## SPEC CPU®2017 Floating Point Rate Result

**Fujitsu**

**PRIMERGY TX1310 M5, Intel Xeon E-2356G, 3.20GHz**

**SPECrater®2017_fp_base = 52.4**  
**SPECrater®2017_fp_peak = Not Run**

<table>
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<tr>
<th>Test Sponsor:</th>
<th>Fujitsu</th>
<th>Test Date:</th>
<th>Sep-2021</th>
<th>Hardware Availability:</th>
<th>Nov-2021</th>
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<td>Tested by:</td>
<td>Fujitsu</td>
<td>Software Availability:</td>
<td>Jun-2021</td>
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</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E-2356G  
- **Max MHz:** 5000  
- **Nominal:** 3200  
- **Enabled:** 6 cores, 1 chip  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 48 KB D on chip per core  
- **L2:** 512 KB I+D on chip per core  
- **L3:** 12 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E)  
- **Storage:** 1 x SATA M.2 SSD, 480GB  
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP3  
  5.3.18-57-default
- **Compiler:**  
  C/C++: Version 2021.1 of Intel oneAPI DPC++/C++  
  Compiler Build 20201113 for Linux;  
  Fortran: Version 2021.1 of Intel Fortran Compiler  
  Classic Build 20201112 for Linux;  
- **Parallel:** No  
- **Firmware:** Fujitsu BIOS Version V5.0.0.22 R1.7.0 for  
  D3930-A1x, Released Nov-2021  
  tested as V5.0.0.22 R1.4.0 for D3930-A1x Sep-2021  
- **File System:** xfs  
- **System State:** Run level 5 (graphical)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** jemalloc memory allocator V5.0.1  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage

### Copies

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base (52.4)</th>
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<tr>
<td>538.imagick_r        6</td>
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<td>544.nab_r            6</td>
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<tr>
<td>549.fotonik3d_r      6</td>
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<td>554.roms_r           6</td>
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<td>549.fotonik3d_r      6</td>
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<td>554.roms_r           6</td>
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**Fujitsu**

**PRIMERGY TX1310 M5, Intel Xeon E-2356G, 3.20GHz**
Results Table

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</table>

SPECrate®2017_fp_base = 52.4
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 numactl 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"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/home/PVT/speccpu-1.1.8_ic2021.1_b/lib/intel64:/home/PVT/speccpu-1.1.8_ic2021.1_b/je5.0.1-64"
MALLOC_CONF = "retain:true"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1
Transparent Huge Pages enabled by default

(Continued on next page)
Fujitsu

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**CPU2017 License:** 19
**Test Sponsor:** Fujitsu
**Test Date:** Sep-2021
**Hardware Availability:** Nov-2021
**Tested by:** Fujitsu
**Software Availability:** Jun-2021

**Spec CPU®2017 Floating Point Rate Result**

**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>
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, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

**Platform Notes**

BIOS configuration:
Hyper Threading = Disabled
DCU Streamer Prefetcher = Disabled
AES = Disabled

Sysinfo program /home/PVT/speccpu-1.1.8_ic2021.1_b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaefc64d
running on localhost Wed Sep 22 17:46:48 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) Xeon(R) E-2356G CPU @ 3.20GHz
  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 from util-linux 2.36.2:

```
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): 6
```

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

- **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:** 167
- **Model name:** Intel(R) Xeon(R) E-2356G CPU @ 3.20GHz
- **Stepping:** 1
- **CPU MHz:** 1085.117
- **CPU max MHz:** 5000.0000
- **CPU min MHz:** 800.0000
- **BogoMIPS:** 6384.00
- **Virtualization:** VT-x
- **L1d cache:** 288 KiB
- **L1i cache:** 192 KiB
- **L2 cache:** 3 MiB
- **L3 cache:** 12 MiB
- **NUMA node0 CPU(s):** 0-5
- **Vulnerability Itlb multihit:** Not affected
- **Vulnerability L1tf:** Not affected
- **Vulnerability Mds:** Not affected
- **Vulnerability Meltdown:** Not affected
- **Vulnerability Spec store bypass:** Mitigation; Speculative Store Bypass disabled via prctl and seccomp
- **Vulnerability Spectre v1:** Mitigation; usercopy/swapgs barriers and __user pointer sanitization
- **Vulnerability Spectre v2:** Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
- **Vulnerability Srbds:** Not affected
- **Vulnerability Txs async abort:** Not affected
- **Flags:** fpu vme de pse pmce msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrunc pdcm pcid sse4_1 mce x2apic movbe popcnt tsarch_vpid tsc_deadline_timer xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb stibp ibrs_most_recent trp_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid mxsr avx512f avx512dq rdseed adx smap avx512ifma clflushopt intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavevs avxloadopt dtherm ida arat pin pts hwp hwp_notify hwp_act_window hwp_epp hwp_pkg_req avx512vbi umip pku ospke avx512_vbmi2 gfn i avx512_vnni avx512_vl morris flush_l1d arch_capabilities

From lscpu --cache:
SPEC CPU®2017 Floating Point Rate Result
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PRIMERGY TX1310 M5, Intel Xeon E-2356G, 3.20GHz

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Test Date: Sep-2021
Hardware Availability: Nov-2021
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Platform Notes (Continued)

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<td>12M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
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<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

/proc/cpuinfo cache data

cache size : 12288 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 4 5
node 0 size: 31513 MB
node 0 free: 30711 MB
node distances:
node 0
0: 10

From /proc/meminfo

MemTotal: 32269356 kB
 HugePages_Total: 0
 Hugepagesize: 2048 kB

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

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

os-release:

NAME="SLES"
VERSION="15-SP3"
VERSION_ID="1.5.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp3"

uname -a:
Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021
(ba3c2e9/lp-5d9e8aa) 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

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Platform Notes (Continued)

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/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Sep 22 17:37
SPEC is set to: /home/PVT/speccpu-1.1.8_ic2021.1_b
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 365G 59G 307G 16% /home

From /sys/devices/virtual/dmi/id
Vendor: FUJITSU
Product: D3930-A1

Memory:
2x Samsung M391A2K43DB1-CWE 16 GB 2 rank 3200

BIOS:
BIOS Vendor: FUJITSU // American Megatrends Inc.
BIOS Version: V5.0.0.22 R1.4.0 for D3930-A1x
BIOS Date: 09/03/2021
BIOS Revision: 1.4

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

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+++ Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
   Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---

Compiler Version Notes (Continued)

==============================================================================
C++, C | 511.povray_r(base) 526.blender_r(base)
+++ Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
   Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---

Compiler Version Notes (Continued)

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
+++ Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
   Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---

Compiler Version Notes (Continued)

==============================================================================
Fortran | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
+++ Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
   Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
---

Compiler Version Notes (Continued)

==============================================================================
Fortran, C | 521.wrf_r(base) 527.cam4_r(base)
+++ Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
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#### Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel (R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2021.1 Build 20201113

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------

#### Base Compiler Invocation

C benchmarks:  
`icx`

C++ benchmarks:  
`icpx`

Fortran benchmarks:  
`ifort`

Benchmarks using both Fortran and C:  
`ifort icx`

Benchmarks using both C and C++:  
`icpx icx`

Benchmarks using Fortran, C, and C++:  
`icpx icx ifort`

#### Base Portability Flags

- `503.bwaves_r: -DSPEC_LP64`
- `507.cactuBSSN_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`
- `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`
SPEC CPU®2017 Floating Point Rate Result

Fujitsu

PRIMERGY TX1310 M5, Intel Xeon E-2356G, 3.20GHz

SPECrate®2017_fp_base = 52.4
SPECrate®2017_fp_peak = Not Run

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

Test Date: Sep-2021
Hardware Availability: Nov-2021
Software Availability: Jun-2021

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

The flags files that were used to format this result can be browsed at
<table>
<thead>
<tr>
<th>SPEC CPU®2017 Floating Point Rate Result</th>
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You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-RKL-RevA.xml
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.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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