SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

$SPECrate®2017\_int\_base =$ 125

$SPECrate®2017\_int\_peak =$ Not Run

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

Copies — scale: 0 15.0 30.0 45.0 60.0 75.0 90.0 105 115 125 135 145 155 165 175 185 195 205 215 225 235 245 260

- **500.perlbench_r** 32 — 90.3
- **502.gcc_r** 32 — 105
- **505.mcf_r** 32 — 164
- **520.omnetpp_r** 32 — 77.9
- **523.xalancbmk_r** 32 — 155
- **525.x264_r** 32 — 259
- **531.deepsjeng_r** 32 — 103
- **541.leela_r** 32 — 96.0
- **548.exchange2_r** 32 — 240
- **557.xz_r** 32 — 77.7

—— **SPECrate®2017_int_base (125)**

Hardware

CPU Name: Intel Xeon Gold 6234
 Max MHz: 4000
 Nominal: 3300
Enabled: 16 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: 24.75 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, 150 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 R1.15.0 for D3384-B1x, released Oct-2019
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

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

SPECrate®2017_int_base =   125

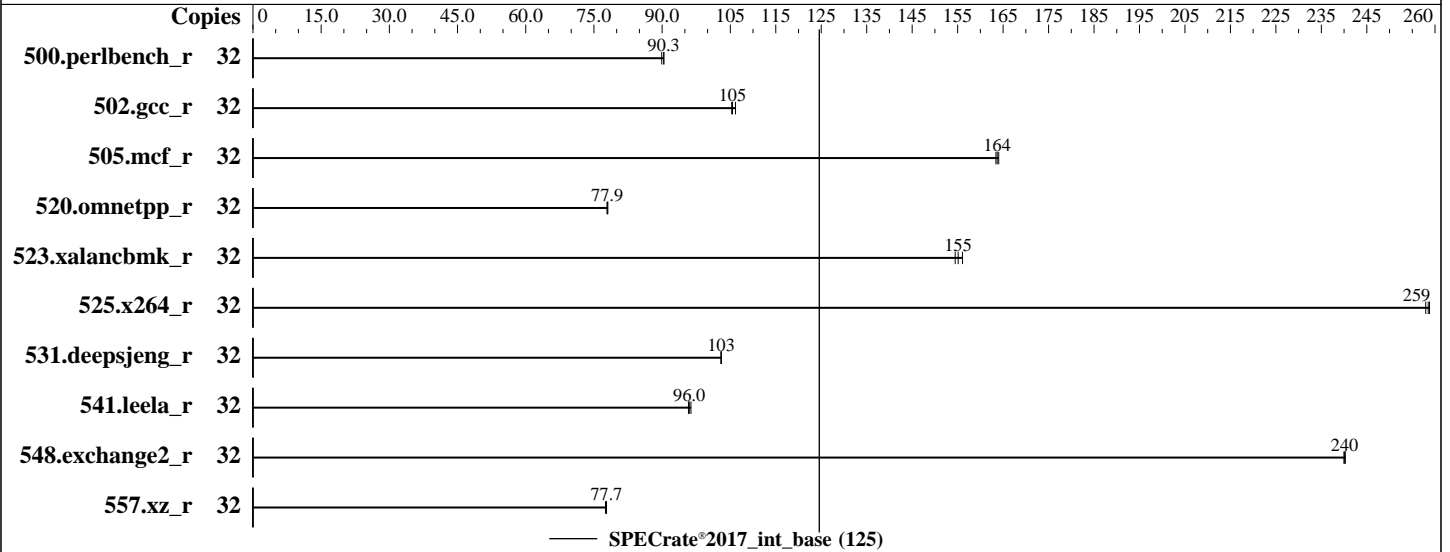SPECrate®2017_int_peak = Not Run

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

Test Date: Nov-2019
Hardware Availability: May-2019
Software Availability: May-2019

Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	32	567	89.9	564	90.4	**564**	**90.3**							
502.gcc_r	32	**430**	**105**	427	106	430	105							
505.mcf_r	32	315	164	**316**	**164**	316	163							
520.omnetpp_r	32	539	77.9	**539**	**77.9**	538	78.1							
523.xalancbmk_r	32	**218**	**155**	219	154	217	156							
525.x264_r	32	217	259	**217**	**259**	217	258							
531.deepsjeng_r	32	**356**	**103**	356	103	356	103							
541.leela_r	32	553	95.8	550	96.3	**552**	**96.0**							
548.exchange2_r	32	**349**	**240**	349	240	349	240							
557.xz_r	32	**445**	**77.7**	446	77.5	444	77.8							
SPECrate®2017_int_base =		**125**												
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=1-31

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 i9-799X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
Transparent Huge Pages enabled by default
Prior to runcpu invocation

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

$SPECrate^{®}2017\_int\_base =$ **125**

$SPECrate^{®}2017\_int\_peak =$ Not Run

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

General Notes (Continued)

```
 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:
 Intel Virtualization Technology = Disabled
 VT-d = Disabled
 CPU C1E Support = Disabled
 LLC Dead Line Alloc = Disabled
 LLC prefetch = Enabled
 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 295195f888a3d7edb1e6e46a485a0011
 running on linux-871b Thu Nov 21 05:49:52 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 6234 CPU @ 3.30GHz
       2  "physical id"s (chips)
       32 "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 3 17 24 25 26 27
       physical 1: cores 1 2 4 9 20 25 26 27

 From lscpu:
    Architecture:       x86_64
    CPU op-mode(s):     32-bit, 64-bit
    Byte Order:         Little Endian
```

(Continued on next page)

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

SPECrate®2017_int_base =   125

SPECrate®2017_int_peak = Not Run

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

Platform Notes (Continued)

```
      CPU(s):              32
      On-line CPU(s) list: 0-31
      Thread(s) per core:  2
      Core(s) per socket:  8
      Socket(s):           2
      NUMA node(s):        4
      Vendor ID:           GenuineIntel
      CPU family:          6
      Model:               85
      Model name:          Intel(R) Xeon(R) Gold 6234 CPU @ 3.30GHz
      Stepping:            7
      CPU MHz:             3300.000
      CPU max MHz:         4000.0000
      CPU min MHz:         1200.0000
      BogoMIPS:            6600.00
      Virtualization:      VT-x
      L1d cache:           32K
      L1i cache:           32K
      L2 cache:            1024K
      L3 cache:            25344K
      NUMA node0 CPU(s):   0,3-5,16,19-21
      NUMA node1 CPU(s):   1,2,6,7,17,18,22,23
      NUMA node2 CPU(s):   8,9,11,13,24,25,27,29
      NUMA node3 CPU(s):   10,12,14,15,26,28,30,31
      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 : 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 3 4 5 16 19 20 21
   node 0 size: 192041 MB
   node 0 free: 191724 MB
   node 1 cpus: 1 2 6 7 17 18 22 23
```

(Continued on next page)

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234,
3.30 GHz

SPECrate®2017_int_base =   125

SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

```
   node 1 size: 193534 MB
   node 1 free: 193278 MB
   node 2 cpus: 8 9 11 13 24 25 27 29
   node 2 size: 193504 MB
   node 2 free: 193313 MB
   node 3 cpus: 10 12 14 15 26 28 30 31
   node 3 size: 193533 MB
   node 3 free: 193334 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:       791157536 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 linux-871b 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): Vulnerable
 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 Nov 21 05:46
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234,
3.30 GHz

$\text{SPECrate}^{\text{®}}\text{2017\_int\_base} = \quad 125$

$\text{SPECrate}^{\text{®}}\text{2017\_int\_peak} = \text{Not Run}$

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

Platform Notes (Continued)

```
  SPEC is set to: /home/Benchmark/SPECCPU2017-1.1.0
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda2       xfs   140G   19G  122G  13% /

  From /sys/devices/virtual/dmi/id
     BIOS:    FUJITSU // American Megatrends Inc. V5.0.0.14 R1.15.0 for D3384-B1x
              10/17/2019
     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.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
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

SPECrate®2017_int_base =   125

SPECrate®2017_int_peak = Not Run

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

Test Date: Nov-2019
Hardware Availability: May-2019
Software Availability: May-2019

Compiler Version Notes (Continued)

```
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`
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
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

Fujitsu

PRIMERGY RX2540 M5, Intel Xeon Gold 6234, 3.30 GHz

SPECrate®2017_int_base = 125

SPECrate®2017_int_peak = Not Run

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Nov-2019

Hardware Availability: May-2019

Software Availability: May-2019

Base Optimization Flags (Continued)

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

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

Tested with SPEC CPU®2017 v1.1.0 on 2019-11-20 15:49:51-0500.
Report generated on 2019-12-10 14:58:10 by CPU2017 PDF formatter v6255.
Originally published on 2019-12-10.