# SPEC CPU®2017 Integer Speed Result

**Fujitsu**

**PRIMERGY TX1330 M5, Intel Xeon E-2356G, 3.20GHz**

<table>
<thead>
<tr>
<th>Threaded SPECbench</th>
<th>Value</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>9.30</td>
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<tr>
<td>602.gcc_s</td>
<td>14.6</td>
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<td>605.mcf_s</td>
<td>28.4</td>
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<tr>
<td>620.omnetpp_s</td>
<td>10.6</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>19.7</td>
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<tr>
<td>625.x264_s</td>
<td>24.5</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>8.34</td>
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<tr>
<td>641.leela_s</td>
<td>6.84</td>
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<tr>
<td>648.exchange2_s</td>
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<tr>
<td>657.xz_s</td>
<td>15.7</td>
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</table>

## SPECspeed®2017_int_base = 14.9

## SPECspeed®2017_int_peak = Not Run

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

### 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  
- **Memory:** 32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E, running at 2933)  
- **Storage:** 1 x SATA M.2 SSD, 240GB  
- **Other:** None  

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP3  
- **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  
- **Operating System:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Firmware:** Fujitsu BIOS Version V5.0.0.22 R1.31.0 for D3931-A1x, Released Mar-2022 tested as V5.0.0.22 R1.20.0 for D3931-A1x Jan-2022  
- **File System:** xfs  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage
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<tr>
<th>Benchmark</th>
<th>Threads</th>
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<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>187</td>
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<td>272</td>
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<td>166</td>
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<td>620.omnetpp_s</td>
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<td>10.5</td>
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<td>71.7</td>
<td>19.8</td>
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<td>72.0</td>
<td>24.5</td>
<td>72.0</td>
<td>24.5</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>12</td>
<td>172</td>
<td>8.35</td>
<td>172</td>
<td>8.34</td>
<td>172</td>
<td>8.34</td>
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<td>641.leela_s</td>
<td>12</td>
<td>249</td>
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<tr>
<td>648.exchange2_s</td>
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<td>29.0</td>
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<td>29.0</td>
<td>102</td>
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<td>657.xz_s</td>
<td>12</td>
<td>393</td>
<td>15.7</td>
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<td>15.7</td>
<td>392</td>
<td>15.8</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 14.9**

**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"

cpupower -c all frequency-set -g performance

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:

KMP_AFFINITY = "granularity=fine,scatter"

LD_LIBRARY_PATH = 

"/home/Sizing/speccpu-1.1.8_b/lib/intel64:/home/Sizing/speccpu-1.1.8_b/j e5.0.1-64"

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) is mitigated in the system as tested and documented.

(Continued on next page)
Fujitsu

PRIMERGY TX1330 M5, Intel Xeon E-2356G, 3.20GHz

SPECSpeed®2017_int_base = 14.9
SPECSpeed®2017_int_peak = Not Run

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

BIOS configuration:
Energy Efficient Turbo = Disabled
FAN Control = Full
SA GV High Gear = Gear1
System date was wrongly set. The actual date is Jan-2022

Sysinfo program /home/Sizing/speccpu-1.1.8_b/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aaca364d
running on localhost Thu Apr 29 21:03:27 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
CPU family: 6
Model: 167
Model name: Intel(R) Xeon(R) E-2356G CPU @ 3.20GHz

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stepping</td>
<td>1</td>
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<tr>
<td>CPU MHz</td>
<td>4273.460</td>
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<tr>
<td>CPU max MHz</td>
<td>5000.0000</td>
</tr>
<tr>
<td>CPU min MHz</td>
<td>800.0000</td>
</tr>
<tr>
<td>BogoMIPS</td>
<td>6384.00</td>
</tr>
<tr>
<td>Virtualization</td>
<td>VT-x</td>
</tr>
<tr>
<td>L1d cache</td>
<td>288 KiB</td>
</tr>
<tr>
<td>L1i cache</td>
<td>192 KiB</td>
</tr>
<tr>
<td>L2 cache</td>
<td>3 MiB</td>
</tr>
<tr>
<td>L3 cache</td>
<td>12 MiB</td>
</tr>
<tr>
<td>NUMA node0 CPU(s)</td>
<td>0-11</td>
</tr>
<tr>
<td>Vulnerability Itlb multihit</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability L1tf</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Mds</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Meltdown</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Spec store bypass</td>
<td>Mitigation; Speculative Store Bypass disabled via prctl and seccomp</td>
</tr>
<tr>
<td>Vulnerability Spectre v1</td>
<td>Mitigation; usercopy/swapgs barriers and __user pointer sanitization</td>
</tr>
<tr>
<td>Vulnerability Spectre v2</td>
<td>Mitigation; Enhanced IBRS, IBPB conditional, RSB filling</td>
</tr>
<tr>
<td>Vulnerability Srbds</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Tx5 async abort</td>
<td>Not affected</td>
</tr>
<tr>
<td>Flags</td>
<td>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_know...</td>
</tr>
</tbody>
</table>

### From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d</td>
<td>48K</td>
<td>288K</td>
<td>12</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>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>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>3</td>
<td>12288</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

/proc/cpuinfo cache data

cache size : 12288 KB

(Continued on next page)
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**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu

### Platform Notes (Continued)

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: 31046 MB
- node distances:
  - node 0
    - 0: 10

From `/proc/meminfo`

- MemTotal: 32268280 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

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

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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Tested by: Fujitsu

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

Platform Notes (Continued)

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

run-level 3 Apr 29 21:00

SPEC is set to: /home/Sizing/speccpu-1.1.8_b
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 140G 73G 67G 53% /home

From /sys/devices/virtual/dmi/id
Vendor: FUJITSU
Product: PRIMERGY TX1330 M5
Product Family: SERVER
Serial: EWBUxxxxxx

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, configured at 2933

BIOS:
BIOS Vendor: FUJITSU // American Megatrends International, LLC.
BIOS Version: V5.0.0.22 R1.20.0 for D3931-A1x
BIOS Date: 01/11/2022
BIOS Revision: 1.20

(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)
------------------------------------------------------------------------------
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.
==============================================================================

C++ | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
    | 641.leela_s(base)
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Fujitsu

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<td>Mar-2022</td>
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**Compiler Version Notes (Continued)**

Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

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

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

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

**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.xalancbmk_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
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops

(Continued on next page)
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<tbody>
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<td>Mar-2022</td>
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</table>

**CPU2017 License:** 19

**Base Optimization Flags (Continued)**

**C benchmarks (continued):**
- `-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`  
- `-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:

---

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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 2021-04-29 08:03:27-0400.

Report generated on 2022-03-16 13:58:54 by CPU2017 PDF formatter v6442.

Originally published on 2022-03-16.