# SPEC CPU®2017 Integer Rate Result

**Fujitsu**

**PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon E-2356G, 3.20GHz**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>56.5</th>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
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## CPU2017 License:
19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2021

Hardware Availability: Mar-2022

Software Availability: Jun-2021

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## Hardware

**CPU Name:** Intel Xeon E-2356G

**Max MHz:** 5000

**Nominal:** 3200

**Enabled:** 6 cores, 1 chip, 2 threads/core

**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 R1.30.0 for D3931-C1x. Released Mar-2022

tested as V5.0.0.22 R1.15.0 for D3931-C1x Dec-2021

**File System:** xfs

**System State:** Run level 5 (multi-user)

**Base Pointers:** 64-bit

**Peak Pointers:** Not Applicable

**Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.
**SPEC CPU®2017 Integer Rate Result**

Copyright 2017-2022 Standard Performance Evaluation Corporation

**Fujitsu**

PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon E-2356G, 3.20GHz

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</table>

**SPECrate®2017_int_base = 56.5**

**SPECrate®2017_int_peak = Not Run**

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

---

**Submit Notes**

The config file option 'submit' was used.

---

**Operating System Notes**

Stack size set to unlimited using "ulimit -s unlimited"
cpupower -c all frequency-set -g performance

---

**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/lib/ia32:/home/PVT/speccpu-1.1.8_ic2021.1_b/je5.0.1-32"
```

```
MALLOCONF = "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

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>
```

(Continued on next page)
### Fujitsu

**PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon E-2356G, 3.20GHz**

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</table>

#### General Notes (Continued)

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.

#### Platform Notes

**BIOS configuration:**

- Adjacent Cache Line Prefetch = Disabled
- Package C-State limit = C6
- Per Core P State OS control mode = Disabled
- FAN Control = Full

**Sysinfo program** /

```
/home/PVT/speccpu-1.1.8_ic2021.1_b/bin/sysinfo
```

Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on sles15sp3 Thu Dec 16 23:03:54 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](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)
  12 "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 : 12
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):             12
On-line CPU(s) list: 0-11
Thread(s) per core: 2
Core(s) per socket: 6
Socket(s):          1
NUMA node(s):       1
Vendor ID:          GenuineIntel
CPU family:         6
```
**SPEC CPU®2017 Integer Rate Result**

Fujitsu
PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon E-2356G, 3.20GHz

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<thead>
<tr>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
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</table>

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**Platform Notes (Continued)**

- Model: 167
- Model name: Intel(R) Xeon(R) E-2356G CPU @ 3.20GHz
- Stepping: 1
- CPU MHz: 4465.776
- 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): 0-11
- Vulnerability Itlb multihit: Not affected
- Vulnerability Lltf: 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 Tsx async abort: Not affected
- 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 arch_perfmon pebs bts rep_good nopl x86topology nonstop_tsc cpuid aperfmpref 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 epb invpcid_single ssbd ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fsแกงส์ basส์  tsc_adjust bmi1 avx2 smep bmi2 erms invpcid mxp avx512f avx512dq rdseed adx smap avx512ifm clflushopt intel_pt avx512cd sha ni avx512bw avx512vl xsaves dtherm ida arat pln pts wwp notify wwp_act_window wwp_epp wwp_pkg_req avx512vmbi umip pku ospke avx512_vmbi2 gfi vaes vpcmwlqkd avx512_vnmi avx512_bitalg avx512_vpopcntdq rdpid fsrmd clear flush_l1d arch_capabilities

---

From lscpu --cache:

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/proc/cpuinfo cache data

(Continued on next page)
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- **CPU2017 License:** 19
- **Test Sponsor:** Fujitsu
- **Test Date:** Dec-2021
- **Hardware Availability:** Mar-2022
- **Tested by:** Fujitsu
- **Software Availability:** Jun-2021

## Platform Notes (Continued)

- **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 6 7 8 9 10 11
- Node 0 Size: 31512 MB
- Node 0 Free: 30636 MB
- Node distances:
  - Node 0
  - 0: 10

From `/proc/meminfo`

- MemTotal: 32268444 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From `/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor`

* performance

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

**os-release:**

- NAME="SLES"
- VERSION="15-SP3"
- VERSION_ID="15.3"
- 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 sles15sp3 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021
(ba3c2e9/1p-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
- **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/swaps barriers and __user pointer sanitization

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

CWE-2017-5715 (Spectre variant 2):
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

CWE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CWE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Dec 16 11:05

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  | 30G   | 336G  | 9%  | /home

From /sys/devices/virtual/dmi/id
Vendor: FUJITSU
Product: PRIMERGY TX1310 M5
Product Family: SERVER
Serial: xxxxxxxxxx

Additional information from dmidecode 3.2 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:
2x Samsung M391A2K43DB1-CWE 16 GB 2 rank 3200

BIOS:
BIOS Vendor: FUJITSU // American Megatrends International, LLC.
BIOS Version: V5.0.0.22 R1.15.0 for D3931-C1x
BIOS Date: 12/03/2021
BIOS Revision: 1.15

(End of data from sysinfo program)

**Compiler Version Notes**

==============================================================================
| C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)                        |
|   | 525.x264_r(base) 557.xz_r(base) |
==============================================================================

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
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==============================================================================
| C++ | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)           |
|     | 541.leela_r(base) |
==============================================================================

(Continued on next page)
Fujitsu
PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon
E-2356G, 3.20GHz

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

SPEC CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>SPECrate®2017_int_peak</th>
<th>Not Run</th>
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<tbody>
<tr>
<td>SPECrate®2017_int_base</td>
<td>56.5</td>
</tr>
</tbody>
</table>

Test Date: Dec-2021
Hardware Availability: Mar-2022
Software Availability: Jun-2021

Compiler Version Notes (Continued)

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.

Fortran | 548.exchange2_r(base)

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
### Fujitsu

**PRIMERGY TX1310 M5 (D3931-C100), Intel Xeon E-2356G, 3.20GHz**

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**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
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**Hardware Availability:** Mar-2022  
**Tested by:** Fujitsu  
**Software Availability:** Jun-2021

### Base Optimization Flags

#### C benchmarks:
- `-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math`  
- `-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`  
- `-mbranches-within-32B-boundaries`  
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`  
- `-lqkmalloc`

#### C++ benchmarks:
- `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto`  
- `-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`  
- `-mbranches-within-32B-boundaries`  
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`  
- `-lqkmalloc`

#### Fortran benchmarks:
- `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div`  
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`  
- `-auto -mbranches-within-32B-boundaries`  
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`  
- `-lqkmalloc`

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:


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