Fujitsu
PRIMERGY CX2550 M5, Intel Xeon Gold 6230, 2.10 GHz

SPECrate®2017_fp_base = 202
SPECrate®2017_fp_peak = Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Mar-2019
Tested by: Fujitsu
Hardware Availability: Apr-2019
Software Availability: Feb-2019

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

Hardware

CPU Name: Intel Xeon Gold 6230
Max MHz: 3900
Nominal: 2100
Enabled: 40 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: 27.5 MB I+D on chip per chip
Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)
Storage: 1 x SATA M.2 SSD, 256 GB
Other: None

Software

Compiler: C/C++; Version 19.0.0.117 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux
Parallel: No
Firmware: Fujitsu BIOS Version V1.0.0.0 R1.6.0 for D3853-B1x,
released Jun-2019. Tested as V1.0.0.0 R1.3.3 for D3853-B1x Mar-2019
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --
### Results Table

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</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"
Kernel Boot Parameter set with : nohz_full=1-79
Process tuning settings:
echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns

### General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-1.0.5/icc19-lib/intel64"

Binaries compiled on a system with 2x Intel Xeon E5-2667 v2 CPU + 64GB RAM memory using SUSE Linux Enterprise Server 12 SP2
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.:
(Continued on next page)
**Fujitsu**

PRIMERGY CX2550 M5, Intel Xeon Gold 6230, 2.10 GHz

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

**General Notes (Continued)**

numactl --interleave=all runcpu <etc>

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:  
Power Technology = Custom  
Energy Performance = Balanced Performance  
Uncore Frequency Scaling = Disabled  
Sub NUMA Clustering = Enabled  
LLC Prefetch = Enabled  
Sysinfo program /home/Benchmark/speccpu2017-1.0.5/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9  
running on linux-3m0d Sat Mar 30 01:28:06 2019

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) Gold 6230 CPU @ 2.10GHz
2 "physical id"s (chips)
80 "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 : 20
  siblings  : 40
    physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
    physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                80
On-line CPU(s) list:   0-79
Thread(s) per core:    2
Core(s) per socket:    20
Socket(s):             2
NUMA node(s):          4
```
**Platform Notes (Continued)**

Vendor ID:           GenuineIntel
CPU family:          6
Model:               85
Model name:          Intel(R) Xeon(R) Gold 6230 CPU @ 2.10GHz
Stepping:            5
CPU MHz:             2100.000
CPU max MHz:         3900.0000
CPU min MHz:         1000.0000
BogoMIPS:            4200.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            1024K
L3 cache:            28160K
NUMA node0 CPU(s):   0,2,5,6,10-12,15,16,40-42,45,46,50-52,55,56
NUMA node1 CPU(s):   3,4,7-9,13,14,17-19,43,44,47-49,53,54,57-59
NUMA node2 CPU(s):   20,22,25,26,30-32,35,36,60-62,65,66,70-72,75,76
NUMA node3 CPU(s):   23,24,27-29,33,34,37-39,63,64,67-69,73,74,77-79
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 xtopology nonstop_tsc cpuid
aperorfperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtpr pdcm pcid dcasse4_1 ssse3 sse2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avxf16c rdrand lahf_lm abml1e avx2 smep bmi2  invpcid rtm cqm mxp rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsaves xsavec xmodifiers xsave qtagged maskregs msrレバ mfar msrレバ エラ
arch_capabilities

```
From numactl --hardware WARNING: a numactl 'node' might or might not correspond to
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
node 0 size: 95452 MB
node 0 free: 95187 MB
node 1 cpus: 3 4 7 8 9 13 14 17 18 19 20 21 22 25 26 30 31 32 33 34 35 36 60 61 62 65 66 70 71 72 75 76
node 1 size: 96756 MB
node 1 free: 96522 MB
node 2 cpus: 20 21 22 25 26 30 31 32 35 36 60 61 62 65 66 70 71 72 75 76
node 2 size: 96756 MB
node 2 free: 96520 MB
node 3 cpus: 23 24 27 28 29 33 34 37 38 39 63 64 67 68 69 73 74 77 78 79
```

(Continued on next page)
Platform Notes (Continued)

node 3 size: 96724 MB
node 3 free: 96522 MB
node distances:

node 0 1 2 3
0: 10 11 19 19
1: 11 10 19 19
2: 19 19 10 11
3: 19 19 11 10

From /proc/meminfo
MemTotal: 394945224 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:
NAME="SLES"
VERSION="15"
VERSION_ID="15"
PRETTY_NAME="SUSE Linux Enterprise Server 15"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:o:suse:sles:15"

uname -a:
Linux linux-3m0d 4.12.14-25.28-default #1 SMP Wed Jan 16 20:00:47 UTC 2019 (dd6077c)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Mar 30 01:13

SPEC is set to: /home/Benchmark/speccpu2017-1.0.5
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 btrfs 236G 48G 189G 20% /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 R1.3.3 for D3853-B1x 03/15/2019
SPEC CPU®2017 Floating Point Rate Result

<table>
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Fujitsu
PRIMERGY CX2550 M5, Intel Xeon Gold 6230, 2.10 GHz

**SPECrate®2017_fp_base = 202**

**SPECrate®2017_fp_peak = Not Run**

Platform Notes (Continued)

Memory:
6x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933
4x Not Specified Not Specified
6x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

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<td>19.0.0.117 20180804</td>
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SPEC CPU®2017 Floating Point Rate Result

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Compiler Version Notes (Continued)
ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Fortran, C | 521.wrf_r(base) 527.cam4_r(base)
ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation
C benchmarks:
icc -m64 -std=c11
C++ benchmarks:
icpc -m64
Fortran benchmarks:
ifort -m64
Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11
Benchmarks using both C and C++:
icpc -m64 icc -m64 -std=c11
Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

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

(Continued on next page)
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Base Portability Flags (Continued)

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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 -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

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-CSL-RevE.xml
## SPEC CPU®2017 Floating Point Rate Result

**Fujitsu**  
PRIMERGY CX2550 M5, Intel Xeon Gold 6230, 2.10 GHz

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| Software Availability: | Feb-2019 |

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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 v1.0.5 on 2019-03-29 12:28:05-0400.  