SPEC CPU®2017 Floating Point Rate Result

Fujitsu
PRIMERGY TX1310 M3, Intel Core i3-7101E, 3.90 GHz

SPECraten®2017_fp_base = 18.8
SPECraten®2017_fp_peak = Not Run

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

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Hardware Availability: May-2017</th>
<th>Software Availability: Apr-2020</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Core i3-7101E</td>
<td>OS: SUSE Linux Enterprise Server 15 SP1 4.12.14-195-default</td>
</tr>
<tr>
<td>Max MHz: 3900</td>
<td>Compiler: C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux; Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux</td>
</tr>
<tr>
<td>Nominal: 3900</td>
<td>Parallel: No</td>
</tr>
<tr>
<td>Enabled: 2 cores, 1 chip, 2 threads/core</td>
<td>Firmware: Fujitsu BIOS Version V5.0.0.11 R1.25.0 for D3521-A1s Released Apr-2020</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>L2: 256 KB I+D on chip per core</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>L3: 3 MB I+D on chip per chip</td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
<tr>
<td>Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2400V-E)</td>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
<tr>
<td>Storage: 1 x 500 GB SATA HDD, 7200 RPM</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>

Test Date: May-2020

Hardware Availability: May-2017

Software Availability: Apr-2020

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Fujitsu

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Copyright 2017-2020 Standard Performance Evaluation Corporation

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Test Date: May-2020
Hardware Availability: May-2017
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Results Table

<table>
<thead>
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<th>Seconds</th>
<th>Ratio</th>
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</tbody>
</table>

SPECrate®2017_fp_base = 18.8
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/intel64"

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

(Continued on next page)
Fujitsu
PRIMERGY TX1310 M3, Intel Core i3-7101E, 3.90 GHz

SPECrate®2017_fp_base = 18.8
SPECrate®2017_fp_peak = Not Run

General Notes (Continued)

Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3 > /proc/sys/vm/drop_caches
runcpu command invoked through numacl 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 295195f888a3d7eddb1e6e46a485a0011
running on linux-1g42 Mon Jun  1 18:46:41 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) Core(TM) i3-7101E CPU @ 3.90GHz
 1 "physical id"s (chips)
 4 "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 : 4
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): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 2
Core(s) per socket: 2
Socket(s): 1
NUMA node(s): 1

(Continued on next page)
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Test Date: May-2020
Hardware Availability: May-2017
Software Availability: Apr-2020

Platform Notes (Continued)

Vendor ID:          GenuineIntel
CPU family:         6
Model:              158
Model name:         Intel(R) Core(TM) i3-7101E CPU @ 3.90GHz
Stepping:           9
CPU MHz:            3900.000
CPU max MHz:        3900.0000
CPU min MHz:        800.0000
BogoMIPS:           7824.00
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           256K
L3 cache:           3072K
NUMA node0 CPU(s):  0-3
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 rdtsscp
                    lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
                    aperf perfctr tsck nknr kmal mmxext abm smep cmovx cx16 xtpr pdcm pclid sse4_1
                    sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
                    xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti
                    ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bm1
                    avx2 smep bmi2 erms invpcid mxpx rdseed adx smap clflushopt intel_pt xsaveopt xsavec
                    xgetbv1 xsavees dtherm arat pni 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 2 3
  node 0 size: 64038 MB
  node 0 free: 63602 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal:        65574940 kB
  HugePages_Total: 0
  Hugepagesize:    2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"

(Continued on next page)
## Platform Notes (Continued)

```bash
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"
```

```bash
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 vulnerable
- **Microarchitectural Data Sampling:** Mitigation: Clear CPU buffers; SMT vulnerable
- **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, IBFB: conditional, IBRS_FW, STIBP: conditional, RSB filling

```bash
run-level 3 Jun 1 15:17
```

**SPEC is set to:** `/home/Benchmark/cpu2017-1.1.0`

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/md126p3</td>
<td>xfs</td>
<td>130G</td>
<td>41G</td>
<td>89G</td>
<td>32%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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

(End of data from sysinfo program)
CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: May-2020
Tested by: Fujitsu
Hardware Availability: May-2017
Software Availability: Apr-2020

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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
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Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
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Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
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Test Date: May-2020
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Software Availability: Apr-2020

Compiler Version Notes (Continued)

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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
Intel (R) C Intel (R) 64 Compiler for applications running on Intel (R) 64, Version 19.0.4.227 Build 20190416
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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.cactusBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
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

(Continued on next page)
## Fujitsu

**PRIMERGY TX1310 M3, Intel Core i3-7101E, 3.90 GHz**

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<th>SPECrate®2017_fp_base</th>
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**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Test Date:** May-2020  
**Tested by:** Fujitsu  
**Hardware Availability:** May-2017  
**Software Availability:** Apr-2020

### Base Portability Flags (Continued)

- 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:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4

#### C++ benchmarks:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4

#### Fortran benchmarks:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs
- -align array32byte

#### Benchmarks using both Fortran and C:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs
- -align array32byte

#### Benchmarks using both C and C++:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4

#### Benchmarks using Fortran, C, and C++:

- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs
- -align array32byte

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:

# SPEC CPU®2017 Floating Point Rate Result

**Fujitsu**

PRIMERGY TX1310 M3, Intel Core i3-7101E, 3.90 GHz

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Tested with SPEC CPU®2017 v1.1.0 on 2020-06-01 05:46:40-0400.
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