# SPEC CPU®2017 Integer Rate Result

## Fujitsu

PRIMERGY TX1330 M5, Intel Xeon E-2378G, 2.80GHz

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>19</th>
</tr>
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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>65.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E-2378G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>5100</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2800</td>
</tr>
<tr>
<td>Enabled:</td>
<td>8 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>512 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>16 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x SATA M.2 SSD, 240GB</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 15 SP3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>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;</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>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</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
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</table>

### SPECrate®2017_int_base (65.4)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate®2017_int_base (65.4)</th>
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<tbody>
<tr>
<td>500.perlbench_r</td>
<td>16</td>
<td>47.7</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>16</td>
<td>45.1</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>16</td>
<td>33.0</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>16</td>
<td>85.5</td>
</tr>
<tr>
<td>523.xalancmk_r</td>
<td>16</td>
<td>147</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>16</td>
<td>53.6</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>16</td>
<td>144</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>16</td>
<td>54.8</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>16</td>
<td>36.4</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>16</td>
<td>105</td>
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SPEC CPU®2017 Integer Rate Result
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Fujitsu

PRIMERGY TX1330 M5, Intel Xeon E-2378G, 2.80GHz

SPECrate®2017_int_base = 65.4
SPECrate®2017_int_peak = Not Run

CPU2017 License: 19
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Results Table

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<tr>
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<th>Seconds</th>
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<td>500.perlbench_r</td>
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<td>534</td>
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<td>503</td>
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<td>85.7</td>
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<td>147</td>
<td>191</td>
<td>147</td>
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<tr>
<td>531.deepsjeng_r</td>
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<td>53.6</td>
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<td>541.leela_r</td>
<td>16</td>
<td>484</td>
<td>54.8</td>
<td>484</td>
<td>54.8</td>
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<td>54.8</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>16</td>
<td>291</td>
<td>144</td>
<td>292</td>
<td>144</td>
<td>292</td>
<td>144</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>16</td>
<td>474</td>
<td>36.4</td>
<td>475</td>
<td>36.4</td>
<td>475</td>
<td>36.4</td>
</tr>
</tbody>
</table>

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/Sizing/speccpu-1.1.8_b/lib/intel64:/home/Sizing/speccpu-1.1.8_b/lib/ia32:/home/Sizing/speccpu-1.1.8_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.:
umactl --interleave=all runcpu <etc>

(Continued on next page)
Fujitsu

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

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

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
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 982a61ec0915b55891ef0e16acafc64d
running on localhost Thu Apr 29 21:01:00 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-2378G CPU @ 2.80GHz
  1 "physical id"s (chips)
  16 "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 : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7

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): 16
  On-line CPU(s) list: 0-15
  Thread(s) per core: 2
  Core(s) per socket: 8
  Socket(s): 1
  NUMA node(s): 1
  Vendor ID: GenuineIntel

(Continued on next page)
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Platform Notes (Continued)

- CPU family: 6
- Model: 167
- Model name: Intel(R) Xeon(R) E-2378G CPU @ 2.80GHz
- Stepping: 1
- CPU MHz: 4793.706
- CPU max MHz: 5100.0000
- CPU min MHz: 800.0000
- BogoMIPS: 5616.00
- Virtualization: VT-x
- L1d cache: 384 KiB
- L1i cache: 256 KiB
- L2 cache: 4 MiB
- L3 cache: 16 MiB
- NUMA node0 CPU(s): 0–15
- Vulnerability Itlb multihit: Not affected
- Vulnerability Llft: 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 sanitation
- 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 pdmpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl x87nop mxsave dxsave stibp lse stia epic fsBITS pdmpe31 nonstop_tsc tsc_known_freq performed tsc manufacturer ibpb ibrs ibrs_shadow ibrs_flight vmmcall scr_msr sse3 mse3 mpx invite imatch ms fxsr_apic idt nmi tsc Calibration vfsync遏等 placemem
- 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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</thead>
<tbody>
<tr>
<td>L1d</td>
<td>48K</td>
<td>384K</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>256K</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>4M</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>16M</td>
<td>16M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
<td>16384</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Fujitsu
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Platform Notes (Continued)

/proc/cpuinfo cache data
  cache size: 16384 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 12 13 14 15
  node 0 size: 31511 MB
  node 0 free: 31027 MB
  node distances:
    node 0
      0: 10

From /proc/meminfo
  MemTotal: 32267384 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/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
    (ba3c2e9/1p-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):
  Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass):
  Mitigation: usercopy/swapsgs barriers and __user pointer

(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 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

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

C++      | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)

(Continued on next page)
## Compiler Version Notes (Continued)

<table>
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<tr>
<th>541.leela_r(base)</th>
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<tbody>
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<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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</tbody>
</table>

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

### 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.xalanchmk_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
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</table>

**Base Optimization Flags**

C benchmarks:
```sh
-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:
```sh
-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:
```sh
-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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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 08:01:00-0400.
Report generated on 2022-03-16 13:58:54 by CPU2017 PDF formatter v6442.
Originally published on 2022-03-16.