SPEC® CPU2017 Integer Rate Result

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Dell Inc.

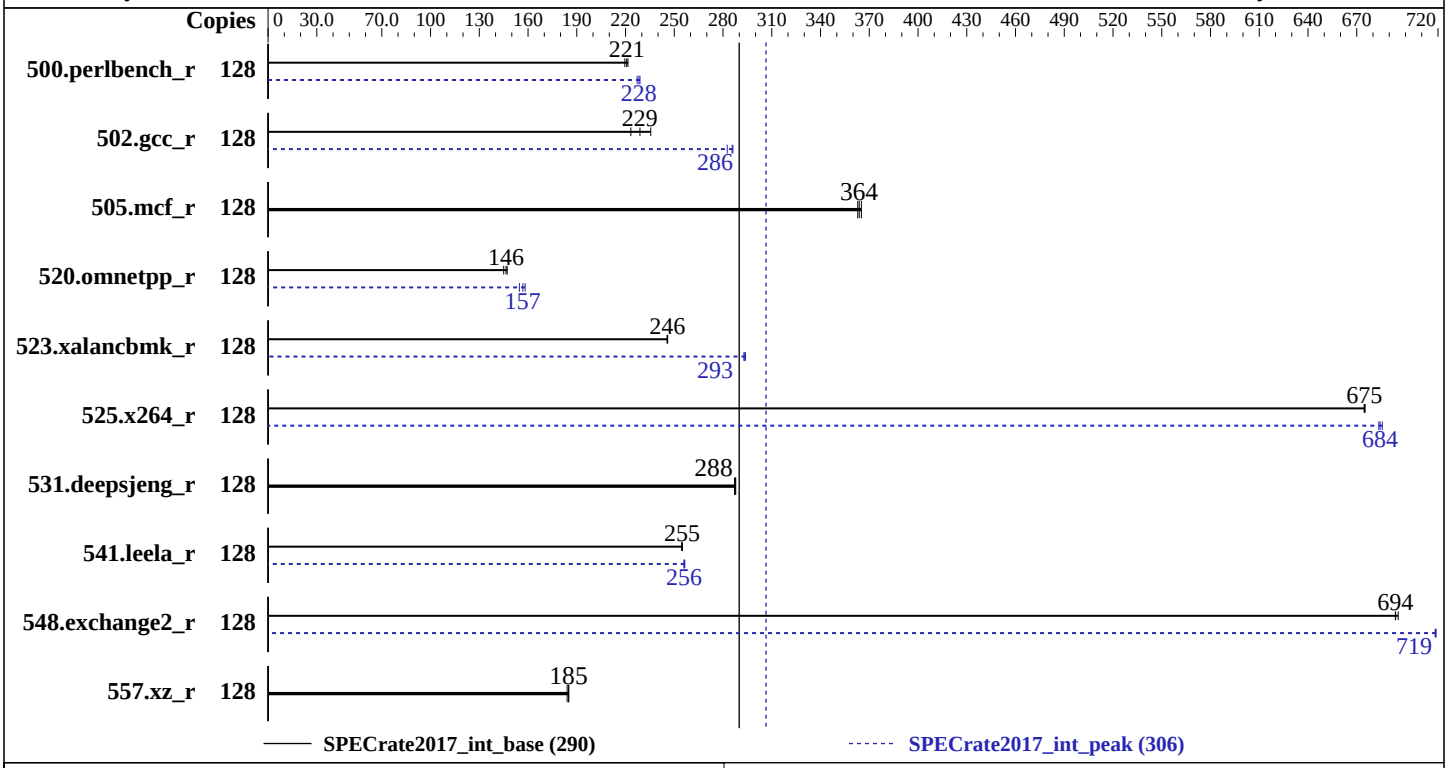
PowerEdge R7425 (AMD EPYC 7551, 2.00GHz)

SPECrate2017_int_base = 290

SPECrate2017_int_peak = 306

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

Test Date: Mar-2019
Hardware Availability: Jan-2019
Software Availability: Feb-2019



Hardware

CPU Name:	AMD EPYC 7551
Max MHz.:	3000
Nominal:	2000
Enabled:	64 cores, 2 chips, 2 threads/core
Orderable:	1,2 chips
Cache L1:	64 KB I + 32 KB D on chip per core
L2:	512 KB I+D on chip per core
L3:	64 MB I+D on chip per chip, 8 MB shared / 4 cores
Other:	None
Memory:	1 TB (16 x 64 GB 4Rx4 PC4-2666V-L)
Storage:	1 x 120 GB SATA SSD
Other:	None

Software

OS:	Ubuntu 18.04.2 LTS kernel 4.15.0-45-generic 4.15.0-45-generic
Compiler:	C/C++: Version 1.3.0 of AOCC Fortran: Version 4.8.2 of GCC
Parallel:	No
Firmware:	Version 1.7.6 released Jan-2019
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other:	jemalloc: jemalloc memory allocator library V5.1.0

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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	128	928	220	920	222	**923**	**221**	128	890	229	**893**	**228**	897	227
502.gcc_r	128	770	236	**792**	**229**	812	223	128	634	286	641	283	**635**	**286**
505.mcf_r	128	570	363	566	365	**569**	**364**	128	570	363	566	365	**569**	**364**
520.omnetpp_r	128	**1147**	**146**	1158	145	1141	147	128	1061	158	**1071**	**157**	1086	155
523.xalancbmk_r	128	**550**	**246**	550	246	550	246	128	462	293	460	294	**461**	**293**
525.x264_r	128	332	675	332	675	**332**	**675**	128	327	686	**327**	**684**	328	684
531.deepsjeng_r	128	510	288	511	287	**510**	**288**	128	510	288	511	287	**510**	**288**
541.leela_r	128	**832**	**255**	833	255	831	255	128	826	256	**828**	**256**	828	256
548.exchange2_r	128	**483**	**694**	482	695	483	694	128	**467**	**719**	467	719	467	718
557.xz_r	128	751	184	747	185	**747**	**185**	128	751	184	747	185	**747**	**185**

SPECrate2017_int_base = 290

SPECrate2017_int_peak = 306

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/

The AOCC Gold Linker plugin was installed and used for the link stage.

The AOCC Fortran Plugin version 1.3.0 was used to leverage AOCC optimizers
with gfortran. It is available here:
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

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <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
```

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Operating System Notes (Continued)

```
sync then drop_caches=3 to reset caches before invoking runcpu

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were
all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages were enabled for this run (OS default)
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5/amd1812na_rate_revA_lib/64;/home/cpu2017-1.0.5/amd1812na_rate_revA_lib/32:"

Binaries were compiled on a system with 2 x AMD EPYC 7601 CPU + 512GB Memory using RHEL 7.6

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 v4.8.5
in RHEL v7.2 under default conditions.
jemalloc: sources available from jemalloc.net or
https://github.com/jemalloc/jemalloc/releases
jemalloc uses environment variable MALLOC_CONF
with values narenas and lg_chunk:
narenas: sets the maximum number of arenas to use
for automatic multiplexing
of threads and arenas.
lg_chunk: set the virtual memory chunk size (log
base 2). For example,
lg_chunk:21 sets the default chunk size to 2^21 =
2MiB
```

Platform Notes

```
BIOS settings:
 Determinism Slider set to Power Determinism
 Sysinfo program /home/cpu2017-1.0.5/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on r7425 Mon Mar  4 16:44:56 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
```

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : AMD EPYC 7551 32-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 : 32
      siblings  : 64
      physical 0: cores 0 1 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
      29 30 31
      physical 1: cores 0 1 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
      29 30 31

From lscpu:
     Architecture:        x86_64
     CPU op-mode(s):      32-bit, 64-bit
     Byte Order:          Little Endian
     CPU(s):              128
     On-line CPU(s) list: 0-127
     Thread(s) per core:  2
     Core(s) per socket:  32
     Socket(s):           2
     NUMA node(s):        8
     Vendor ID:           AuthenticAMD
     CPU family:          23
     Model:               1
     Model name:          AMD EPYC 7551 32-Core Processor
     Stepping:            2
     CPU MHz:             2192.699
     BogoMIPS:            3992.30
     Virtualization:      AMD-V
     L1d cache:           32K
     L1i cache:           64K
     L2 cache:            512K
     L3 cache:            8192K
     NUMA node0 CPU(s):   0,8,16,24,32,40,48,56,64,72,80,88,96,104,112,120
     NUMA node1 CPU(s):   2,10,18,26,34,42,50,58,66,74,82,90,98,106,114,122
     NUMA node2 CPU(s):   4,12,20,28,36,44,52,60,68,76,84,92,100,108,116,124
     NUMA node3 CPU(s):   6,14,22,30,38,46,54,62,70,78,86,94,102,110,118,126
     NUMA node4 CPU(s):   1,9,17,25,33,41,49,57,65,73,81,89,97,105,113,121
     NUMA node5 CPU(s):   3,11,19,27,35,43,51,59,67,75,83,91,99,107,115,123
     NUMA node6 CPU(s):   5,13,21,29,37,45,53,61,69,77,85,93,101,109,117,125
     NUMA node7 CPU(s):   7,15,23,31,39,47,55,63,71,79,87,95,103,111,119,127
     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 amd_dcm aperfmperf pni
```

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Platform Notes (Continued)

```
      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 skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb
      hw_pstate sme ssbd ibpb vmmcall fsgsbase bmi1 avx2 smep bmi2 rdseed adx smap
      clflushopt sha_ni xsaveopt xsavec xgetbv1 xsaves clzero irperf xsaveerptr arat npt
      lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
      pfthreshold avic v_vmsave_vmload vgif 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: 8 nodes (0-7)
   node 0 cpus: 0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120
   node 0 size: 128638 MB
   node 0 free: 128466 MB
   node 1 cpus: 2 10 18 26 34 42 50 58 66 74 82 90 98 106 114 122
   node 1 size: 129020 MB
   node 1 free: 128847 MB
   node 2 cpus: 4 12 20 28 36 44 52 60 68 76 84 92 100 108 116 124
   node 2 size: 129020 MB
   node 2 free: 128866 MB
   node 3 cpus: 6 14 22 30 38 46 54 62 70 78 86 94 102 110 118 126
   node 3 size: 129020 MB
   node 3 free: 128795 MB
   node 4 cpus: 1 9 17 25 33 41 49 57 65 73 81 89 97 105 113 121
   node 4 size: 129020 MB
   node 4 free: 128839 MB
   node 5 cpus: 3 11 19 27 35 43 51 59 67 75 83 91 99 107 115 123
   node 5 size: 129020 MB
   node 5 free: 128850 MB
   node 6 cpus: 5 13 21 29 37 45 53 61 69 77 85 93 101 109 117 125
   node 6 size: 129020 MB
   node 6 free: 128810 MB
   node 7 cpus: 7 15 23 31 39 47 55 63 71 79 87 95 103 111 119 127
   node 7 size: 124965 MB
   node 7 free: 124796 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  16  16  16  28  28  22  28
     1:  16  10  16  16  28  28  28  22
     2:  16  16  10  16  22  28  28  28
     3:  16  16  16  10  28  22  28  28
     4:  28  28  22  28  10  16  16  16
     5:  28  28  28  22  16  10  16  16
     6:  22  28  28  28  16  16  10  16
```

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Platform Notes (Continued)

```
     7:  28  22  28  28  16  16  16  10

 From /proc/meminfo
    MemTotal:       1052392348 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

 /usr/bin/lsb_release -d
    Ubuntu 18.04.2 LTS

 From /etc/*release* /etc/*version*
    debian_version: buster/sid
    os-release:
       NAME="Ubuntu"
       VERSION="18.04.2 LTS (Bionic Beaver)"
       ID=ubuntu
       ID_LIKE=debian
       PRETTY_NAME="Ubuntu 18.04.2 LTS"
       VERSION_ID="18.04"
       HOME_URL="https://www.ubuntu.com/"
       SUPPORT_URL="https://help.ubuntu.com/"

 uname -a:
    Linux r7425 4.15.0-45-generic #48-Ubuntu SMP Tue Jan 29 16:28:13 UTC 2019 x86_64
    x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2017-5754 (Meltdown):          Not affected
 CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB

 run-level 5 Mar 4 16:41

 SPEC is set to: /home/cpu2017-1.0.5
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda2      ext4  109G   19G   85G  19% /

 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.
   BIOS Dell Inc. 1.7.6 01/14/2019
   Memory:
    16x 80CE863280CE M386A8K40BM2-CTD 64 GB 4 rank 2666
    16x Not Specified Not Specified
```

(Continued on next page)

Platform Notes (Continued)

```
 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC  502.gcc_r(peak)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------

==============================================================================
 CXXC 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------

==============================================================================
 CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
     525.x264_r(base) 557.xz_r(base, peak)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------

==============================================================================
 CXXC 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base,
     peak) 541.leela_r(base)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------
```


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Compiler Version Notes (Continued)

```
==============================================================================
CC   500.perlbench_r(peak) 525.x264_r(peak)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------

==============================================================================
CXXC 541.leela_r(peak)
------------------------------------------------------------------------------
AOCC.LLVM.1.3.0.B34.2018_10_22 clang version 7.0.0 (CLANG: Jenkins
  AOCC_1_3_0_Release-Build#34) (based on LLVM AOCC.LLVM.1.3.0.B34.2018_10_22)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /root/work/compilers/aocc1.3.0/AOCC-1.3.0-Compiler/bin
------------------------------------------------------------------------------

==============================================================================
 FC  548.exchange2_r(base, peak)
------------------------------------------------------------------------------
GNU Fortran (GCC) 4.8.2
Copyright (C) 2013 Free Software Foundation, Inc.
GNU Fortran comes with NO WARRANTY, to the extent permitted by law.
You may redistribute copies of GNU Fortran
under the terms of the GNU General Public License.
For more information about these matters, see the file named COPYING
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
clang gfortran

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:

500.perlbench_r: `-flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -O3 -ffast-math -march=znver1 -mno-avx2 -fstruct-layout=3 -mllvm -unroll-threshold=50 -fremap-arrays -mllvm -inline-threshold=1000 -flv-function-specialization -mllvm -enable-gvn-hoist -mllvm -function-specialize -z muldefs -lamdlibm -lpthread -ldl -ljemalloc`

502.gcc_r: `Same as 500.perlbench_r`

505.mcf_r: `Same as 500.perlbench_r`

525.x264_r: `Same as 500.perlbench_r`

557.xz_r: `-flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -O3 -ffast-math -march=znver1 -mno-avx2 -fstruct-layout=3 -mllvm -unroll-threshold=50 -fremap-arrays -mllvm -inline-threshold=1000 -flv-function-specialization -mllvm -enable-gvn-hoist -mllvm -function-specialize -z muldefs -lpthread -ldl -ljemalloc`

C++ benchmarks:
`-flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -O3 -march=znver1 -mllvm -unroll-threshold=100 -finline-aggressive -fremap-arrays -mllvm -inline-threshold=1000 -mllvm -enable-vectorize-compares=false -z muldefs -lpthread -ldl -ljemalloc`

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Base Optimization Flags (Continued)

Fortran benchmarks:
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -Wl,-mllvm -Wl,-merge-constant
-Wl,-mllvm -Wl,-unroll-aggressive -Wl,-mllvm -Wl,-unroll-threshold=150
-flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-enable-vectorize-compares -O3(gfortran) -O3(clang)
-mavx -madx -funroll-loops -ffast-math -frepack-arrays -z muldefs
-fplugin=dragonegg.so -specs=integrated-as.specs
-fplugin-arg-dragonegg-llvm-option=-disable-indvar-simplify
-fplugin-arg-dragonegg-llvm-option=-unroll-aggressive
-fplugin-arg-dragonegg-llvm-option=-unroll-threshold:150 -lpthread -ldl
-ljemalloc -lgfortran -lamdlibm

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
clang gfortran

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,-enable-vectorize-compares -fprofile-instr-generate`(pass 1) `-fprofile-instr-use`(pass 2) `-Ofast -march=znver1 -fstruct-layout=3 -mllvm -vectorize-memory-aggressively -mno-avx2 -mllvm -unroll-threshold=100 -fremap-arrays -mllvm -inline-threshold=1000 -lpthread -ldl -ljemalloc`

502.gcc_r: `-m32 -flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -Ofast -march=znver1 -fstruct-layout=3 -mllvm -vectorize-memory-aggressively -mno-avx2 -mllvm -unroll-threshold=100 -fremap-arrays -mllvm -inline-threshold=1000 -fgnu89-inline -lpthread -ldl -L/root/work/lib/jemalloc510/lib32 -ljemalloc`

505.mcf_r: `basepeak = yes`

525.x264_r: `-flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -fprofile-instr-generate`(pass 1) `-fprofile-instr-use`(pass 2) `-Ofast -march=znver1 -mno-avx2 -fstruct-layout=5 -mllvm -vectorize-memory-aggressively -mllvm -unroll-threshold=50 -fremap-arrays -mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist -flv-function-specialization -lamdlibm -ljemalloc -lpthread -ldl`

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `-flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -Ofast -march=znver1 -finline-aggressive -mllvm -unroll-threshold=100 -fremap-arrays -mllvm -inline-threshold=1000 -lpthread -ldl -ljemalloc`

523.xalancbmk_r: `-m32 -flto -Wl,-mllvm -Wl,-function-specialize -Wl,-mllvm -Wl,-enable-vectorize-compares -Ofast -march=znver1 -finline-aggressive -mllvm -unroll-threshold=100 -fremap-arrays -mllvm -inline-threshold=1000 -lpthread -ldl`

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Peak Optimization Flags (Continued)

523.xalancbmk_r (continued):
-L/root/work/lib/jemalloc510/lib32 -ljemalloc

531.deepsjeng_r: basepeak = yes

541.leela_r: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-enable-vectorize-compares
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -Ofast -march=znver1
-mllvm -unroll-count=8 -mllvm -unroll-threshold=100
-lpthread -ldl -ljemalloc

Fortran benchmarks:
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -Wl,-mllvm -Wl,-merge-constant
-Wl,-mllvm -Wl,-unroll-aggressive -Wl,-mllvm -Wl,-unroll-threshold=150
-flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-enable-vectorize-compares -O3(gfortran) -O3(clang)
-mavx -madx -funroll-loops -ffast-math -frepack-arrays
-fplugin=dragonegg.so -specs=integrated-as.specs
-fplugin-arg-dragonegg-llvm-option=-disable-indvar-simplify
-fplugin-arg-dragonegg-llvm-option=-unroll-aggressive
-fplugin-arg-dragonegg-llvm-option=-unroll-threshold:150 -lpthread -ldl
-ljemalloc -lgfortran -lamdlibm

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/gcc.2018-02-16.html
http://www.spec.org/cpu2017/flags/aocc130-flags-revA2.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/gcc.2018-02-16.xml
http://www.spec.org/cpu2017/flags/aocc130-flags-revA2.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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