SPEC CPU®2017 Integer Rate Result

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Fujitsu

PRIMERGY TX1310 M3, Intel Core i3-7101E, 3.90 GHz

$SPECrate®2017\_int\_base =$ **15.8**

$SPECrate®2017\_int\_peak =$ Not Run

CPU2017 License: 19	**Test Date:** May-2020
Test Sponsor: Fujitsu	**Hardware Availability:** May-2017
Tested by: Fujitsu	**Software Availability:** Apr-2020

Copies

Benchmark	Copies	Result
500.perlbench_r	4	11.6
502.gcc_r	4	14.6
505.mcf_r	4	20.9
520.omnetpp_r	4	10.2
523.xalancbmk_r	4	18.6
525.x264_r	4	34.0
531.deepsjeng_r	4	12.8
541.leela_r	4	11.5
548.exchange2_r	4	30.5
557.xz_r	4	9.22

SPECrate®2017_int_base (15.8)

Hardware

CPU Name: Intel Core i3-7101E
 Max MHz: 3900
 Nominal: 3900
Enabled: 2 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 256 KB I+D on chip per core
 L3: 3 MB I+D on chip per chip
 Other: None
Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2400V-E)
Storage: 1 x 500 GB SATA HDD, 7200 RPM
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP1
 4.12.14-195-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 V5.0.0.11 R1.25.0 for D3521-A1x Released Apr-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

https://www.spec.org/

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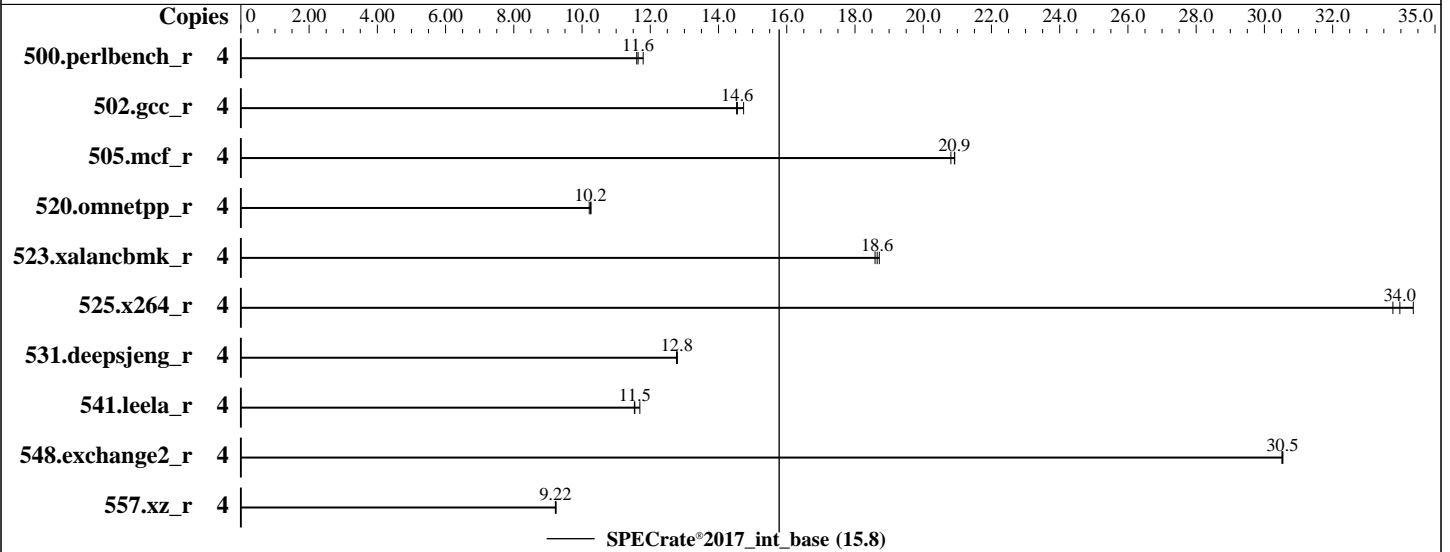
CPU2017 License: 19	**Test Date:** May-2020
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Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	4	**547**	**11.6**	549	11.6	540	11.8							
502.gcc_r	4	390	14.5	384	14.7	**389**	**14.6**							
505.mcf_r	4	**309**	**20.9**	309	20.9	311	20.8							
520.omnetpp_r	4	511	10.3	514	10.2	**512**	**10.2**							
523.xalancbmk_r	4	227	18.6	**226**	**18.6**	226	18.7							
525.x264_r	4	**206**	**34.0**	207	33.8	204	34.4							
531.deepsjeng_r	4	**359**	**12.8**	359	12.8	358	12.8							
541.leela_r	4	566	11.7	574	11.5	**574**	**11.5**							
548.exchange2_r	4	343	30.5	**343**	**30.5**	343	30.5							
557.xz_r	4	467	9.24	**468**	**9.22**	469	9.22							
SPECrate®2017_int_base =		**15.8**												
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 taskset 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"
echo always > /sys/kernel/mm/transparent_hugepage/enabled
echo 1000000000 > /proc/sys/kernel/sched_min_granularity_ns
echo 1500000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/Benchmark/cpu2017-1.1.0/lib/intel64:/home/Benchmark/cpu2017-1.1.0
     /lib/ia32:/home/Benchmark/cpu2017-1.1.0/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
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
```

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General Notes (Continued)

```
 sync; echo 3> /proc/sys/vm/drop_caches
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
Yes: 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:
 Fan Control = Full

 Sysinfo program /home/Benchmark/cpu2017-1.1.0/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on linux-1g42 Mon Jun  1 15:20:58 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) Core(TM) i3-7101E CPU @ 3.90GHz
       1  "physical id"s (chips)
       4 "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 : 2
       siblings  : 4
       physical 0: cores 0 1

 From lscpu:
    Architecture:        x86_64
    CPU op-mode(s):      32-bit, 64-bit
    Byte Order:          Little Endian
    Address sizes:       39 bits physical, 48 bits virtual
    CPU(s):              4
    On-line CPU(s) list: 0-3
    Thread(s) per core:  2
    Core(s) per socket:  2
    Socket(s):           1
    NUMA node(s):        1
    Vendor ID:           GenuineIntel
    CPU family:          6
```

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Platform Notes (Continued)

```
        Model:                 158
        Model name:            Intel(R) Core(TM) i3-7101E CPU @ 3.90GHz
        Stepping:              9
        CPU MHz:               3900.000
        CPU max MHz:           3900.0000
        CPU min MHz:           800.0000
        BogoMIPS:              7824.00
        Virtualization:        VT-x
        L1d cache:             32K
        L1i cache:             32K
        L2 cache:              256K
        L3 cache:              3072K
        NUMA node0 CPU(s):     0-3
        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 tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx 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 abm 3dnowprefetch cpuid_fault epb invpcid_single pti
    ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1
    avx2 smep bmi2 erms invpcid mpx rdseed adx smap clflushopt intel_pt xsaveopt xsavec
    xgetbv1 xsaves dtherm arat pln pts hwp hwp_notify hwp_act_window hwp_epp md_clear
    flush_l1d

  /proc/cpuinfo cache data
    cache size : 3072 KB

  From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
  physical chip.
    available: 1 nodes (0)
    node 0 cpus: 0 1 2 3
    node 0 size: 64038 MB
    node 0 free: 63601 MB
    node distances:
    node   0
      0:  10

  From /proc/meminfo
    MemTotal:       65574940 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

  From /etc/*release* /etc/*version*
    os-release:
      NAME="SLES"
      VERSION="15-SP1"
      VERSION_ID="15.1"
```

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Platform Notes (Continued)

```
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp1"


uname -a:
   Linux linux-1g42 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
   x86_64 x86_64 x86_64 GNU/Linux


Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault):        Mitigation: PTE Inversion; VMX: conditional
                                          cache flushes, SMT vulnerable
Microarchitectural Data Sampling:        Mitigation: Clear CPU buffers; SMT vulnerable
CVE-2017-5754 (Meltdown):                 Mitigation: PTI
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: Indirect Branch Restricted
                                          Speculation, IBPB: conditional, IBRS_FW, STIBP:
                                          conditional, RSB filling


run-level 3 Jun 1 15:17

SPEC is set to: /home/Benchmark/cpu2017-1.1.0
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/md126p3    xfs   130G   41G   89G  32% /home

From /sys/devices/virtual/dmi/id
    BIOS:     FUJITSU // American Megatrends Inc. V5.0.0.11 R1.25.0 for D3521-A1x
              04/06/2020
    Vendor:   FUJITSU
    Product:  PRIMERGY TX1310 M3
    Serial:   YM9F000154


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:
    4x SK Hynix HMA82GU6AFR8N-UH 16 GB 2 rank 2400


(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-AVX2 -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-AVX2 -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-AVX2 -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-V1.2-BDW-RevG.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-V1.2-BDW-RevG.xml

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

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