ASUSTeK Computer Inc.
ASUS RS520A-E11(KMPA-U16) Server System
2.65 GHz, AMD EPYC 7413

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>ASUSTeK Computer Inc.</td>
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<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
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<td>Hardware Availability:</td>
<td>May-2021</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Mar-2021</td>
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</table>

### SPECspeed®2017_fp_peak = 136

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 132</th>
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</table>

### Hardware

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base (132)</th>
<th>SPECspeed®2017_fp_peak (136)</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>24</td>
<td>200</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>24</td>
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<tr>
<td>619.lbm_s</td>
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<td>621.wrf_s</td>
<td>24</td>
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<td>627.cam4_s</td>
<td>24</td>
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<td>628.pop2_s</td>
<td>24</td>
<td>87.6</td>
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<tr>
<td>638.imagick_s</td>
<td>24</td>
<td>142</td>
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<tr>
<td>644.nab_s</td>
<td>48</td>
<td>202</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>24</td>
<td>70.4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>24</td>
<td>120</td>
</tr>
</tbody>
</table>

#### CPU2017 License:
9016

#### CPU Name:
AMD EPYC 7413

#### Max MHz:
3600

#### Nominal:
2650

#### Enabled:
24 cores, 1 chip, 2 threads/core

#### Orderable:
1 chip

#### 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, 32 MB shared / 6 cores

#### Other:
None

#### Memory:
512 GB (8 x 64 GB 4Rx4 PC4-3200AA-L)

#### Storage:
1 x 240 GB SATA SSD

#### Other:
None

#### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 SP2 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kernel:</td>
<td>5.3.18-22-default</td>
</tr>
</tbody>
</table>

#### Compiler:
C/C++/Fortran: Version 3.0.0 of AOCC

#### Parallel:
Yes

#### Firmware:
Version 0401 released Apr-2021

#### 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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SPECspeed®2017_fp_base = 132
SPECspeed®2017_fp_peak = 136

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>628.pop2_s</td>
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<td>649.fotonik3d_s</td>
<td>24</td>
<td>127</td>
<td>71.5</td>
<td>130</td>
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<td>654.roms_s</td>
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<td>120</td>
<td>131</td>
<td>120</td>
<td>133</td>
<td>119</td>
<td>24</td>
<td>123</td>
<td>128</td>
<td>126</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 132
SPECspeed®2017_fp_peak = 136

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
OS set to performance mode via cpupower frequency-set -g performance
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.
'sync; echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.
To enable Transparent Hugepages (THP) for all allocations,
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SPECspeed®2017_fp_base = 132
SPECspeed®2017_fp_peak = 136

Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
To enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To disable THP for peak runs of 627.cam4_s, 644.nab_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/enabled' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-47"
LD_LIBRARY_PATH =
"/cpu118/amd_speed_aocc300_milan_B_lib/64;/cpu118/amd_speed_aocc300_milan_B_lib/32:"
MALLOCONF = "retain:true"
OMP_DYN = "false"
OMP_SCH = "static"
OMP_STACKSZ = "128M"
OMP_THREADS = "48"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0-23"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 24 1 25 2 26 3 27 4 28 5 29 6 30 7 31 8 32 9 33 10 34 11 35 12 36 13 37 14 38 15 39 16 40 17 41 18 42 19 43 20 44 21 45 22 46 23 47"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-23"

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.

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
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SPEC CPU®2017 Floating Point Speed Result
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SPECspeed®2017_fp_base = 132
SPECspeed®2017_fp_peak = 136

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Test Date: Aug-2021
Tested by: ASUSTeK Computer Inc.
Hardware Availability: May-2021
Software Availability: Mar-2021

Platform Notes

BIOS Configuration:
DLWM Support = Disabled
SVM Mode = Disabled
NUMA nodes per socket = NPS2
APBDIS = 1
Fix SOC P-state = P0
Engine Boost = Enabled
IOMMU = Disabled

Sysinfo program /cpu118/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aaca64d
running on localhost Wed Aug 11 18:35:53 2021

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 7413 24-Core Processor
    1 "physical id"s (chips)
    48 "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 : 24
siblings : 48
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29

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: 48 bits physical, 48 bits virtual
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 1
NUMA node(s): 2
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7413 24-Core Processor
Stepping: 1
CPU MHz: 3369.861
CPU max MHz: 2650.0000
CPU min MHz: 1500.0000
BogoMIPS: 5289.95

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SPEC CPU®2017 Floating Point Speed Result

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Test Sponsor: ASUSTeK Computer Inc.
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Platform Notes (Continued)

Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 32768K
NUMA node0 CPU(s): 0-11,24-35
NUMA node1 CPU(s): 12-23,36-47
Flags: fpu vme de pse tsc msr pae mce cmov
pat pse36 clflush mmx fxsr mfx 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 pdci sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand
lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3nowprefetch osvw
ibs skinit wdt tce topoext perfctr_core perfctr_nb bfreq perfctr_llc mwAITx cpb
cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsqsbased
bm1 avx2 smep bni2 erms invpcid cqm rdt_a rdseed adx smap clflushopt clwb sha ni
xsaveopt xsave xgetbv xsave xsaves cqm_llc cqm_occup_llc cqm_mm_total cqm_mm_local
clearzer iperf xsaverptr wbnoinvd arat npt lbrv svm_lock nrlp_save tsc_scale
vmcb_clean flushbyasid decodeassists parfepthr pfthreshold v_vmsave_vmload vgic
umip pku ospke vaes vpcmulmulqdq rpdird overflow_recurv 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: 2 nodes (0-1)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 24 25 26 27 28 29 30 31 32 33 34 35
    node 0 size: 257820 MB
    node 0 free: 257396 MB
    node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 36 37 38 39 40 41 42 43 44 45 46 47
    node 1 size: 258028 MB
    node 1 free: 257509 MB
    node distances:
      node 0 1
      0: 10 12
      1: 12 10

From /proc/meminfo
  MemTotal: 528229668 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

From /etc/*release* /etc/*version*
  os-release:

(Continued on next page)
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Software Availability: Mar-2021

Platform Notes (Continued)

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/swapsgs barriers and __user pointer sanitation
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Aug 11 14:37

SPEC is set to: /cpu118

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 199G 26G 174G 13% /

From /sys/devices/virtual/dmi/id
Vendor: ASUSTeK COMPUTER INC.
Product: RS520A-E11-RS24U
Product Family: Server
Serial: 333366669999

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.

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SPECspeed®2017_fp_base = 132
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Platform Notes (Continued)

Memory:
8x Samsung M386A8K40DM2-CWE 64 GB 4 rank 3200
8x Unknown Unknown

BIOS:
BIOS Vendor: American Megatrends Inc.
BIOS Version: 0401
BIOS Date: 04/14/2021
BIOS Revision: 4.1

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C               | 619.lbm_s(base, peak) 638.imagick_s(base, peak) |
| 644.nab_s(base, peak) |
==============================================================================
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

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**ASUSTeK Computer Inc.**  
ASUS RS520A-E11(KMFA-U16) Server System  
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**Software Availability:** Mar-2021

### Compiler Version Notes (Continued)

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<th>Fortran</th>
</tr>
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<tbody>
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<tr>
<td>649.fotonik3d_s(base, peak)</td>
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<td>654.roms_s(base, peak)</td>
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AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

<table>
<thead>
<tr>
<th>Fortran, C</th>
</tr>
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<td>621.wrf_s(base, peak)</td>
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AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

### Base Compiler Invocation

**C benchmarks:**  
clang

**Fortran benchmarks:**  
flang

**Benchmarks using both Fortran and C:**  
flang clang

**Benchmarks using Fortran, C, and C++:**  
clang++ clang flang

### Base Portability Flags

603.bwaves_s: -DSPEC_LP64

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Base Portability Flags (Continued)

607.cactuBSSN_s: -DSPEC_LP64
619.ibm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -function-specialize -flv-function-specialization
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -enable-lcm-vrp -mlllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-llang -llangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-enable-X86-prefetching
-Wl,-mlllvm -Wl,-enable-lcm-vrp -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mlllvm -fuse-tile-inner-loop -funroll-loops
-mlllvm -extra-vectorizer-passes -mlllvm -lsr-in-nested-loop
-mlllvm -enable-lcm-vrp -mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -llang -llangrti

Benchmarks using both Fortran and C:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-enable-X86-prefetching
-Wl,-mlllvm -Wl,-enable-lcm-vrp -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3

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ASUSTeK Computer Inc.
ASUS RS520A-E11(KMPA-U16) Server System
2.65 GHz, AMD EPYC 7413

SPECspeak®2017_fp_base = 132
SPECspeak®2017_fp_peak = 136

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.
Test Date: Aug-2021
Hardware Availability: May-2021
Software Availability: Mar-2021

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
- fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- -mlirv -unroll-threshold=50 -mlirv -inline-threshold=1000
- -fremap-arrays -mlirv -function-specialize -flv-function-specialization
- -mlirv -enable-gvn-hoist -mlirv -global-vectorize-slp=true
- -mlirv -enable-lcm-vrp -mlirv -reduce-array-computations=3 -Hz,1,0x1
- -Mrecursive -mlirv -fuse-tile-inner-loop -funroll-loops
- -mlirv -extra-vectorizer-passes -mlirv -lsr-in-nested-loop -z muldefs
- -DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
- -lflang -lflangrti

Benchmarks using Fortran, C, and C++:
- -m64 -mno-adx -mno-sse4a -std=c++98
- -Wl,-mllvm -Wl,-x86-use-vzeroupper=false
- -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 -flto -fstruct-layout=5
- -mlirv -unroll-threshold=50 -mlirv -inline-threshold=1000
- -fremap-arrays -mlirv -function-specialize -flv-function-specialization
- -mlirv -enable-gvn-hoist -mlirv -global-vectorize-slp=true
- -mlirv -enable-lcm-vrp -mlirv -reduce-array-computations=3
- -mlirv -enable-partial-unswitch -mlirv -unroll-threshold=100
- -finline-aggressive -mlirv -loop-unswitch-threshold=200000
- -mlirv -reroll-loops -mlirv -aggressive-loop-unswitch
- -mlirv -extra-vectorizer-passes -mlirv -convert-pow-exp-to-int=false
- -Hz,1,0x1 -Mrecursive -mlirv -fuse-tile-inner-loop -funroll-loops
- -mlirv -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp
- -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang -lflangrti

Base Other Flags

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

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

Benchmarks using both Fortran and C:
- -Wno-unused-command-line-argument -Wno-return-type

Benchmarks using Fortran, C, and C++:
- -Wno-unused-command-line-argument -Wno-return-type
ASUSTeK Computer Inc.

ASUS RS520A-E11(KMPA-U16) Server System
2.65 GHz, AMD EPYC 7413

SPECspeed®2017_fp_base = 132
SPECspeed®2017_fp_peak = 136

CPU2017 License: 9016
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Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: -m64 -mno-adx -mno-sse4a
-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 -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
-fopenmp=libomp -lomp -landlibm -ljemalloc -lflang

638.imagick_s: basepeak = yes

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-Wl, -mllvm -Wl,-function-specialize -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -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

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ASUSTeK Computer Inc.

ASUS RS520A-E11(KMPA-U16) Server System
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SPECspeed®2017_fp_base = 132
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Peak Optimization Flags (Continued)

644.nab_s (continued):
-mlirm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:

603.bwaves_s: basepeak = yes
649.fotonik3d_s: basepeak = yes
654.roms_s: -m64 -mno-adx -mno-sse4a
-W,-mlirm -W,-enable-X86-prefetching
-W,-mlirm -W,-enable-licm-vrp
-W,-mlirm -W,-function-specialize
-W,-mlirm -W,-align-all-nofallthru-blocks=6
-W,-mlirm -W,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mlirm -reduce-array-computations=3
-mlirm -global-vectorize-slp=true -mlirm -enable-licm-vrp
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes
627.cam4_s: basepeak = yes
628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

Peak Other Flags

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

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

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument -Wno-return-type

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## Peak Other Flags (Continued)

Benchmarks using Fortran, C, and C++:
- `-Wno-unused-command-line-argument`  
  `-Wno-return-type`

The flags files that were used to format this result can be browsed at:


You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-Milan-V1.3.2021-07-06.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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