### SPEC® CPU2017 Floating Point Rate Result

**Fujitsu**
PRIMERGY CX2550 M4, Intel Xeon Silver 4114T, 2.20GHz

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
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<tbody>
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<td>SPECrate2017_fp_peak</td>
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**CPU2017 License:** 19  
**Test Date:** Apr-2018  
**Test Sponsor:** Fujitsu  
**Hardware Availability:** Dec-2017  
**Tested by:** Fujitsu  
**Software Availability:** Mar-2018

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<tr>
<td>554.roms_r</td>
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</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Silver 4114T  
- **Max MHz.** 3000  
- **Nominal:** 2200  
- **Enabled:** 20 cores, 2 chips, 2 threads/core  
- **Orderable:** 1,2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 13.75 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 192 GB (12 x 16 GB 2Rx4 PC4-2666V-R, running at 2400)  
- **Storage:** 1 x SATA SSD, 960 GB  
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP2  
  4.4.114-92.64-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
  Compiler for Linux;  
  Fortran: Version 18.0.0.128 of Intel Fortran  
  Compiler for Linux  
- **Parallel:** No  
- **Firmware:** Fujitsu BIOS Version V1.0.0.0 R1.27.0 for D3853-A1x. Released Mar-2018  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** None
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Results Table

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</tbody>
</table>

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Set Kernel Boot Parameter: nohz_full=1-39
Set CPU frequency governor to maximum performance with:
cpupower -c all frequency-set -g performance
Process tuning settings:
  echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns
  echo 15000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
cpu idle state set with:
cpupower idle-set -d 1
cpupower idle-set -d 2

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017/lib/ia32:/home/Benchmark/speccpu2017/lib/intel64"
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/Benchmark/speccpu2017/je5.0.1-32"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/Benchmark/speccpu2017/je5.0.1-64"

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

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.4  
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>

Yes: 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:  
DCU Streamer Prefetcher = Disabled  
Intel Virtualization Technology = Disabled  
Power Technology = Custom  
HWPM Support = Disabled  
Uncore Frequency Scaling = Disabled  
Sub NUMA Clustering = Disabled  
Stale AtoS = Enabled  
LLC dead line alloc = Disabled  
Sysinfo program /home/Benchmark/speccpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on CX2550M4 Fri Apr 20 21:50:14 2018

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) Silver 4114T CPU @ 2.20GHz  
2 "physical id"s (chips)  
40 "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 : 10  
siblings : 20  
physical 0: cores 0 1 2 3 4 8 9 10 11 12  
physical 1: cores 0 1 2 3 4 8 9 10 11 12

(Continued on next page)
### Fujitsu

**PRIMERGY CX2550 M4, Intel Xeon Silver 4114T, 2.20GHz**

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| Tested by: | Fujitsu |
| Test Date: | Apr-2018 |
| Hardware Availability: | Dec-2017 |
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**Platform Notes (Continued)**

From `lscpu`:
- **Architecture**: x86_64
- **CPU op-mode(s)**: 32-bit, 64-bit
- **Byte Order**: Little Endian
- **CPU(s)**: 40
- **On-line CPU(s) list**: 0-39
- **Thread(s) per core**: 2
- **Core(s) per socket**: 10
- **Socket(s)**: 2
- **NUMA node(s)**: 2
- **Vendor ID**: GenuineIntel
- **CPU family**: 6
- **Model**: 85
- **Model name**: Intel(R) Xeon(R) Silver 4114T CPU @ 2.20GHz
- **Stepping**: 4
- **CPU MHz**: 2201.000
- **CPU max MHz**: 2201.0000
- **CPU min MHz**: 800.0000
- **BogoMIPS**: 4389.71
- **Virtualization**: VT-x
- **L1d cache**: 32K
- **L1i cache**: 32K
- **L2 cache**: 1024K
- **L3 cache**: 14080K
- **NUMA node0 CPU(s)**: 0-9, 20-29
- **NUMA node1 CPU(s)**: 10-19, 30-39
- **Flags**: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc aperfmperf n捉onstop tsc aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm intel_pt rsb_cxsw spec_ctrl retperline kaiser tpr_shadow vnmi fexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc

*/proc/cpuinfo*
- **cache data**
  - **cache size**: 14080 KB

From `numactl --hardware` WARNING: a numactl 'node' might or might not correspond to a physical chip.
- **available**: 2 nodes (0-1)
- **node 0 cpus**: 0 1 2 3 4 5 6 7 8 9 20 21 22 23 24 25 26 27 28 29
- **node 0 size**: 95373 MB
- **node 0 free**: 94995 MB
Fujitsu
PRIMERGY CX2550 M4, Intel Xeon Silver 4114T, 2.20GHz

SPECrate2017_fp_base = 104
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Platform Notes (Continued)

node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39
node 1 size: 96641 MB
node 1 free: 96320 MB
node distances:
    node 0  1
      0: 10  21
      1: 21  10

From /proc/meminfo
MemTotal:       196622460 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release*/etc/*version*
SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 2
    # This file is deprecated and will be removed in a future service pack or release.
    # Please check /etc/os-release for details about this release.
os-release:
    NAME="SLES"
    VERSION="12-SP2"
    VERSION_ID="12.2"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
    Linux CX2550M4 4.4.114-92.64-default #1 SMP Thu Feb 1 19:18:19 UTC 2018 (c6ce5db)
    x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 20 13:54

SPEC is set to: /home/Benchmark/speccpu2017

Filesystem  Type Size Used Avail Use% Mounted on
/dev/sda4    xfs  852G  17G  836G   2% /home

Additional information from dmidecode 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.
    BIOS FUJITSU V1.0.0.0 R1.27.0 for D3853-A1x 03/15/2018

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

Memory:  
12x Hynix HMA42GR7JR4N-VK 16 GB 2 rank 2666, configured at 2400  
4x Not Specified Not Specified

(End of data from sysinfo program)

#### Compiler Version Notes

```plaintext
== CACTUS Version Notes ==
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
-------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------
---
CXXC 508.namd_r(base) 510.parest_r(base)
-------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------
---
CC  511.povray_r(base) 526.blender_r(base)
-------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------
---
FC  507.cactuBSSN_r(base)
-------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------
---
FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
-------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
```
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Compiler Version Notes (Continued)

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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

CC 521.wrf_r(base) 527.cam4_r(base)

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

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG

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### Base Portability Flags (Continued)

- 538.imagick_r: `-DSPEC_LP64`
- 544.nab_r: `-DSPEC_LP64`
- 549.fotonik3d_r: `-DSPEC_LP64`
- 554.roms_r: `-DSPEC_LP64`

---

### Base Optimization Flags

**C benchmarks:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`

**C++ benchmarks:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`

**Fortran benchmarks:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

**Benchmarks using both Fortran and C:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

**Benchmarks using both C and C++:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`

**Benchmarks using Fortran, C, and C++:**

- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-nostandard-realloc-lhs`  
- `-align array32byte`

---

### Base Other Flags

**C benchmarks:**

- `-m64`  
- `-std=c11`

**C++ benchmarks:**

- `-m64`

**Fortran benchmarks:**

- `-m64`

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*(Continued on next page)*
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Base Other Flags (Continued)

Benchmarks using both Fortran and C:
-m64 -std=c11

Benchmarks using both C and C++:
-m64 -std=c11

Benchmarks using Fortran, C, and C++:
-m64 -std=c11

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-V1.2-SKL-RevE.xml

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Tested with SPEC CPU2017 v1.0.2 on 2018-04-20 08:50:13-0400.
Originally published on 2018-05-29.