SPEC CPU®2017 Integer Rate Result

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Fujitsu

PRIMERGY RX4770 M5, Intel Xeon Gold 6250, 3.90 GHz

$SPECrate®2017\_int\_base =$ 274

$SPECrate®2017\_int\_peak =$ Not Run

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

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

Benchmark	Copies	Result
500.perlbench_r	64	202
502.gcc_r	64	221
505.mcf_r	64	352
520.omnetpp_r	64	165
523.xalancbmk_r	64	344
525.x264_r	64	555
531.deepsjeng_r	64	230
541.leela_r	64	221
548.exchange2_r	64	543
557.xz_r	64	173

SPECrate®2017_int_base (274)

Hardware

CPU Name: Intel Xeon Gold 6250
 Max MHz: 4500
 Nominal: 3900
Enabled: 32 cores, 4 chips, 2 threads/core
Orderable: 2,4 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 35.75 MB I+D on chip per chip
 Other: None
Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R)
Storage: 1 x SATA M.2 SSD, 480 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 D3753-C1x released Apr-2020
File System: btrfs
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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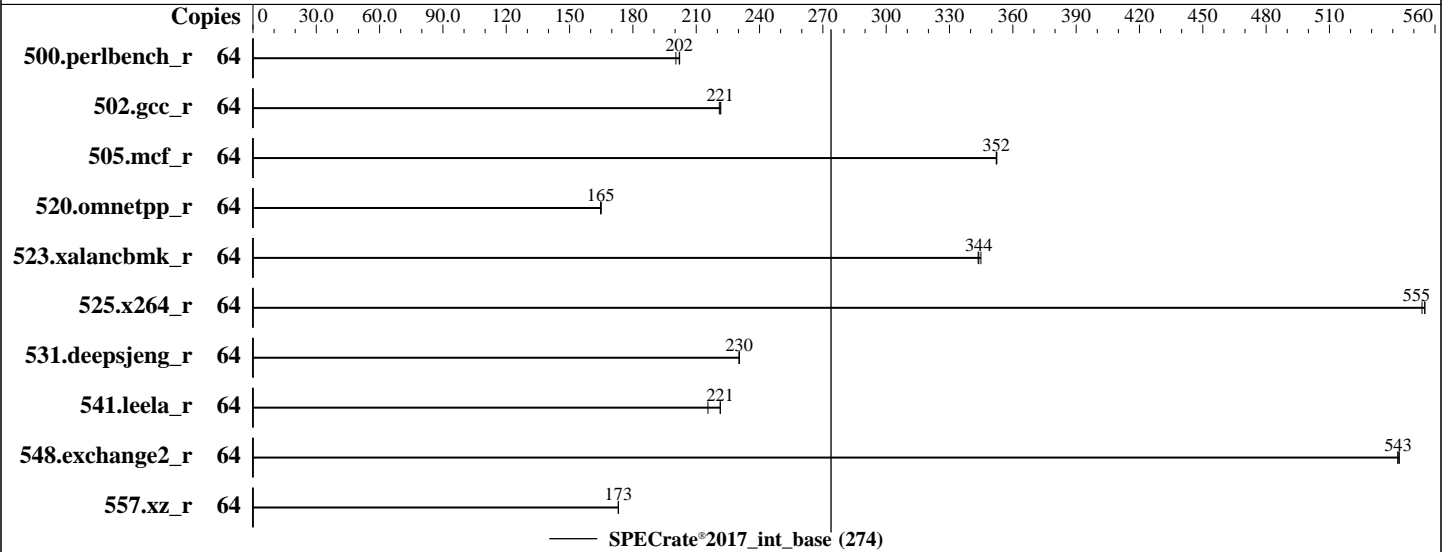
SPECrate®2017_int_peak = Not Run

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	64	508	200	504	202	**504**	**202**							
502.gcc_r	64	409	222	**409**	**221**	410	221							
505.mcf_r	64	294	352	**294**	**352**	293	352							
520.omnetpp_r	64	**510**	**165**	509	165	510	165							
523.xalancbmk_r	64	**197**	**344**	197	344	196	345							
525.x264_r	64	202	554	202	555	**202**	**555**							
531.deepsjeng_r	64	318	231	**318**	**230**	318	230							
541.leela_r	64	492	216	**479**	**221**	479	221							
548.exchange2_r	64	**309**	**543**	309	543	309	542							
557.xz_r	64	399	173	399	173	**399**	**173**							
SPECrate®2017_int_base =		**274**												
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=1-63
Process tuning settings:
echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns

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

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

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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:
 DCU Streamer Prefetcher = Disabled
 Fan Control = Full
 Energy Performance = Performance
 Hardware Prefetcher = Disabled
 HWPM = Native Mode with no legacy
 Override OS Energy Performance = Enable
 Patrol Scrub = Disabled
 WR CRC feature Control = Disabled
 XPT Prefetch = Enable


 Sysinfo program /home/Benchmark/speccpu2017-1.1.0/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on RX4770M5-CLXR Mon Mar  2 21:18:17 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 6250 CPU @ 3.90GHz
       4  "physical id"s (chips)
       64 "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  : 16
       physical 0: cores 2 6 8 10 12 17 19 28
       physical 1: cores 2 10 13 17 18 19 28 29
       physical 2: cores 1 2 3 6 10 12 13 21
       physical 3: cores 2 3 10 12 13 21 24 29
```

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Platform Notes (Continued)

```
From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Byte Order:            Little Endian
      CPU(s):                64
      On-line CPU(s) list:   0-63
      Thread(s) per core:    2
      Core(s) per socket:    8
      Socket(s):             4
      NUMA node(s):          8
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Gold 6250 CPU @ 3.90GHz
      Stepping:              7
      CPU MHz:               3900.000
      CPU max MHz:           4500.0000
      CPU min MHz:           1200.0000
      BogoMIPS:              7800.00
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              36608K
      NUMA node0 CPU(s):     0,2,3,5,32,34,35,37
      NUMA node1 CPU(s):     1,4,6,7,33,36,38,39
      NUMA node2 CPU(s):     8,9,11,12,40,41,43,44
      NUMA node3 CPU(s):     10,13-15,42,45-47
      NUMA node4 CPU(s):     16-18,20,48-50,52
      NUMA node5 CPU(s):     19,21-23,51,53-55
      NUMA node6 CPU(s):     24-26,30,56-58,62
      NUMA node7 CPU(s):     27-29,31,59-61,63
      Flags:                 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
    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_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
    flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
    cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
    avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
    cqm_mbm_local dtherm ida 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 : 36608 KB
```

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Platform Notes (Continued)

```
 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 2 3 5 32 34 35 37
   node 0 size: 191891 MB
   node 0 free: 185697 MB
   node 1 cpus: 1 4 6 7 33 36 38 39
   node 1 size: 193534 MB
   node 1 free: 193361 MB
   node 2 cpus: 8 9 11 12 40 41 43 44
   node 2 size: 193534 MB
   node 2 free: 193404 MB
   node 3 cpus: 10 13 14 15 42 45 46 47
   node 3 size: 193534 MB
   node 3 free: 193383 MB
   node 4 cpus: 16 17 18 20 48 49 50 52
   node 4 size: 193534 MB
   node 4 free: 193373 MB
   node 5 cpus: 19 21 22 23 51 53 54 55
   node 5 size: 193504 MB
   node 5 free: 193352 MB
   node 6 cpus: 24 25 26 30 56 57 58 62
   node 6 size: 193534 MB
   node 6 free: 193358 MB
   node 7 cpus: 27 28 29 31 59 60 61 63
   node 7 size: 193315 MB
   node 7 free: 193180 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  21  21  21  21  21  21
     1:  11  10  21  21  21  21  21  21
     2:  21  21  10  11  21  21  21  21
     3:  21  21  11  10  21  21  21  21
     4:  21  21  21  21  10  11  21  21
     5:  21  21  21  21  11  10  21  21
     6:  21  21  21  21  21  21  10  11
     7:  21  21  21  21  21  21  11  10

 From /proc/meminfo
    MemTotal:       1583496188 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    os-release:
       NAME="SLES"
```

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Tested by:	Fujitsu	**Software Availability:**	May-2019

Platform Notes (Continued)

```
       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 RX4770M5-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 2 21:12

SPEC is set to: /home/Benchmark/speccpu2017-1.1.0
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/sda2       btrfs  445G   59G  386G  14% /home

From /sys/devices/virtual/dmi/id
    BIOS:    FUJITSU // American Megatrends Inc. V5.0.0.14 R1.18.0 for D3753-C1x
             02/11/2020
    Vendor:  FUJITSU
    Product: PRIMERGY RX4770 M5
    Product Family: SERVER
    Serial:  YMTJ000009


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:
     47x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933, configured at 2934
     1x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934


(End of data from sysinfo program)
```

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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.leela_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.
--------------------------------------------------------------------------------
```

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`

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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_2019.4.227/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
```

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.xml

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