SPEC CPU®2017 Integer Rate Result

Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 6256, 3.60 GHz

SPECrater®2017_int_base = 193
SPECrater®2017_int_peak = Not Run

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

Test Date: Mar-2020
Hardware Availability: Feb-2020
Software Availability: May-2019

Hardware

CPU Name: Intel Xeon Gold 6256
Max MHz: 4500
Nominal: 3600
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: 33 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, 240 GB
Other: None

Software

OS: SUSE Linux Enterprise Server 15
4.12.14-25.28-default
Compiler: C/C++: Version 19.0.4.227 of Intel C/C++
Compiler Build 20190416 for Linux;
Fortran: Version 19.0.4.227 of Intel Fortran
Compiler Build 20190416 for Linux
Parallel: No
Firmware: Fujitsu BIOS Version V5.0.0.14 R1.18.0 for D3384-B1x
released Feb-2020
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage
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## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>520.omnetpp_r</td>
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<td>523.xalanbmk_r</td>
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<td>217</td>
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<td>531.deepsjeng_r</td>
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<td>548.exchange2_r</td>
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<tr>
<td>557.xz_r</td>
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<td>120</td>
<td>430</td>
<td>121</td>
<td>430</td>
<td>120</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"
Kernel Boot Parameter set with : nohz_full=1-47

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:

`LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-1.1.0/lib/intel64:/home/Benchmark/speccpu20
17-1.1.0/lib/ia32:/home/Benchmark/speccpu2017-1.1.0/je5.0.1-32"`

**General Notes**

Environment variables set by runcpu before the start of the run:

`LD_LIBRARY_PATH = "/home/Benchmark/SPECCPU2017-1.1.0/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

(Continued on next page)
SPECCPU®2017 Integer Rate Result

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CPU2017 License: 19
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General Notes (Continued)

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.

Platform Notes

BIOS configuration:
  Patrol Scrub = Disabled
  WR CRC feature Control = Disabled
  Fan Control = Full

Sysinfo program /home/Benchmark/speccpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7eddb1e6e46a485a001
running on RX2540M5_CLXR Wed Mar 11 18:38:55 2020

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 6256 CPU @ 3.60GHz
  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 1 3 8 9 12 18 21 25 27 28 29
    physical 1: cores 0 2 4 5 8 11 13 17 19 20 24 26

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

(Continued on next page)
Fujitsu
PRIMERGY RX2540 M5, Intel Xeon Gold 6256, 3.60 GHz

Platform Notes (Continued)

Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6256 CPU @ 3.60GHz
Stepping: 7
CPU MHz: 3600.000
CPU max MHz: 4500.0000
CPU min MHz: 1200.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 33792K
NUMA node0 CPU(s): 0,1,3,4,6,7,8,25,26,28,30,32
NUMA node1 CPU(s): 2,5,7,9,11,16,23,31,34
NUMA node2 CPU(s): 12,13,16,22,23,36,37,40,41,44,45
NUMA node3 CPU(s): 14,15,17,18,20,21,38,39,41,42,44,47

Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts ept ms cpl ds long jms rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nolock key cx8
apefmpref pfni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrunc pdcm pclid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abml3 emms cmov tcqm tm2 ssse3 fma4 cx16
huemul movntxi4 cx8

/cache/data

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 3 4 6 8 24 25 27 28 30 32
node 0 size: 191947 MB
node 0 free: 191650 MB
node 1 cpus: 2 5 7 9 10 11 26 29 31 33 34 35
node 1 size: 193533 MB
node 1 free: 193247 MB
node 2 cpus: 12 13 16 19 22 23 36 37 40 43 46 47
node 2 size: 193533 MB

(Continued on next page)
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CPU2017 License: 19
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Test Date: Mar-2020
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Platform Notes (Continued)

- node 2 free: 193232 MB
- node 3 cpus: 14 15 17 18 20 21 38 39 41 42 44 45
- node 3 size: 193321 MB
- node 3 free: 193084 MB
- node distances:
  - 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: 790872380 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_CLXR 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-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: No status reported
- 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: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Mar 11 18:36

SPEC is set to: /home/Benchmark/speccpu2017-1.1.0

- Filesystem Type Size Used Avail Use% Mounted on
  - /dev/sda5 xfs 191G 113G 78G 60% /home

(Continued on next page)
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Platform Notes (Continued)

From /sys/devices/virtual/dmi/id
BIOS: FUJITSU // American Megatrends Inc. V5.0.0.14 R1.18.0 for D3384-B1x 02/10/2020
Vendor: FUJITSU
Product: PRIMERGY RX2540 M5
Product Family: SERVER
Serial: YMSQXXXXXX

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.
Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)

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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

==============================================================================
| C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leea_r(base) |
==============================================================================
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
# SPEC CPU®2017 Integer Rate Result

## Fujitsu

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## 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
- **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_2019.4.227/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_2019.4.227/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_2019.4.227/linux/compiler/lib/intel64
  - -Lqkmalloc
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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:

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

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