SPEC CPU®2017 Floating Point Rate Result

Fujitsu

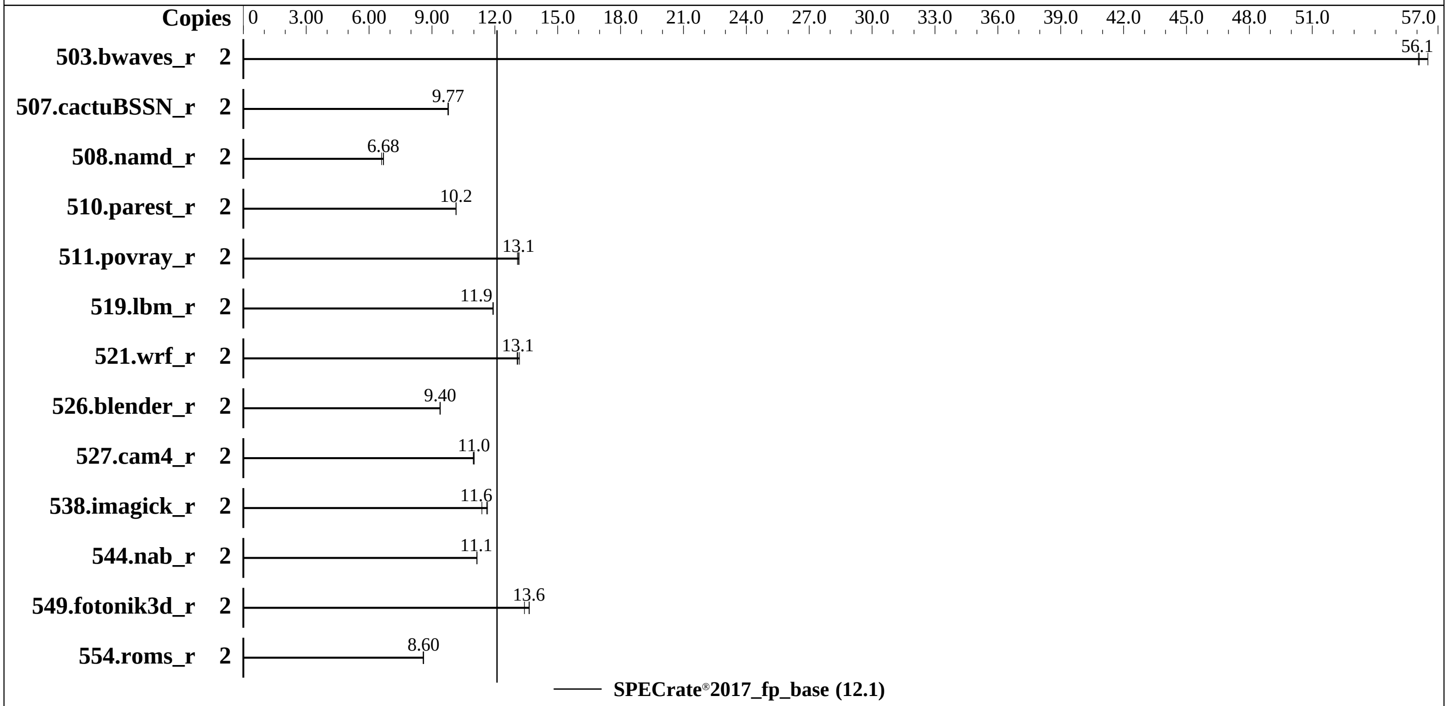
PRIMERGY TX1310 M3, Intel Pentium G4400, 3.30 GHz

SPECrate®2017_fp_base = 12.1

SPECrate®2017_fp_peak = Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Tested by: Fujitsu

Test Date: May-2020
Hardware Availability: May-2017
Software Availability: Apr-2020



Hardware

CPU Name:	Intel Pentium G4400
Max MHz:	3300
Nominal:	3300
Enabled:	2 cores, 1 chip
Orderable:	1 chip
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	256 KB I+D on chip per core
L3:	3 MB I+D on chip per chip
Other:	None
Memory:	64 GB (4 x 16 GB 2Rx8 PC4-2400V-E, running at 2133)
Storage:	1 x 500 GB SATA HDD, 7200 RPM
Other:	None

Software

OS:	SUSE Linux Enterprise Server 15 SP1 4.12.14-195-default
Compiler:	C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	Fujitsu BIOS Version V5.0.0.11 R1.25.0 for D3521-A1x Released Apr-2020
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	None
Power Management:	BIOS set to prefer performance at the cost of additional power usage

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	2	**357**	**56.1**	358	56.1	355	56.5							
507.cactuBSSN_r	2	259	9.76	**259**	**9.77**	259	9.79							
508.namd_r	2	284	6.69	**284**	**6.68**	288	6.60							
510.parest_r	2	515	10.2	516	10.1	**515**	**10.2**							
511.povray_r	2	355	13.2	357	13.1	**356**	**13.1**							
519.lbm_r	2	177	11.9	177	11.9	**177**	**11.9**							
521.wrf_r	2	**342**	**13.1**	343	13.1	340	13.2							
526.blender_r	2	**324**	**9.40**	325	9.38	324	9.40							
527.cam4_r	2	319	11.0	317	11.0	**318**	**11.0**							
538.imagick_r	2	427	11.6	437	11.4	**428**	**11.6**							
544.nab_r	2	**302**	**11.1**	302	11.1	302	11.1							
549.fotonik3d_r	2	**572**	**13.6**	571	13.6	581	13.4							
554.roms_r	2	**369**	**8.60**	371	8.58	369	8.61							

SPECrate®2017_fp_base = 12.1

SPECrate®2017_fp_peak = Not Run

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate taskset commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
echo always > /sys/kernel/mm/transparent_hugepage/enabled
echo 1000000000 > /proc/sys/kernel/sched_min_granularity_ns
echo 1500000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/Benchmark/cpu2017-1.1.0/lib/ia32:/home/Benchmark/cpu2017-1.1.0/li
     b/intel64:/usr/local/je5.0.1-32:/usr/local/je5.0.1-64"
```

General Notes

```
 Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.5
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
 Filesystem page cache synced and cleared with:
 sync; echo 3> /proc/sys/vm/drop_caches
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
Yes: 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.
```

Platform Notes

```
 BIOS configuration:
 Fan Control = Full

 Sysinfo program /home/Benchmark/cpu2017-1.1.0/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on linux-1g42 Mon May 25 00:41:57 2020

 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) Pentium(R) CPU G4400 @ 3.30GHz
       1  "physical id"s (chips)
       2 "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 : 2
       siblings  : 2
       physical 0: cores 0 1

 From lscpu:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      Address sizes:       39 bits physical, 48 bits virtual
      CPU(s):              2
      On-line CPU(s) list: 0,1
      Thread(s) per core:  1
```

(Continued on next page)

Platform Notes (Continued)

```
      Core(s) per socket:  2
      Socket(s):           1
      NUMA node(s):        1
      Vendor ID:           GenuineIntel
      CPU family:          6
      Model:               94
      Model name:          Intel(R) Pentium(R) CPU G4400 @ 3.30GHz
      Stepping:            3
      CPU MHz:             3300.000
      CPU max MHz:         3300.0000
      CPU min MHz:         800.0000
      BogoMIPS:            6624.00
      Virtualization:      VT-x
      L1d cache:           32K
      L1i cache:           32K
      L2 cache:            256K
      L3 cache:            3072K
      NUMA node0 CPU(s):   0,1
      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 est tm2 ssse3 sdbg
      cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
      rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti ssbd ibrs ibpb
      stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust erms invpcid rdseed
      smap clflushopt intel_pt xsaveopt xsavec xgetbv1 xsaves dtherm arat pln pts hwp
      hwp_notify hwp_act_window hwp_epp md_clear flush_l1d

 /proc/cpuinfo cache data
    cache size : 3072 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0 1
   node 0 size: 64038 MB
   node 0 free: 63585 MB
   node distances:
   node   0
     0:  10

 From /proc/meminfo
    MemTotal:       65575380 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

 From /etc/*release* /etc/*version*
```

(Continued on next page)

Platform Notes (Continued)

```
    os-release:
       NAME="SLES"
       VERSION="15-SP1"
       VERSION_ID="15.1"
       PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
       ID="sles"
       ID_LIKE="suse"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:15:sp1"

 uname -a:
    Linux linux-1g42 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
    x86_64 x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2018-3620 (L1 Terminal Fault):        Mitigation: PTE Inversion; VMX: conditional
                                           cache flushes, SMT disabled
 Microarchitectural Data Sampling:         Mitigation: Clear CPU buffers; SMT disabled
 CVE-2017-5754 (Meltdown):                 Mitigation: PTI
 CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled
                                           via prctl and seccomp
 CVE-2017-5753 (Spectre variant 1):        Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2):        Mitigation: Indirect Branch Restricted
                                         Speculation, IBPB: conditional, IBRS_FW, STIBP:
                                          disabled, RSB filling

 run-level 3 May 21 23:10

 SPEC is set to: /home/Benchmark/cpu2017-1.1.0
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/md126p3   xfs   130G   33G   97G  26% /home

 From /sys/devices/virtual/dmi/id
     BIOS:    FUJITSU // American Megatrends Inc. V5.0.0.11 R1.25.0 for D3521-A1x
               04/06/2020
     Vendor:  FUJITSU
     Product: PRIMERGY TX1310 M3
     Serial:  YM9F000154

 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.
   Memory:
     4x SK Hynix HMA82GU6AFR8N-UH 16 GB 2 rank 2400
```

(Continued on next page)

Platform Notes (Continued)

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

Compiler Version Notes

```
==============================================================================
C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++             | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
```

(Continued on next page)

Compiler Version Notes (Continued)

```
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc -m64 -std=c11`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`ifort -m64 icc -m64 -std=c11`

Benchmarks using both C and C++:
`icpc -m64 icc -m64 -std=c11`

Benchmarks using Fortran, C, and C++:
`icpc -m64 icc -m64 -std=c11 ifort -m64`

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`

(Continued on next page)

Base Portability Flags (Continued)

510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
526.blender_r: `-DSPEC_LP64 -DSPEC_LINUX -funsigned-char`
527.cam4_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
538.imagick_r: `-DSPEC_LP64`
544.nab_r: `-DSPEC_LP64`
549.fotonik3d_r: `-DSPEC_LP64`
554.roms_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3`

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3`

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte`

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte`

Benchmarks using both C and C++:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3`

Benchmarks using Fortran, C, and C++:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevG.html

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

http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevG.xml

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

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