SPEC CPU®2017 Floating Point Speed Result

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

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

SPECSpeed®2017_fp_base = 41.0
SPECSpeed®2017_fp_peak = Not Run

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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<tr>
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<tr>
<td>654.roms_s</td>
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**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
- **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:** Fortran: Version 2021.1 of Intel Fortran Compiler
  C/C++: Version 2021.1 of Intel C/C++ Compiler
- **Parallel:** Yes
- **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
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS and OS set to prefer performance
  at the cost of additional power usage.
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Results Table

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<tr>
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SPECspeed®2017_fp_base = 41.0
SPECspeed®2017_fp_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"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
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"
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)
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General Notes (Continued)

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
Package C-State un-demotion = Enabled
REFRESH_2X_MODE = 2- Enabled HOT only
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 Wed Dec 22 14:55:04 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
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
### Platform Notes (Continued)

- CPU MHz: 1760.866
- 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 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 rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf 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 f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibpb ibrs ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fsgsbase ept堇adj bmi1 avx2 smep bmi2 3dnowprefetch cpuid_fault
- From lscpu --cache:
  - NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
  - L1d 48K 288K 12 Data 1 64 1 64
  - L1i 32K 192K 8 Instruction 1 64 1 64
  - L2 512K 3M 8 Unified 2 1024 1 64
  - L3 12M 12M 16 Unified 3 12288 1 64

From numactl --hardware
- cache size : 12288 KB

(Continued on next page)
Platform Notes (Continued)

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: 30728 MB
 node distances:
 node 0
 0: 10

From /proc/meminfo
 MemTotal:       32269780 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 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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swaps barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
## Fujitsu

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### SPEC CPU 2017 Floating Point Speed Result

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<th>SPECspeed²017_fp_base</th>
<th>SPECspeed²017_fp_peak</th>
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<tbody>
<tr>
<td>41.0</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

- **CVE-2019-11135 (TSX Asynchronous Abort):** Not affected

- run-level 5 Dec 22 14:52

- 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 | 62G  | 303G  | 17%  | /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               | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
------------------------------------------------------------------------------
Intel(R) C 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.
------------------------------------------------------------------------------

C++, C, Fortran | 607.cactuBSSN_s(base)
==============================================================================
Intel(R) C++ 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.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
```

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

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

### Base Compiler Invocation

**C benchmarks:**
- `icc`

**Fortran benchmarks:**
- `ifort`

**Benchmarks using both Fortran and C:**
- `ifort icc`

**Benchmarks using Fortran, C, and C++:**
- `icpc icc ifort`

### Base Portability Flags

603.bwaves_s: `-DSPEC_LP64`
Base Portability Flags (Continued)

- 607.cactuBSSN_s: -DSPEC_LP64
- 619.lbm_s: -DSPEC_LP64
- 621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- assume byterecl
- 638.imagick_s: -DSPEC_LP64
- 644.nab_s: -DSPEC_LP64
- 649.fotonik3d_s: -DSPEC_LP64
- 654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
- -m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
- -mbranches-within-32B-boundaries

Fortran benchmarks:
- -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
- -nostandard-realloc-lhs -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both Fortran and C:
- -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
- -DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
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Benchmarks using Fortran, C, and C++:
- -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
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- -DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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-RevC.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 2021-12-22 00:55:04-0500.  
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