# SPEC CPU®2017 Integer Speed Result

**Fujitsu**

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

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base = 13.7</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>4</td>
<td></td>
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<tr>
<td>6</td>
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<tr>
<td>8</td>
<td></td>
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<tr>
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<td></td>
</tr>
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<td>12</td>
<td>13.6</td>
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</tr>
<tr>
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<tr>
<td>28</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><img src="https://www.spec.org/images/threads_graph.png" alt="Threads Graph" /></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECspeed®2017_int_base (13.7)</strong></td>
</tr>
</tbody>
</table>

## 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
- **Cache L2:** 512 KB I+D on chip per core
- **Cache 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:** Yes
- **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

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TEST DATE: Sep-2021

**Test Sponsor:** Fujitsu

**Hardware Availability:** Nov-2021

**Software Availability:** Jun-2021

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**CPU2017 License:** 19

**Test Date:** Sep-2021

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**Tested by:** Fujitsu

---

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

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<tr>
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<tbody>
<tr>
<td>0</td>
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<tr>
<td>---</td>
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<tr>
<td>8.68</td>
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</table>
Fujitsu
PRIMERGY TX1310 M5, Intel Xeon E-2356G, 3.20GHz

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
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<td>8.67</td>
<td>204</td>
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<td>605.mcf_s</td>
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<td>620.omnetpp_s</td>
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<td>623.xalancbmk_s</td>
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<td>76.0</td>
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<td>641.leela_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td>107</td>
<td>27.4</td>
<td>108</td>
<td>27.3</td>
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<tr>
<td>657.xz_s</td>
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<td>435</td>
<td>14.2</td>
<td>435</td>
<td>14.2</td>
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<td>14.2</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 13.7
SPECspeed®2017_int_peak = Not Run

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

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"
Kernel Boot Parameter set with: nohz_full=1-11

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/PVT/speccpu-1.1.8_ic2021.1_b/lib/intel64:/home/PVT/speccpu-1.1.8_1c2021.1_b/je5.0.1-64"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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
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)
### General Notes (Continued)

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

<table>
<thead>
<tr>
<th>BIOS configuration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjacent Cache Line Prefetch = Disabled</td>
</tr>
<tr>
<td>DCU Streamer Prefetcher = Disabled</td>
</tr>
<tr>
<td>Intel Virtualization Technology = Disabled</td>
</tr>
<tr>
<td>Enhanced C-states = Disabled</td>
</tr>
<tr>
<td>CState Pre-Wake = Disabled</td>
</tr>
<tr>
<td>Energy Efficient Turbo = Disabled</td>
</tr>
<tr>
<td>DDR PowerDown and idle counter = PCODE</td>
</tr>
</tbody>
</table>

Sysinfo program /home/PVT/speccpu-1.1.8_ic2021.1_b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6a4d64d
running on localhost Wed Sep 15 22:13:20 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)
  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
```

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

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

SPECspeed®2017_int_base = 13.7
SPECspeed®2017_int_peak = Not Run

Platform Notes (Continued)

CPU family: 6
Model: 167
Model name: Intel(R) Xeon(R) E-2356G CPU @ 3.20GHz
Stepping: 1
CPU MHz: 1100.364
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 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; userscopy/swapsgs 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 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 tsc_deadline_timer aes xsave f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb ibrs_enhanced tpr_shadow vmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid mxp avx512f avx512dq rdseed adx smap avx512ifma clflushopt intel_pt avx512cd sha ni avx512bw avx512vl xsaves opt xsaveopt xsave cvtsid xsaveopt xsaveopt xsave avx512eofl xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp hwp_pkg_req avx512vbm avx512vmbi umip pku ospke avx512_vbmi2 gfni vaes vpcmvdqavx512_vnni avx512_bitalg avx512_vpopcntdq rdpid fsrm md_clear flush_l1d arch_capabilities

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
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<tbody>
<tr>
<td>L1d</td>
<td>48K</td>
<td>288K</td>
<td>12</td>
<td>Data</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>192K</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L2</td>
<td>512K</td>
<td>3M</td>
<td>8</td>
<td>Unified</td>
<td>2</td>
<td>1024</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>L3</td>
<td>12M</td>
<td>12M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
<td>12288</td>
<td>1</td>
<td>64</td>
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Fujitsu

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

| SPECspeed®2017_int_base = 13.7 |
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CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Sep-2021
Tested by: Fujitsu
Hardware Availability: Nov-2021
Software Availability: Jun-2021

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.
  available: 1 nodes (0)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11
  node 0 size: 31511 MB
  node 0 free: 30698 MB
  node distances:
    node 0
      0:  10

From /proc/meminfo
  MemTotal:       32267736 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="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 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
CVE-2017-5754 (Meltdown):
  Mitigation: Speculative Store
    Bypass disabled via prctl and
    seccomp
CVE-2018-3639 (Speculative Store Bypass):
  Mitigation: usercopy/swaps
    barriers and __user pointer
CVE-2017-5753 (Spectre variant 1):

(Continued on next page)
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Platform Notes (Continued)

- 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 15 18:29

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

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 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
600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
625.x264_s(base) 657.xz_s(base)

C++
620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
641.leela_s(base)

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**Fujitsu**

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| CPU2017 License: 19 | Test Date: Sep-2021 |
| Test Sponsor: Fujitsu | Hardware Availability: Nov-2021 |
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### Compiler Version Notes (Continued)

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

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

Fortran | 648.exchange2_s(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

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64  
602.gcc_s: -DSPEC_LP64  
605.mcf_s: -DSPEC_LP64  
620.omnetpp_s: -DSPEC_LP64  
623.xalancmk_s: -DSPEC_LP64 -DSPEC_LINUX  
625.x264_s: -DSPEC_LP64  
631.deepsjeng_s: -DSPEC_LP64  
641.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64  
657.xz_s: -DSPEC_LP64

### Base Optimization Flags

C benchmarks:
- -DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl, -z, muldefs -xCORE-AVX2

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C benchmarks (continued):
-03 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX2 -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:
-m64 -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries

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:
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.

Tested with SPEC CPU®2017 v1.1.8 on 2021-09-15 09:13:20-0400.
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