### Fujitsu

**PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz**

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_int_base =</th>
<th>SPECrate®2017_int_peak =</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>128</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

#### SPEC CPU®2017 Integer Rate Result

**CPU2017 License:** 19

**Test Sponsor:** Fujitsu

**Tested by:** Fujitsu

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Hardware Availability:</th>
<th>Software Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr-2022</td>
<td>Feb-2020</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>500.perlbench_r</th>
<th>502.gcc_r</th>
<th>505.mcf_r</th>
<th>520.omnetpp_r</th>
<th>523.xalancbmk_r</th>
<th>525.x264_r</th>
<th>531.deepsjeng_r</th>
<th>541.leela_r</th>
<th>548.exchange2_r</th>
<th>557.xz_r</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>86.2</td>
<td>97.8</td>
<td>86.0</td>
<td>223</td>
<td>172</td>
<td>253</td>
<td>223</td>
<td>94.7</td>
<td>238</td>
<td>74.4</td>
</tr>
</tbody>
</table>

#### Hardware

**CPU Name:** Intel Xeon Silver 4210R
**Max MHz:** 3200
**Nominal:** 2400
**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:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)
**Storage:** 1 x SATA M.2 SSD, 480 GB
**Other:** None

#### Software

**OS:** Red Hat Enterprise Linux release 8.2 (Ootpa)
4.18.0-193.el8.x86_64
**Compiler:**
C/C++: Version 2021.1 of Intel oneAPI DPC++/C++
Compiler Build 20201113 for Linux;
Fortran: Version 2021.1 of Intel Fortran Compiler
Classic Build 20201112 for Linux;
**Parallel:** No
**Firmware:** Fujitsu BIOS Version V5.0.0.14 R1.31.0 for D3383-B1x released Feb-2022
**File System:** xfs
**System State:** Run level 3 (multi-user)
**Base Pointers:** 64-bit
**Peak Pointers:** Not Applicable
**Other:** None
**Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.
Fujitsu
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

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

Specrate2017_int_base = 128
Specrate2017_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>40</td>
<td>739</td>
<td>86.2</td>
<td>738</td>
<td>86.2</td>
<td>739</td>
<td>86.2</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>40</td>
<td>579</td>
<td>97.8</td>
<td>576</td>
<td>98.4</td>
<td>579</td>
<td>97.8</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>40</td>
<td>293</td>
<td>220</td>
<td>290</td>
<td>223</td>
<td>290</td>
<td>223</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>40</td>
<td>611</td>
<td>85.8</td>
<td>611</td>
<td>86.0</td>
<td>610</td>
<td>86.0</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>40</td>
<td>246</td>
<td>172</td>
<td>246</td>
<td>172</td>
<td>246</td>
<td>172</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>40</td>
<td>277</td>
<td>253</td>
<td>275</td>
<td>254</td>
<td>279</td>
<td>251</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>40</td>
<td>454</td>
<td>101</td>
<td>455</td>
<td>101</td>
<td>454</td>
<td>101</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>40</td>
<td>699</td>
<td>94.7</td>
<td>700</td>
<td>94.7</td>
<td>698</td>
<td>94.9</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>40</td>
<td>441</td>
<td>238</td>
<td>441</td>
<td>238</td>
<td>441</td>
<td>238</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>40</td>
<td>581</td>
<td>74.4</td>
<td>580</td>
<td>74.5</td>
<td>580</td>
<td>74.4</td>
</tr>
</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"

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/lib/ia32:/home/Benchmark/speccpu/je5.0.1-32"
MALLOC_CONF = "retain:true"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1
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 RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

SPECrate®2017_int_base = 128
SPECrate®2017_int_peak = Not Run

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

Test Date: Apr-2022
Hardware Availability: Feb-2020
Software Availability: Dec-2020

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:
Stale AtoS = Enabled
LLC Dead Line Alloc = Disabled
LLC prefetch = Enabled
Sub NUMA Clustering = Disabled
IMC Interleaving = 2-way
Patrol Scrub = Disabled
WR CRC feature Control = Disabled
Fan Control = Full

Sysinfo program /home/Benchmark/speccpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Tue Apr  5 03:02:22 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) Silver 4210R CPU @ 2.40GHz
  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

From lscpu from util-linux 2.32.1:
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

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

Fujitsu
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

Copyright 2017-2022 Standard Performance Evaluation Corporation

Fujitsu
2.40 GHz
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

SPECrate®2017_int_base = 128
SPECrate®2017_int_peak = Not Run

CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Apr-2022
Hardware Availability: Feb-2020
Tested by: Fujitsu
Software Availability: Dec-2020

Platform Notes (Continued)

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 4210R CPU @ 2.40GHz
Stepping: 7
CPU MHZ: 1000.134
CPU max MHZ: 3200.0000
CPU min MHZ: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9,20-29
NUMA nodel CPU(s): 10-19,30-39
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi 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 intel_pmm ssbd mba ibrs ibpb stibp ibrs enhanced tpr_shadow vnumi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cmp mpx rdt_a avx512sf avx512df rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsaveprec xsaves xsavec cqm_llc cqm_total cqm_mbb_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni md_clear flush_l1d arch_capabilities

/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: 386068 MB
node 0 free: 385535 MB
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: 387039 MB
node 1 free: 386284 MB
node distances:
node 0 1
0: 10 21

(Continued on next page)
Fujitsu
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

Platform Notes (Continued)

1: 21 10

From /proc/meminfo
MemTotal: 791662128 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
NAME="Red Hat Enterprise Linux"
VERSION="8.2 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):
KVM: Vulnerable
CVE-2018-3620 (L1 Terminal Fault):
Not affected
Microarchitectural Data Sampling:
Not affected
CVE-2017-5754 (Meltdown):
Not affected
CVE-2018-3639 (Speculative Store Bypass):
Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):
Mitigation: usercopy/swaps barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):
No status reported
CVE-2019-11135 (TSX Asynchronous Abort):
Mitigation: Clear CPU buffers; SMT

(Continued on next page)
Platform Notes (Continued)

vulnerable

run-level 3 Apr 5 02:41

SPEC is set to: /home/Benchmark/speccpu
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 392G 10G 382G 3% /home

From /sys/devices/virtual/dmi/id
Vendor: FUJITSU
Product: PRIMERGY RX2530 M5
Product Family: SERVER
Serial: YMLUXXXXXX

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:
12x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933, configured at 2400
12x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2400

BIOS:
BIOS Vendor: FUJITSU // American Megatrends Inc.
BIOS Version: V5.0.0.14 R1.31.0 for D3383-B1x
BIOS Date: 02/14/2022
BIOS Revision: 1.31

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Intel(R) oneAPI DPC+/C++ Compiler for applications running on Intel(R) 64,</td>
<td></td>
</tr>
<tr>
<td>Version 2021.1 Build 20201113</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------</td>
</tr>
</tbody>
</table>

==============================================================================
<table>
<thead>
<tr>
<th>C++</th>
<th>520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) oneAPI DPC+/C++ Compiler for applications running on Intel(R) 64,</td>
<td></td>
</tr>
</tbody>
</table>

(Continued on next page)
Fujitsu
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

Compiler Version Notes (Continued)
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

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
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:
-w -std=c11 -m64 -Wl,-z,muldefs -XCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4

(Continued on next page)
Fujitsu
PRIMERGY RX2530 M5, Intel Xeon Silver 4210R, 2.40 GHz

SPECrate®2017_int_base = 128
SPECrate®2017_int_peak = Not Run

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
<th>Test Sponsor</th>
<th>Hardware Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Apr-2022</td>
<td>Fujitsu</td>
<td>Feb-2020</td>
</tr>
<tr>
<td>Tested by</td>
<td></td>
<td>Fujitsu</td>
<td></td>
</tr>
</tbody>
</table>

Base Optimization Flags (Continued)

C benchmarks (continued):
-mbranches-within-32B-boundaries
-l/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-l/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-l/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-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/Intel-ic2021-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevF.xml