## SPEC® CPU2017 Floating Point Rate Result

**Fujitsu**  
**PRIMERGY RX2540 M5, Intel Xeon Gold 6226, 2.70 GHz**  
**SPECrates2017_fp_base = 174**  
**SPECrates2017_fp_peak = Not Run**

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

**Test Date:** May-2019  
**Hardware Availability:** May-2019  
**Software Availability:** Feb-2019

### Hardware
- **CPU Name:** Intel Xeon Gold 6226  
- **Max MHz.:** 3700  
- **Nominal:** 2700  
- **Enabled:** 24 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:** 19.25 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x SATA M.2 SSD, 240GB  
- **Other:** None

### Software
- **OS:** SUSE Linux Enterprise Server 15  
- **4.12.14-25.28-default**  
- **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 V5.0.0.14 R1.2.0 for D3384-B1x. Released Jun-2019 tested as V5.0.0.14 R1.2.0 for D3384-B1x Feb-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** None

### Copies

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Specrate2017_fp_base</th>
<th>CPU2017 License</th>
<th>Test Sponsor</th>
<th>Tested by</th>
<th>Test Date</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>48</td>
<td>0</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>129</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>119</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>103</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>178</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>151</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td>276</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>376</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>88.2</td>
<td>19</td>
<td>Fujitsu</td>
<td>Fujitsu</td>
<td>May-2019</td>
<td>May-2019</td>
<td>Feb-2019</td>
</tr>
</tbody>
</table>

---

**Copyright 2017-2019 Standard Performance Evaluation Corporation**

**Standard Performance Evaluation Corporation (info@spec.org) | https://www.spec.org/**
Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>48</td>
<td>1002</td>
<td>481</td>
<td>1000</td>
<td>481</td>
<td>1000</td>
<td>481</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>470</td>
<td>129</td>
<td>471</td>
<td>129</td>
<td>470</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>381</td>
<td>120</td>
<td>382</td>
<td>119</td>
<td>382</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>48</td>
<td>1149</td>
<td>109</td>
<td>1156</td>
<td>109</td>
<td>1154</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>48</td>
<td>598</td>
<td>187</td>
<td>599</td>
<td>187</td>
<td>599</td>
<td>187</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>491</td>
<td>103</td>
<td>490</td>
<td>103</td>
<td>491</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>48</td>
<td>563</td>
<td>191</td>
<td>550</td>
<td>196</td>
<td>552</td>
<td>195</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>48</td>
<td>415</td>
<td>176</td>
<td>415</td>
<td>176</td>
<td>415</td>
<td>176</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>470</td>
<td>179</td>
<td>474</td>
<td>177</td>
<td>471</td>
<td>178</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>318</td>
<td>376</td>
<td>319</td>
<td>375</td>
<td>315</td>
<td>379</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td>292</td>
<td>276</td>
<td>292</td>
<td>277</td>
<td>294</td>
<td>275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>1241</td>
<td>151</td>
<td>1240</td>
<td>151</td>
<td>1244</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>866</td>
<td>88.1</td>
<td>861</td>
<td>88.6</td>
<td>865</td>
<td>88.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECrate2017_fp_base = 174
SPECrate2017_fp_peak = 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"
Kernel Boot Parameter set with: nohz_full=1-47
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)
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:
Patrol Scrub = Disabled
WR CRC feature Control = Disabled
Fan Control = Full
Sysinfo program /home/Benchmark/speccpu2017-1.0.5/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on RX2540M5 Wed May 8 14:52:01 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 6226 CPU @ 2.70GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 2 3 4 5 6 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 6 9 10 11 13 14

From lscpu:

Architecture:   x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
SPEC CPU2017 Floating Point Rate Result

**Fujitsu**

PRIMERGY RX2540 M5, Intel Xeon Gold 6226, 2.70 GHz

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>174</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Hardware Availability:** May-2019  
**Software Availability:** Feb-2019

---

**Platform Notes (Continued)**

Model name: Intel(R) Xeon(R) Gold 6226 CPU @ 2.70GHz  
Stepping: 7  
CPU MHz: 2700.000  
CPU max MHz: 3700.0000  
CPU min MHz: 1200.0000  
BogoMIPS: 5400.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 19712K  
NUMA node0 CPU(s): 0-2,6,8-24,26,30-32  
NUMA node1 CPU(s): 3-5,9-11,27-29,33-35  
NUMA node2 CPU(s): 12-15,19,20,36-39,43,44  
NUMA node3 CPU(s): 16-18,21-23,40-42,45-47  
Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mpx cmov stp 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 pni 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 abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enabled rpr_shadow vmm_angles flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ets invpcid rdimm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtgmm ioapek dema arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni flush_l1d arch_capabilities

```
/proc/cpuinfo cache data  
cache size : 19712 KB
```

From numactl --hardware  
WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 4 nodes (0-3)  
node 0 cpus: 0 1 2 6 7 8 24 25 26 30 31 32  
node 0 size: 191969 MB  
node 0 free: 191613 MB  
node 1 cpus: 3 4 5 9 10 11 27 28 29 33 34 35  
node 1 size: 193504 MB  
node 1 free: 193246 MB  
node 2 cpus: 12 13 14 15 19 20 36 37 38 39 43 44  
node 2 size: 193533 MB  
node 2 free: 193287 MB  
node 3 cpus: 16 17 18 21 22 23 40 41 42 45 46 47  
node 3 size: 193321 MB  
node 3 free: 193035 MB

(Continued on next page)
Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 6226, 2.70 GHz

SPECrate2017_fp_base = 174
SPECrate2017_fp_peak = Not Run

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

Platform Notes (Continued)

node  0  1  2  3
 0:  10 11 21 21
 1:  11 10 21 21
 2:  21 21 10 11
 3:  21 21 11 10

From /proc/meminfo
MemTotal: 790864360 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 RX2540M5 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: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 May 8 14:50

SPEC is set to: /home/Benchmark/speccpu2017-1.0.5

Filesystem  Type  Size  Used Avail Use% Mounted on
/dev/sda5    xfs  191G  57G  135G  30% /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 // American Megatrends Inc. V5.0.0.14 R1.2.0 for D3384-B1x
02/28/2019
Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(Continued on next page)
Platform Notes (Continued)

(End of data from sysinfo program)

Compiler Version Notes

==================================================================================================
 CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)

icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==================================================================================================
 CXXC 508.namd_r(base) 510.parest_r(base)

icpc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==================================================================================================
 CC  511.povray_r(base) 526.blender_r(base)

icpc (ICC) 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.

==================================================================================================
 FC  507.cactuBSSN_r(base)

icpc (ICC) 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.
ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==================================================================================================
 FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

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

(Continued on next page)
Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 6226, 2.70 GHz

SPECrate2017_fp_base = 174
SPECrate2017_fp_peak = Not Run

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

---

Compiler Version Notes (Continued)

---------------------------------------------------------------------
 CC 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
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 6226, 2.70 GHz

| SPECrate2017_fp_base = | 174 |
| SPECrate2017_fp_peak = | Not Run |

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

| Test Date: | May-2019 |
| Hardware Availability: | May-2019 |
| Software Availability: | Feb-2019 |

### Base Portability Flags (Continued)

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 -auto -nostandard-realloc-lhs

**Benchmarks using both Fortran and C:**
- -xCORE-AVX2 -ipo -O3 -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 -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 -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:

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2019-05-08 01:52:00-0400.
Originally published on 2019-05-29.