16	298	4.82	299	4.79	**298**	**4.80**	16	298	4.82	299	4.79	**298**	**4.80**
641.leela_s	16	386	4.42	**386**	**4.42**	386	4.42	16	386	4.42	**386**	**4.42**	386	4.42
648.exchange2_s	16	165	17.8	165	17.8	**165**	**17.8**	16	165	17.8	165	17.8	**165**	**17.8**
657.xz_s	16	**343**	**18.0**	343	18.0	339	18.2	16	343	18.0	**339**	**18.2**	338	18.3

SPECspeed®2017_int_base = 8.55

SPECspeed®2017_int_peak = 8.71

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,
```

(Continued on next page)

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 = "0-15"
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 = "16"

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 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

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

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-15"
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.
```

(Continued on next page)

General Notes (Continued)

```
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 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 Tue Jun 28 04:13:19 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 7262 8-Core Processor
       2  "physical id"s (chips)
       16 "processors"
    cores, siblings (Caution: counting these is hw and system dependent. The following
    excerpts from /proc/cpuinfo might not be reliable.  Use with caution.)
       cpu cores : 8
       siblings  : 8
       physical 0: cores 0 4 8 12 16 20 24 28
       physical 1: cores 0 4 8 12 16 20 24 28

 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):              16
      On-line CPU(s) list: 0-15
      Thread(s) per core:  1
```

(Continued on next page)

Platform Notes (Continued)

```
      Core(s) per socket:  8
      Socket(s):           2
      NUMA node(s):        16
      Vendor ID:           AuthenticAMD
      CPU family:          23
      Model:               49
      Model name:          AMD EPYC 7262 8-Core Processor
      Stepping:            0
      CPU MHz:             1971.571
      CPU max MHz:         3200.0000
      CPU min MHz:         1500.0000
      BogoMIPS:            6388.18
      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
      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
```

(Continued on next page)

Platform Notes (Continued)

```
    cache size : 512 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 16 nodes (0-15)
   node 0 cpus: 0
   node 0 size: 128840 MB
   node 0 free: 128762 MB
   node 1 cpus: 1
   node 1 size: 129023 MB
   node 1 free: 128970 MB
   node 2 cpus: 2
   node 2 size: 129023 MB
   node 2 free: 128839 MB
   node 3 cpus: 3
   node 3 size: 128987 MB
   node 3 free: 128852 MB
   node 4 cpus: 4
   node 4 size: 129023 MB
   node 4 free: 128981 MB
   node 5 cpus: 5
   node 5 size: 129023 MB
   node 5 free: 128971 MB
   node 6 cpus: 6
   node 6 size: 129023 MB
   node 6 free: 128969 MB
   node 7 cpus: 7
   node 7 size: 129009 MB
   node 7 free: 128947 MB
   node 8 cpus: 8
   node 8 size: 129023 MB
   node 8 free: 128969 MB
   node 9 cpus: 9
   node 9 size: 129023 MB
   node 9 free: 128966 MB
   node 10 cpus: 10
   node 10 size: 129023 MB
   node 10 free: 128984 MB
   node 11 cpus: 11
   node 11 size: 129021 MB
   node 11 free: 128967 MB
   node 12 cpus: 12
   node 12 size: 129023 MB
   node 12 free: 128985 MB
   node 13 cpus: 13
   node 13 size: 129023 MB
   node 13 free: 128972 MB
```

(Continued on next page)

Platform Notes (Continued)

```
   node 14 cpus: 14
   node 14 size: 129023 MB
   node 14 free: 128977 MB
   node 15 cpus: 15
   node 15 size: 129022 MB
   node 15 free: 128967 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  11  11  11  12  12  12  12  32  32  32  32  32  32  32  32
     1:  11  10  11  11  12  12  12  12  32  32  32  32  32  32  32  32
     2:  11  11  10  11  12  12  12  12  32  32  32  32  32  32  32  32
     3:  11  11  11  10  12  12  12  12  32  32  32  32  32  32  32  32
     4:  12  12  12  12  10  11  11  11  32  32  32  32  32  32  32  32
     5:  12  12  12  12  11  10  11  11  32  32  32  32  32  32  32  32
     6:  12  12  12  12  11  11  10  11  32  32  32  32  32  32  32  32
     7:  12  12  12  12  11  11  11  10  32  32  32  32  32  32  32  32
     8:  32  32  32  32  32  32  32  32  10  11  11  11  12  12  12  12
     9:  32  32  32  32  32  32  32  32  11  10  11  11  12  12  12  12
    10:  32  32  32  32  32  32  32  32  11  11  10  11  12  12  12  12
    11:  32  32  32  32  32  32  32  32  11  11  11  10  12  12  12  12
    12:  32  32  32  32  32  32  32  32  12  12  12  12  10  11  11  11
    13:  32  32  32  32  32  32  32  32  12  12  12  12  11  10  11  11
    14:  32  32  32  32  32  32  32  32  12  12  12  12  11  11  10  11
    15:  32  32  32  32  32  32  32  32  12  12  12  12  11  11  11  10

  From /proc/meminfo
     MemTotal:       2113676568 kB
     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
```

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Platform Notes (Continued)

```
 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  9.6G  214G   5% /

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

 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, configured at 1600
     16x Unknown Unknown

 BIOS:
    BIOS Vendor:       Cisco Systems, Inc.
    BIOS Version:      C225M6.4.2.1.30.0221222139
    BIOS Date:         02/21/2022
    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)
------------------------------------------------------------------------------
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
-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
```

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Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-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:

(Continued on next page)

Peak Optimization Flags (Continued)

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: `basepeak = yes`

605.mcf_s: `Same as 600.perlbench_s`

625.x264_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 -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`

657.xz_s: `Same as 625.x264_s`

C++ benchmarks:

620.omnetpp_s: `-m64 -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 -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`

(Continued on next page)

Peak Optimization Flags (Continued)

620.omnetpp_s (continued):
-mllvm -global-vectorize-slp=true
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang

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

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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