SPEC® CPU2017 Floating Point Speed Result

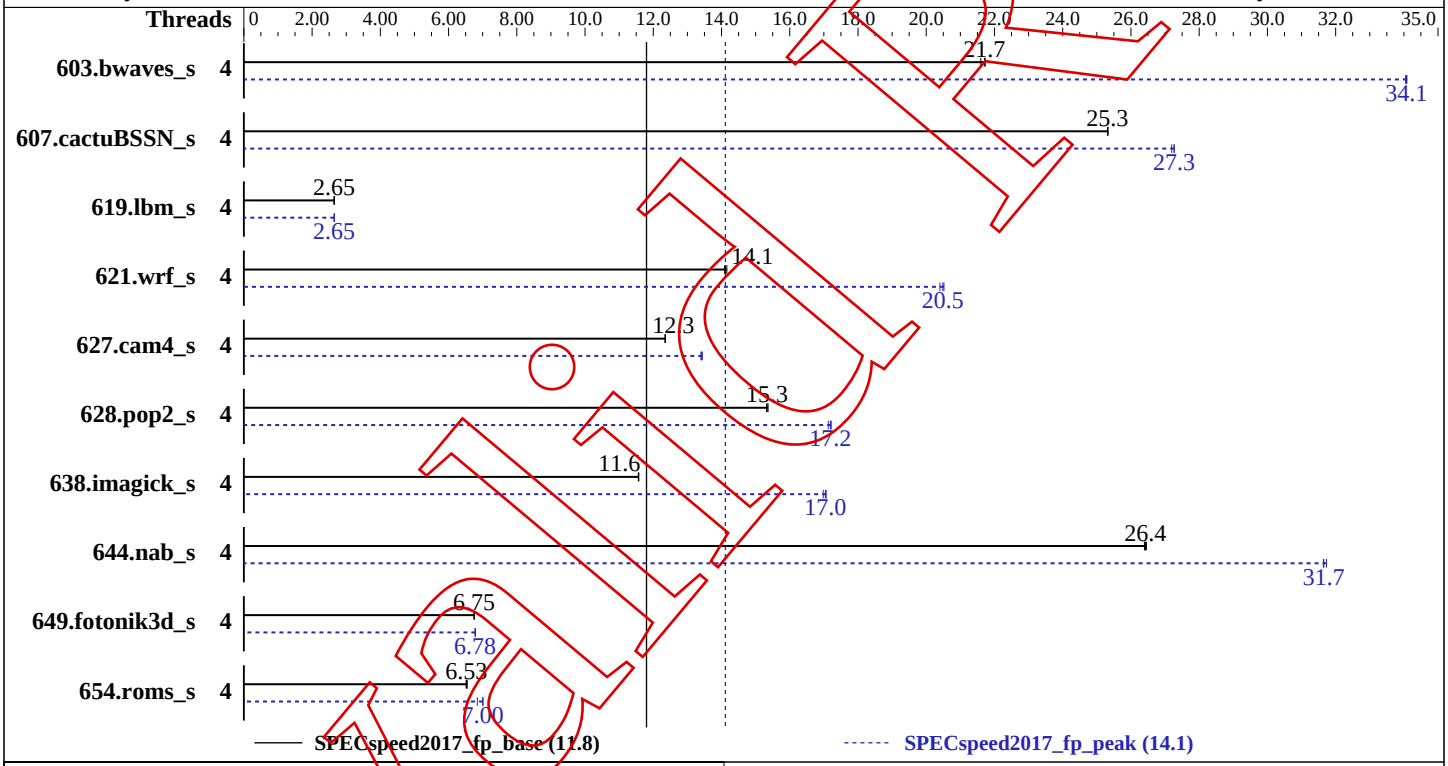
(Test Sponsor: Red Hat, Inc.)

SPECspeed2017_fp_base = 11.8

SPECspeed2017_fp_peak = 14.1

CPU2017 License: 0002991
Test Sponsor: Red Hat, Inc.
Tested by: Vladimir Makarov

Test Date: Jul-2021
Hardware Availability: Now
Software Availability:



Hardware

CPU Name: Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz
Max MHz.:
Nominal: 4702.311
Enabled: 6 cores, 1 chip, threads/core
Orderable:
Cache L1:
L2: 12288 KB
L3:
Other:
Memory: 16300620 kB
'N GB (M x N GB nRxn PCn-nnnnnR-n, ECC)'
Storage: 192 GB add more disk info here
Other:

Software

OS: Linux 4.17.3-200.fc28.x86_64
4.17.3-200.fc28.x86_64
Compiler: gcc version 12.0.0 20210711 (experimental) (GCC)
Parallel: Yes
Firmware:
File System: ext4
System State: multiuser
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other:

Errors

'reportable' flag not set during run
627.cam4_s (peak) had invalid runs!
Run of 627.cam4_s (peak) was not valid; status is VE
Unknown flags were used! See
https://www.spec.org/cpu2017/Docs/runcpu.html#flagsurl

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Errors (Continued)

for information about how to get rid of this error.

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	4	**2717**	**21.7**	2715	21.7	2732	21.6	4	1731	34.1	1733	34.1	**1731**	**34.1**
607.cactuBSSN_s	4	**658**	**25.3**	658	25.3	658	25.3	4	**611**	**27.3**	613	27.2	611	27.3
619.lbm_s	4	1978	2.65	1978	2.65	**1978**	**2.65**	4	1976	2.65	**1976**	**2.65**	1976	2.65
621.wrf_s	4	934	14.2	**937**	**14.1**	939	14.1	4	645	20.5	**646**	**20.5**	648	20.4
627.cam4_s	4	717	12.4	718	12.3	**718**	**12.3**	4	660	0.00	661	0.00	661	0.00
628.pop2_s	4	**774**	**15.3**	775	15.3	773	15.4	4	693	17.1	690	17.2	**690**	**17.2**
638.imagick_s	4	**1247**	**11.6**	1246	11.6	1248	11.6	4	**846**	**17.0**	850	17.0	845	17.1
644.nab_s	4	660	26.5	662	26.4	**661**	**26.4**	4	552	31.6	**552**	**31.7**	551	31.7
649.fotonik3d_s	4	1350	6.75	1351	6.75	**1350**	**6.75**	4	1343	6.79	1344	6.78	**1344**	**6.78**
654.roms_s	4	**2412**	**6.53**	2405	6.55	2417	6.51	4	2246	7.01	2301	6.84	**2249**	**7.00**

SPECspeed2017_fp_base = 11.8

SPECspeed2017_fp_peak = 14.1

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/lib64:/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/lib::/usr/lib64/:/usr/lib/:/lib64"
OMP_STACKSIZE = "120M"
```

Platform Notes

```
 Sysinfo program /notnfs/vmakarov/spec2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on ton8 Sun Jul 11 09:12:33 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 : Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz
       1  "physical id"s (chips)
       6 "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 : 6
```

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Platform Notes (Continued)

```
       siblings  : 6
       physical 0: cores 0 1 2 3 4 5

  From lscpu:
       Architecture:            x86_64
       CPU op-mode(s):          32-bit, 64-bit
       Byte Order:              Little Endian
       CPU(s):                  6
       On-line CPU(s) list:     0-5
       Thread(s) per core:      1
       Core(s) per socket:      6
       Socket(s):               1
       NUMA node(s):            1
       Vendor ID:               GenuineIntel
       CPU family:              6
       Model:                   158
       Model name:              Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz
       Stepping:                10
       CPU MHz:                 4695.518
       CPU max MHz:             4700.0000
       CPU min MHz:             800.0000
       BogoMIPS:                7392.00
       Virtualization:          VT-x
       L1d cache:               32K
       L1i cache:               32K
       L2 cache:                256K
       L3 cache:                12288K
       NUMA node0 CPU(s):       0-5
       Flags:                   fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
       pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
       lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
       aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
       sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer
       aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault invpcid_single pti
       ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle
       avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt intel_pt xsaveopt
       xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp

  /proc/cpuinfo cache data
     cache size : 12288 KB

  From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
  physical chip.

  From /proc/meminfo
     MemTotal:       16300620 kB
     HugePages_Total:       0
```


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Platform Notes (Continued)

```
    Hugepagesize:       2048 kB

  From /etc/*release* /etc/*version*
     fedora-release: Fedora release 28 (Twenty Eight)
     os-release:
        NAME=Fedora
        VERSION="28 (Workstation Edition)"
        ID=fedora
        VERSION_ID=28
        PLATFORM_ID="platform:f28"
        PRETTY_NAME="Fedora 28 (Workstation Edition)"
        ANSI_COLOR="0;34"
        CPE_NAME="cpe:/o:fedoraproject:fedora:28"
     redhat-release: Fedora release 28 (Twenty Eight)
     system-release: Fedora release 28 (Twenty Eight)
     system-release-cpe: cpe:/o:fedoraproject:fedora:28

  uname -a:
     Linux ton8 4.17.3-200.fc28.x86_64 #1 SMP Tue Jun 26 14:17:07 UTC 2018 x86_64 x86_64
     x86_64 GNU/Linux


  SPEC is set to: /notnfs/vmakarov/spec2017
     Filesystem              Type  Size  Used Avail Use% Mounted on
     /dev/mapper/fedora-home ext4  192G   51G  132G  28% /notnfs

  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.

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 FC  607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/g++
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
```


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Compiler Version Notes (Continued)

```
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gcc
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gfortran
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
------------------------------------------------------------------------------

==============================================================================
 CC  619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gcc
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
```


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Compiler Version Notes (Continued)

```
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
------------------------------------------------------------------------------

==============================================================================
 FC  603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base,
      peak)
------------------------------------------------------------------------------
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gfortran
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
------------------------------------------------------------------------------

==============================================================================
 CC  621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)
------------------------------------------------------------------------------
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gfortran
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
Using built-in specs.
COLLECT_GCC=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/bin/gcc
COLLECT_LTO_WRAPPER=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8/libexec/gcc/x86_64-pc-linux-gnu/12.0.0/lto-wrapper
Target: x86_64-pc-linux-gnu
Configured with:
  /notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src/configure
  --prefix=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/inst.ton8
  --srcdir=/notnfs/vmakarov/perf/sbox/gcc/local.spec2017.x86_64/src
```

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Compiler Version Notes (Continued)

```
  --disable-bootstrap --disable-libcilkrts --enable-checking=release
  --enable-languages=c,c++,fortran
Thread model: posix
Supported LTO compression algorithms: zlib
gcc version 12.0.0 20210711 (experimental) (GCC)
------------------------------------------------------------------------------
```

Base Unknown Flags

603.bwaves_s: "-fallow-argument-mismatchARRAY(0xa8893b8)
"-fallow-argument-mismatchARRAY(0xa8d00b0)

607.cactuBSSN_s: "-fcommonARRAY(0xa8a3f80) "-fcommonARRAY(0xa8d9550)
"-fallow-argument-mismatchARRAY(0xa8dedc0)
"-fcommonARRAY(0xa8e0870)

619.lbm_s: "-fcommonARRAY(0xa88b230) "-fcommonARRAY(0xa8d0098)

621.wrf_s: "-fallow-argument-mismatchARRAY(0xa872670)
"-fcommonARRAY(0xa8df5d0)
"-fallow-argument-mismatchARRAY(0xa8e6720)

627.cam4_s: "-fallow-argument-mismatchARRAY(0xa8d9490)
"-fcommonARRAY(0xaa0a968)
"-fallow-argument-mismatchARRAY(0xa8e6ba0)

628.pop2_s: "-fallow-argument-mismatchARRAY(0xaa09ab8)
"-fcommonARRAY(0xaa08f30)
"-fallow-argument-mismatchARRAY(0xaa092c0)

638.imagick_s: "-fcommonARRAY(0xa8df480) "-fcommonARRAY(0xaa0a638)

644.nab_s: "-fcommonARRAY(0xaa0b8c0) "-fcommonARRAY(0xa984750)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0xa88b650)
"-fallow-argument-mismatchARRAY(0xa984c90)

654.roms_s:"-fallow-argument-mismatchARRAY(0xaa0bc80)
"-fallow-argument-mismatchARRAY(0xaa1e770)

Peak Unknown Flags

603.bwaves_s: "-fallow-argument-mismatchARRAY(0xa8893b8)
"-fallow-argument-mismatchARRAY(0xa8d00b0)

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Peak Unknown Flags (Continued)

607.cactuBSSN_s: "-fcommonARRAY(0xa8a3f80) "-fcommonARRAY(0xa8d9550)
"-fallow-argument-mismatchARRAY(0xa8dedc0)
"-fcommonARRAY(0xa8e0870)

619.lbm_s: "-fcommonARRAY(0xa88b230) "-fcommonARRAY(0xa8d0098)

621.wrf_s: "-fallow-argument-mismatchARRAY(0xa872670)
"-fcommonARRAY(0xa8df5d0)
"-fallow-argument-mismatchARRAY(0xa8e6720)

627.cam4_s: "-fallow-argument-mismatchARRAY(0xa8d9490)
"-fcommonARRAY(0xaa0a968)
"-fallow-argument-mismatchARRAY(0xa8e6ba0)

628.pop2_s: "-fallow-argument-mismatchARRAY(0xaa09ab8)
"-fcommonARRAY(0xaa08f30)
"-fallow-argument-mismatchARRAY(0xaa092c0)

638.imagick_s: "-fcommonARRAY(0xa8df480) "-fcommonARRAY(0xaa0a638)

644.nab_s: "-fcommonARRAY(0xaa0b8c0) "-fcommonARRAY(0xa984750)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0xa88b650)
"-fallow-argument-mismatchARRAY(0xa984c90)

654.roms_s: "-fallow-argument-mismatchARRAY(0xaa0bc80)
"-fallow-argument-mismatchARRAY(0xaa1e770)

603.bwaves_s: "-fallow-argument-mismatchARRAY(0xaa09758)
"-fallow-argument-mismatchARRAY(0xaa217a0)
"-fltoARRAY(0xaa67d80)

607.cactuBSSN_s: "-fcommonARRAY(0xa98de78) "-fcommonARRAY(0xaa480b0)
"-fallow-argument-mismatchARRAY(0xaa683b0)
"-fcommonARRAY(0xaa6b098) "-fltoARRAY(0xaa5a618)

619.lbm_s: "-fcommonARRAY(0xaa21920) "-fcommonARRAY(0xaa6b620)
"-fltoARRAY(0xaa6b7b8)

621.wrf_s: "-fallow-argument-mismatchARRAY(0xaa65858)
"-fcommonARRAY(0xaa632c8)
"-fallow-argument-mismatchARRAY(0xaa63268)
"-fltoARRAY(0xaa6bbf0)

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Peak Unknown Flags (Continued)

627.cam4_s: "-fallow-argument-mismatchARRAY(0xaa68998)
"-fcommonARRAY(0xaa1d140)
"-fallow-argument-mismatchARRAY(0xaa6bc98)
"-fltoARRAY(0xaa73970)

628.pop2_s: "-fallow-argument-mismatchARRAY(0xaa680b0)
"-fcommonARRAY(0xaa6bd10)
"-fallow-argument-mismatchARRAY(0xaa739e8)
"-fltoARRAY(0xaa713a8)

638.imagick_s: "-fcommonARRAY(0xaa41318) "-fcommonARRAY(0xaa47cc0)
"-fltoARRAY(0xaa71888)

644.nab_s: "-fcommonARRAY(0xaa6b3b0) "-fcommonARRAY(0xaa6bd88)
"-fltoARRAY(0xaa79550)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0xaa5c8d0)
"-fallow-argument-mismatchARRAY(0xaa70988)
"-fltoARRAY(0xaa7a088)

654.roms_s: "-fallow-argument-mismatchARRAY(0xaa6baa0)
"-fallow-argument-mismatchARRAY(0xaa78860)
"-fltoARRAY(0xaa7abc0)

Base Compiler Invocation

C benchmarks:
gcc

Fortran benchmarks:
gfortran

Benchmarks using both Fortran and C:
gfortran gcc

Benchmarks using Fortran, C, and C++:
g++ gcc gfortran

Base Portability Flags

603.bwaves_s: -DSPEC_LP64

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Base Portability Flags (Continued)

607.cactuBSSN_s: `-DSPEC_LP64`
619.lbm_s: `-DSPEC_LP64`
621.wrf_s: `-DSPEC_CASE_FLAG -fconvert=big-endian -DSPEC_LP64`
627.cam4_s: `-DSPEC_CASE_FLAG -DSPEC_LP64`
628.pop2_s: `-DSPEC_CASE_FLAG -fconvert=big-endian -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:
`-O2 -mtune=generic -fopenmp -DSPEC_OPENMP`

Fortran benchmarks:
`-O2 -mtune=generic -DSPEC_OPENMP -fopenmp`

Benchmarks using both Fortran and C:
`-O2 -mtune=generic -DSPEC_OPENMP -fopenmp`

Benchmarks using Fortran, C, and C++:
`-O2 -mtune=generic -fopenmp -DSPEC_OPENMP`

Peak Compiler Invocation

C benchmarks:
`gcc`

Fortran benchmarks:
`gfortran`

Benchmarks using both Fortran and C:
`gfortran gcc`

Benchmarks using Fortran, C, and C++:
`g++ gcc gfortran`

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
-Ofast -mtune=corei7 -march=core-avx2 -fopenmp -DSPEC_OPENMP

Fortran benchmarks:

603.bwaves_s: -Ofast -mtune=corei7 -march=core-avx2 -DSPEC_OPENMP
-fopenmp -fno-stack-arrays

649.fotonik3d_s: -Ofast -mtune=corei7 -march=core-avx2 -DSPEC_OPENMP
-fopenmp

654.roms_s: Same as 649.fotonik3d_s

Benchmarks using both Fortran and C:
-Ofast -mtune=corei7 -march=core-avx2 -DSPEC_OPENMP -fopenmp

Benchmarks using Fortran, C, and C++:
-Ofast -mtune=corei7 -march=core-avx2 -fopenmp -DSPEC_OPENMP

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.1 on 2021-07-11 09:12:33-0400.
Report generated on 2021-07-12 05:53:01 by CPU2017 PDF formatter v5748.