**Fujitsu**
PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

**SPECrater®2017_int_base = 199**
**SPECrater®2017_int_peak = Not Run**

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

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>199</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

### Hardware
**CPU Name:** Intel Xeon Gold 5220S  
**Max MHz:** 3900  
**Nominal:** 2700  
**Enabled:** 36 cores, 2 chips, 2 threads/core  
**Orderable:** 1.2 chips  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**Cache L2:** 1 MB I+D on chip per core  
**Cache L3:** 24.75 MB I+D on chip per chip  
**Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R, running at 2666)  
**Storage:** 1 x SATA M.2, 240 GB  
**Other:** None

### Software
**OS:** SUSE Linux Enterprise Server 15, 4.12.14-25.28-default  
**Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
**Parallel:** No  
**Firmware:** Fujitsu BIOS for D3384-B1x, Version V5.0.0.14 R1.11.0 released Jul-2019  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** None  
**Power Management:** --

---

**Copies**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base (199)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r 72</td>
</tr>
<tr>
<td>502.gcc_r 72</td>
</tr>
<tr>
<td>505.mcf_r 72</td>
</tr>
<tr>
<td>520.omnetpp_r 72</td>
</tr>
<tr>
<td>523.xalanckmk_r 72</td>
</tr>
<tr>
<td>525.x264_r 72</td>
</tr>
<tr>
<td>531.deepsjeng_r 72</td>
</tr>
<tr>
<td>541.leela_r 72</td>
</tr>
<tr>
<td>548.exchange2_r 72</td>
</tr>
<tr>
<td>557.xz_r 72</td>
</tr>
</tbody>
</table>

| 0 | 20.0 | 40.0 | 60.0 | 80.0 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | 410 |
| 153 | | | | | | | | | | | | | | | | | | | | | | |
| 163 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 265 | | | | | | | | | | | | | | | | | | | | | | |
| 139 | | | | | | | | | | | | | | | | | | | | | | |
| 224 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 408 | | | | | | | | | | | | | | | | | | | | | | |

---

**500.perlbench_r 72**

**502.gcc_r 72**

**505.mcf_r 72**

**520.omnetpp_r 72**

**523.xalanckmk_r 72**

**525.x264_r 72**

**531.deepsjeng_r 72**

**541.leela_r 72**

**548.exchange2_r 72**

**557.xz_r 72**
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

SPECrate®2017_int_base = 199
SPECrate®2017_int_peak = Not Run

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>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>72</td>
<td>751</td>
<td>153</td>
<td>747</td>
<td>153</td>
<td>747</td>
<td>153</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>72</td>
<td>629</td>
<td>162</td>
<td>626</td>
<td>163</td>
<td>625</td>
<td>163</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>72</td>
<td>439</td>
<td>265</td>
<td>440</td>
<td>264</td>
<td>440</td>
<td>265</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>72</td>
<td>679</td>
<td>139</td>
<td>680</td>
<td>139</td>
<td>681</td>
<td>139</td>
</tr>
<tr>
<td>523.xalanbmk_r</td>
<td>72</td>
<td>339</td>
<td>224</td>
<td>339</td>
<td>224</td>
<td>339</td>
<td>224</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>72</td>
<td>309</td>
<td>409</td>
<td>309</td>
<td>408</td>
<td>309</td>
<td>408</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>72</td>
<td>499</td>
<td>165</td>
<td>498</td>
<td>166</td>
<td>499</td>
<td>165</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>72</td>
<td>792</td>
<td>151</td>
<td>799</td>
<td>149</td>
<td>772</td>
<td>155</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>72</td>
<td>545</td>
<td>346</td>
<td>544</td>
<td>347</td>
<td>544</td>
<td>347</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>72</td>
<td>578</td>
<td>134</td>
<td>578</td>
<td>134</td>
<td>578</td>
<td>135</td>
</tr>
</tbody>
</table>

SPECrate®2017_int_base = 199
SPECrate®2017_int_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=1-71

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

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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>
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.

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

SPECrate®2017_int_base = 199
SPECrate®2017_int_peak = Not Run

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

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

General Notes (Continued)
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
DCU Ip Prefetcher = Disabled
DCU Streamer Prefetcher = Disabled
Stale AtoS = Enable
Fan Control = Full
Sysinfo program /home/Benchmark/speccpu2017-1.0.5/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on RX2540M5-AD-540 Thu Jul 25 11:45:44 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 5220S CPU @ 2.70GHz
  2 "physical id"s (chips)
  72 "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 : 18
  siblings : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 72
On-line CPU(s) list: 0-71
Thread(s) per core: 2
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5220S CPU @ 2.70GHz
Stepping: 7

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

SPECrate®2017_int_base = 199
SPECrate®2017_int_peak = Not Run

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

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

Platform Notes (Continued)

CPU MHz: 2700.000
CPU max MHz: 3900.0000
CPU min MHz: 1000.0000
BogoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s): 0-2,5,6,9,10,14,15,36-38,41,42,45,46,50,51
NUMA node1 CPU(s): 3,4,7,8,11-13,16,17,39,40,43,44,47-49,52,53
NUMA node2 CPU(s): 18-20,23,24,27,28,32,33,54-56,59,60,63,64,68,69
NUMA node3 CPU(s): 21,22,25,26,29-31,34,35,57,58,61,62,65-67,70,71
Flows: 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
aperfmpref 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
avx f16c rdrand lahf_lm abhp_lmm 3nowprefetch cpuid_fault epb cat_13 cdp_13
invpcid_single intel_pmm ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
flexpriority mpt vpid fsgsbase tsc_adjust bni hle avx2 smep bmi2 erms invpcid rtm
cqm mpk rdrt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsavevc xgetbv1 xsavec cqm_llc cqm_occcll cqm_mbb_total
cqm_mbb_local dtherm ida arat pni pts hwp hwp_act_window hwp_epp hwp_pkg_req pku
ospke avx512_vnni flush_lid arch_capabilities

/proc/cpuinfo cache data
  cache size: 25344 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 5 6 9 10 14 15 36 37 38 41 42 45 46 50 51
  node 0 size: 191968 MB
  node 0 free: 188322 MB
  node 1 cpus: 3 4 7 8 11 12 13 16 17 39 40 43 44 47 48 49 52 53
  node 1 size: 193532 MB
  node 1 free: 193260 MB
  node 2 cpus: 18 19 20 23 24 27 28 32 33 54 55 56 59 60 63 64 68 69
  node 2 size: 193503 MB
  node 2 free: 193267 MB
  node 3 cpus: 21 22 25 26 29 30 31 34 35 57 58 61 62 65 66 67 70 71
  node 3 size: 193319 MB
  node 3 free: 193085 MB
  node distances:
    node 0 1 2 3
    0: 10 11 21 21

(Continued on next page)
**Fujitsu**

PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>199</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

```
1: 11 10 21 21
2: 21 21 10 11
3: 21 21 11 10
```

From /proc/meminfo

```
MemTotal:       790859396 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-AD-540 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 Jul 25 11:05

SPEC is set to: /home/Benchmark/speccpu2017-1.0.5
```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda5      xfs  191G  57G  134G  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 R1.11.0 for D3384-B1x 07/12/2019

Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2666

(End of data from sysinfo program)
Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

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

SPECraten®2017_int_base = 199
SPECraten®2017_int_peak = Not Run

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

Compiler Version Notes
==============================================================================
| C      | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) |
|        | 525.x264_r(base) 557.xz_r(base) |
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

C++      | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) |
        | 541.leela_r(base) |
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

Fortran  | 548.exchange2_r(base) |
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
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

Base Portability Flags
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 5220S, 2.70 GHz

SPECrate®2017_int_base = 199
SPECrate®2017_int_peak = Not Run

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

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

Base Portability Flags (Continued)

523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

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-RevA.xml

SPEC CPU and SPECrate are registered trademarks 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 CPU®2017 v1.0.5 on 2019-07-24 22:45:43-0400.
Report generated on 2019-10-01 14:30:15 by CPU2017 PDF formatter v6255.
Originally published on 2019-10-01.