### SPEC CPU®2017 Floating Point Rate Result

**Fujitsu**  
PRIMERGY RX2540 M6, Intel Xeon Gold 5315Y, 3.20GHz  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 173</th>
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</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = Not Run</td>
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</tbody>
</table>

**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu  
**Test Date:** Oct-2022  
**Hardware Availability:** Aug-2021  
**Software Availability:** Jul-2022

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
</table>
| **CPU Name:** Intel Xeon Gold 5315Y  
**Max MHz:** 3600  
**Nominal:** 3200  
**Enabled:** 16 cores, 2 chips  
**Orderable:** 1,2 chips  
**Cache L1:** 32 KB I + 48 KB D on chip per core  
**L2:** 1.25 MB I+D on chip per core  
**L3:** 12 MB I+D on chip per chip  
**Other:** None  
**Memory:** 1 TB (32 x 32 GB 2Rx4 PC4-3200AA-R, running at 2933)  
**Storage:** 1 x SATA M.2 SSD, 480GB  
**Other:** None |
| **OS:** SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default  
**Compiler:** C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;  
**Parallel:** No  
**Firmware:** Fujitsu BIOS Version V1.0.0.0 R1.16.0 for D3891-A1x. Released Aug-2022  
**File System:** xfs  
**System State:** Run level 3 (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 |
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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**SPECrate**<sup>®</sup>2017<sub>fp_base</sub> = 173

**SPECrate**<sup>®</sup>2017<sub>fp_peak</sub> = Not Run

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## 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"
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/Benchmark/speccpu/lib/intel64:/home/Benchmark/speccpu/je5.0.1-64"
MALLOC_CONF = "retain:true"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default

(Continued on next page)
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>
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

BIOS configuration:
Hyper Threading = Disabled
Adjacent Cache Line Prefetch = Disabled
DCU Streamer Prefetcher = Disabled
Intel Virtualization Technology = Disabled
Override OS Energy Performance = Enabled
Energy Performance = Performance
CPU C1E Support = Disabled
Patrol Scrub = Enabled
FAN Control = Full

Sysinfo program /home/Benchmark/spec CPU/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Wed Oct 19 22:36:55 2022

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 5315Y CPU @ 3.20GHz
  2 "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 : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7

(Continued on next page)
Fujitsu
PRIMERGY RX2540 M6, Intel Xeon Gold 5315Y, 3.20GHz

Platform Notes (Continued)

From lscpu from util-linux 2.33.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 57 bits virtual
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 5315Y CPU @ 3.20GHz
Stepping: 6
CPU MHz: 3493.314
CPU max MHz: 3600.0000
CPU min MHz: 800.0000
BogoMIPS: 6400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 12288K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
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 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf npx pcpuid pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm lm 3nowprefetch cpuid_fault epb cat_13 invpcid_single sbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma idxflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xsaveopt xsavec qsaves cqm_llc cqm_occpx_llc cqm_mbb_total cqm_mbb_local wbinvd dtscn ida arat pfn pts hwp_act_window hwp_epp hwp_pkb_req avx512vmbi umip pku ospke avx512_vmbi2 qfni vaes vclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq 1a57 rdpid md_clear pconfig flush_l1d
arch_capabilities

/proc/cpuinfo cache data
  cache size: 12288 KB

From numactl --hardware

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

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Jul-2022

Platform Notes (Continued)

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
node 0 size: 515697 MB
node 0 free: 515222 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 515779 MB
node 1 free: 515309 MB
node distances:
  node 0 1
  0: 10 20
  1: 20 10

From /proc/meminfo
MemTotal: 1056233096 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-SP2"
  VERSION_ID="15.2"
  PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
  ID="sles"
  ID_LIKE="suse"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
  Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020
  (720aeba/lp-1a956f1) 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
CVE-2017-5753 (Spectre variant 1):

(Continued on next page)
Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): sanitation
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 Oct 19 22:35

SPEC is set to: /home/Benchmark/speccpu

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sdb2      xfs   445G   16G  430G   4% /

From /sys/devices/virtual/dmi/id
Vendor:         FUJITSU
Product:        PRIMERGY RX2540 M6
Product Family: SERVER
Serial:         EWAAxxxxxx

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: 32x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200, configured at 2933

BIOS:
  BIOS Vendor:       FUJITSU
  BIOS Version:      V1.0.0.0 R1.16.0 for D3891-A1x
  BIOS Date:         07/19/2022
  BIOS Revision:     1.16
  Firmware Revision: 3.40

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
==============================================================================
C++               | 508.namd_r(base) 510.parest_r(base)
(Continued on next page)
Compiler Version Notes (Continued)

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==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
==============================================================================

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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
==============================================================================

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Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
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Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
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Compiler Version Notes (Continued)

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

Base Compiler Invocation

C benchmarks:
  icx

C++ benchmarks:
  icpx

Fortran benchmarks:
  ifx

Benchmarks using both Fortran and C:
  ifx icx

Benchmarks using both C and C++:
  icpx icx

Benchmarks using Fortran, C, and C++:
  icpx icx ifx

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

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Base Optimization Flags

C benchmarks:
- `w -std=gnu11` -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- `flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

C++ benchmarks:
- `w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto`
- `mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

Fortran benchmarks:
- `w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto`
- `mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
- `nostandard-realloc-lhs -align array32byte -auto -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using both Fortran and C:
- `w -m64 -std=gnu11` -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- `flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
- `nostandard-realloc-lhs -align array32byte -auto -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using both C and C++:
- `w -m64 -std=gnu11` -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- `flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

Benchmarks using Fortran, C, and C++:
- `w -m64 -std=gnu11` -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- `flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
- `nostandard-realloc-lhs -align array32byte -auto -ljemalloc`
- `L/usr/local/jemalloc64-5.0.1/lib`

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-ICL-RevB.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\textsuperscript{*}2017 v1.1.8 on 2022-10-19 09:36:54-0400.
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