

SPEC® CPU2017 Floating Point Speed Result

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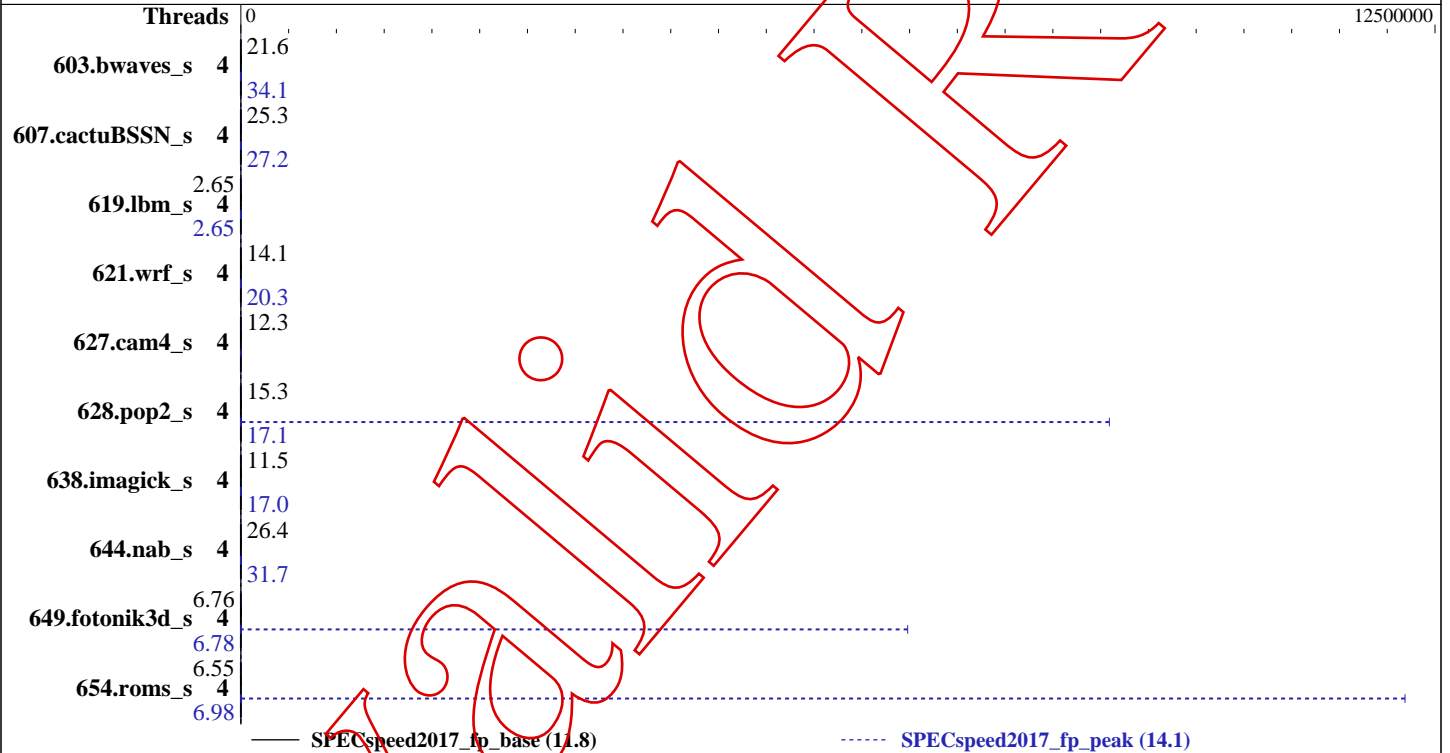
(Test Sponsor: Red Hat, Inc.)

SPECSpeed2017_fp_base = 11.8

SPECSpeed2017_fp_peak = 14.1

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

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



Hardware

CPU Name: Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz
Max MHz.:
Nominal: 3681.625
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 20210622 (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) did not have enough runs!
621.wrf_s (peak) had invalid runs!
627.cam4_s (peak) had invalid runs!
628.pop2_s (peak) had invalid runs!

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Errors (Continued)

654.roms_s (peak) had invalid runs!
649.fotonik3d_s (peak) had invalid runs!
Run of 621.wrf_s (peak) was not valid; status is VE
Run of 627.cam4_s (peak) was not valid; status is CE
Run of 628.pop2_s (peak) was not valid; status is RE
Run of 649.fotonik3d_s (peak) was not valid; status is RE
Run of 654.roms_s (peak) was not valid; status is RE
Unknown flags were used! See
<https://www.spec.org/cpu2017/Docs/runcpu.html#flagsurl>
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	2732	21.6	2721	21.7	<u>2731</u>	<u>21.6</u>	4	1730	34.1	<u>1730</u>	<u>34.1</u>	1747	33.8
607.cactuBSSN_s	4	656	25.4	660	25.3	<u>658</u>	<u>25.3</u>	4	<u>612</u>	<u>27.2</u>	611	27.3	614	27.2
619.lbm_s	4	1976	2.65	1977	2.65	<u>1977</u>	<u>2.65</u>	4	1974	2.65	<u>1978</u>	<u>2.65</u>	1978	2.65
621.wrf_s	4	937	14.1	934	14.2	<u>935</u>	<u>14.1</u>	4	<u>650</u>	<u>20.3</u>	863	0.00	648	20.4
627.cam4_s	4	718	12.3	718	12.4	<u>718</u>	<u>12.3</u>	1	0.00	0.00				
628.pop2_s	4	<u>774</u>	<u>15.3</u>	775	15.3	774	15.3	4	691	17.2	0.00131	0.00	<u>695</u>	<u>17.1</u>
638.imagick_s	4	1249	11.5	<u>1250</u>	<u>11.5</u>	1251	11.5	4	846	17.0	861	16.7	<u>847</u>	<u>17.0</u>
644.nab_s	4	661	26.4	<u>661</u>	<u>26.4</u>	661	26.4	4	548	31.9	553	31.6	<u>551</u>	<u>31.7</u>
649.fotonik3d_s	4	1349	6.76	<u>1349</u>	<u>6.76</u>	1349	6.76	4	1343	6.79	0.00131	0.00	<u>1344</u>	<u>6.78</u>
654.roms_s	4	<u>2404</u>	<u>6.55</u>	2401	6.56	2411	6.53	4	2254	6.99	0.00129	0.00	<u>2257</u>	<u>6.98</u>

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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 Tue Jun 22 12:38:16 2021

SUT (System Under Test) info as seen by some common utilities.

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Platform Notes (Continued)

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

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: 4651.278

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

aperfperf 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

xsaves xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_opp

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Platform Notes (Continued)

```
/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
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;84"
  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: /mntnfs/vmakarov/spec2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/fedora-home	ext4	192G	51G	132G	28%	/mntnfs

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)

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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
--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 20210622 (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:

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--enable-languages=c,c++,fortran
```

Thread model: posix

Supported LTO compression algorithms: zlib

gcc version 12.0.0 20210622 (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
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--enable-languages=c,c++,fortran
```

Thread model: posix

Supported LTO compression algorithms: zlib

gcc version 12.0.0 20210622 (experimental) (GCC)

=====
CC 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)

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Compiler Version Notes (Continued)

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 20210622 (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 20210622 (experimental) (GCC)

=====
CC 621.wrf_s(base, peak) 627.cam4_s(base) 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
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```

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Supported LTO compression algorithms: zlib

gcc version 12.0.0 20210622 (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 20210622 (experimental) (GCC)

Base Unknown Flags

603.bwaves_s: "-fallow-argument-mismatchARRAY(0x9606af0)

"-fallow-argument-mismatchARRAY(0x9652800)

607.cactuBSSN_s: "-fcommonARRAY(0x960fc30) "-fcommonARRAY(0x9600168)

"-fallow-argument-mismatchARRAY(0x9678d10)

"-fcommonARRAY(0x96794c0)

619.lbm_s: "-fcommonARRAY(0x961c988) "-fcommonARRAY(0x96527e8)

621.wrf_s: "-fallow-argument-mismatchARRAY(0x961dcc0)

"-fcommonARRAY(0x9678ab8)

"-fallow-argument-mismatchARRAY(0x9682a80)

627.cam4_s: "-fallow-argument-mismatchARRAY(0x960ddc8)

"-fcommonARRAY(0x97a1498)

"-fallow-argument-mismatchARRAY(0x96802d8)

628.pop2_s: "-fallow-argument-mismatchARRAY(0x97a0610)

"-fcommonARRAY(0x979fa60)

"-fallow-argument-mismatchARRAY(0x979fdf0)

638.imagick_s: "-fcommonARRAY(0x9678e90) "-fcommonARRAY(0x97a1168)

644.nab_s: "-fcommonARRAY(0x97a23f0) "-fcommonARRAY(0x97a2eb0)

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Base Unknown Flags (Continued)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0x960fc18)
"-fallow-argument-mismatchARRAY(0x97a34c8)

654.roms_s: "-fallow-argument-mismatchARRAY(0x97a27d8)
"-fallow-argument-mismatchARRAY(0x970faf0)

Peak Unknown Flags

603.bwaves_s: "-fallow-argument-mismatchARRAY(0x9606af0)
"-fallow-argument-mismatchARRAY(0x9652800)

607.cactuBSSN_s: "-fcommonARRAY(0x960fc30) "-fcommonARRAY(0x9600168)
"-fallow-argument-mismatchARRAY(0x9678d10)
"-fcommonARRAY(0x96794c0)

619.lbm_s: "-fcommonARRAY(0x961c988) "-fcommonARRAY(0x96527e8)

621.wrf_s: "-fallow-argument-mismatchARRAY(0x961dcc0)
"-fcommonARRAY(0x9678ab8)
"-fallow-argument-mismatchARRAY(0x9682a80)

627.cam4_s: "-fallow-argument-mismatchARRAY(0x960ddc8)
"-fcommonARRAY(0x97a1498)
"-fallow-argument-mismatchARRAY(0x96802d8)

628.pop2_s: "-fallow-argument-mismatchARRAY(0x97a0610)
"-fcommonARRAY(0x979fa60)
"-fallow-argument-mismatchARRAY(0x979fdf0)

638.imagick_s: "-fcommonARRAY(0x9678e90) "-fcommonARRAY(0x97a1168)

644.nab_s: "-fcommonARRAY(0x97a23f0) "-fcommonARRAY(0x97a2eb0)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0x960fc18)
"-fallow-argument-mismatchARRAY(0x97a34c8)

654.roms_s: "-fallow-argument-mismatchARRAY(0x97a27d8)
"-fallow-argument-mismatchARRAY(0x970faf0)

603.bwaves_s: "-fallow-argument-mismatchARRAY(0x97a0288)
"-fallow-argument-mismatchARRAY(0x97b69a8)
"-flttoARRAY(0x9801318)

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Peak Unknown Flags (Continued)

607.cactuBSSN_s: "-fcommonARRAY(0x97b8028) "-fcommonARRAY(0x98039d0)
"-fallow-argument-mismatchARRAY(0x980b860)
"-fcommonARRAY(0x98157e0) "-fltoARRAY(0x9812800)

619.lbm_s: "-fcommonARRAY(0x9727170) "-fcommonARRAY(0x9815378)
"-fltoARRAY(0x9815858)

621.wrf_s: "-fallow-argument-mismatchARRAY(0x9808c20)
"-fcommonARRAY(0x98125a8)
"-fallow-argument-mismatchARRAY(0x97fc4a8)
"-fltoARRAY(0x9815c90)

628.pop2_s: "-fallow-argument-mismatchARRAY(0x980e0d0)
"-fcommonARRAY(0x97276f8)
"-fallow-argument-mismatchARRAY(0x9808ce0)
"-fltoARRAY(0x981b040)

638.imagick_s: "-fcommonARRAY(0x9815438) "-fcommonARRAY(0x98158b8)
"-fltoARRAY(0x981ea28)

644.nab_s: "-fcommonARRAY(0x979fd48) "-fcommonARRAY(0x9815b58)
"-fltoARRAY(0x981f9b0)

649.fotonik3d_s: "-fallow-argument-mismatchARRAY(0x9815600)
"-fallow-argument-mismatchARRAY(0x97fa498)
"-fltoARRAY(0x98204c0)

654.roms_s: "-fallow-argument-mismatchARRAY(0x97fc628)
"-fallow-argument-mismatchARRAY(0x981ec98)
"-fltoARRAY(0x9820ff8)

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

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Base Portability Flags

603.bwaves_s: -DSPEC_LP64
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 (except as noted below):
gfortran gcc

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

SPEC CPU2017 Floating Point Speed Result

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SPECspeed2017_fp_base = 11.8

SPECspeed2017_fp_peak = 14.1

CPU2017 License: 0002991

Test Sponsor: Red Hat, Inc.

Tested by: Vladimir Makarov

Test Date: Jun-2021

Hardware Availability: Now

Software Availability:

Peak Portability Flags

```
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -fconvert=big-endian -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
```

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:

```
621.wrf_s: -Ofast -mtune=corei7 -march=core-avx2 -DSPEC_OPENMP
-fopenmp
```

```
628.pop2_s: Same as 621.wrf_s
```

Benchmarks using Fortran, C, and C++:

```
-Ofast -mtune=corei7 -march=core-avx2 -fopenmp -DSPEC_OPENMP
```

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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 2021-06-22 12:38:15-0400.

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