Fujitsu
PRIMERGY TX1330 M3, Intel Pentium G4560, 3.50GHz

CPU2017 License: 19  Test Date:  Dec-2018
Test Sponsor:  Fujitsu  Hardware Availability:  May-2017
Tested by:  Fujitsu  Software Availability:  Sep-2018

### Hardware

- **CPU Name**: Intel Pentium G4560
- **Max MHz.**: 3500
- **Nominal**: 3500
- **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
- **Memory**: 64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)
- **Storage**: 1 x SATA HDD, 2TB, 7200RPM
- **Other**: None

### Software

- **OS**: SUSE Linux Enterprise Server 15 4.12.14-23-default
- **Compiler**: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux
- **Parallel**: No
- **Firmware**: Fujitsu BIOS Version V5.0.0.11 R1.21.0 for D3373-B1x. Released Nov-2018
- **File System**: xfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: 32/64-bit
- **Other**: jemalloc memory allocator library V5.0.1
# SPEC CPU2017 Integer Rate Result

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## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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</table>

**SPECrate2017_int_base = 11.8**  
**SPECrate2017_int_peak = 12.7**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The taskset 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 1 > /proc/sys/vm/drop_caches  
echo 1000000000 > /proc/sys/kernel/sched_min_granularity_ns  
echo 1500000000 > /proc/sys/kernel/sched_wakeup_granularity_ns

## General Notes

Environment variables set by runcpu before the start of the run:  
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-ic19-20181011/icc19-lib/ia32"  
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-ic19-20181011/icc19-lib/intel64"  
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-ic19-20181011/je5.0.1-32"  
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-ic19-20181011/je5.0.1-64"

Binaries compiled on a system with 2x Intel Xeon Silver 4108 CPU + 384GB RAM memory using SUSE Linux Enterprise Server 12 SP2  
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  
jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;

(Continued on next page)
General Notes (Continued)

jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;
jemalloc: sources available via jemalloc.net

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/speccpu2017-ic19-20181011/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bfc91c0f
running on TX1330M3 Sun Dec  2 18:35:06 2018

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) Pentium(R) CPU G4560 @ 3.50GHz
  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
 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
 Model: 158
 Model name: Intel(R) Pentium(R) CPU G4560 @ 3.50GHz

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Platform Notes (Continued)

Stepping: 9
CPU MHz: 3500.000
CPU max MHz: 3500.0000
CPU min MHz: 800.0000
BogoMIPS: 7008.00
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 arch_perfmon pebs bts rep_good ntop xtopology nonstop_tsc cpuid
aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg
cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
rdlang_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti tpr_shadow vmi
flexpriority ept vpid fsgsbase tsc_adjust smep erms invpcid mpx rdseed smap
c1flushopt intel_pt xsaveopt xsaves xgetbv1 xsaves ibpb ibrs stibp dtherm arat pln
pts hwp hwp_notif hwp_act_window hwp_epp ssbd

/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: 64034 MB
  node 0 free: 63557 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 65571408 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"

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Software Availability: Sep-2018

Platform Notes (Continued)

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
Linux TX1330M3 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b) x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Dec 2 18:33

SPEC is set to: /home/Benchmark/speccpu2017-ic19-20181011
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 1.7T 27G 1.7T 2% /home

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.
BIOS FUJITSU // American Megatrends Inc. V5.0.0.11 R1.21.0 for D3373-B1x
11/20/2018
Memory:
4x Samsung M391A2K43BB1-CRC 16 GB 2 rank 2400

(End of data from sysinfo program)

Compiler Version Notes

=================================================================================
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
525.x264_r(base, peak) 557.xz_r(base, peak)
=================================================================================

icc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=================================================================================
CC 500.perlbench_r(peak) 502.gcc_r(peak)
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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=================================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)
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icpc (ICC) 19.0.0.117 20180804

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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)

icpc (ICC) 19.0.0.117 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC 548.exchange2_r(base, peak)

ifort (IFORT) 19.0.0.117 20180804
Copyright (C) 1985-2018 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
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Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64 -std=c11

502.gcc_r: icc -m32 -std=c11 -L/opt/intel/compilers_and_libraries/linux/lib/ia32

C++ benchmarks (except as noted below):
icpc -m64

523.xalancbmk_r: icpc -m32 -L/opt/intel/compilers_and_libraries/linux/lib/ia32

Fortran benchmarks:
ifort -m64

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -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
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## Peak Optimization Flags

### C benchmarks:

500.perlbench:  
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
- -xSSE4.2 -O3 -no-prec-div -qopt-prefetch  
- -qopt-mem-layout-trans=3 -fno-strict-overflow  
- -L/usr/local/je5.0.1-64/lib -ljemalloc

502.gcc:  
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
- -xSSE4.2 -O3 -no-prec-div -qopt-prefetch  
- -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib  
- -ljemalloc

505.mcf:  
- -Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div  
- -qopt-prefetch -qopt-mem-layout-trans=3  
- -L/usr/local/je5.0.1-64/lib -ljemalloc

525.x264:  
- -Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div  
- -qopt-prefetch -qopt-mem-layout-trans=3 -fno-alias  
- -L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz:  
- basepeak = yes

### C++ benchmarks:

520.omnetpp:  
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
- -xSSE4.2 -O3 -no-prec-div -qopt-prefetch  
- -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib  
- -ljemalloc

523.xalancbmk:  
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
- -xSSE4.2 -O3 -no-prec-div -qopt-prefetch  
- -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib  
- -ljemalloc

531.deepsjeng:  
- Same as 520.omnetpp

541.leela:  
- Same as 520.omnetpp

### Fortran benchmarks:

548.exchange2:  
- basepeak = yes

The flags files that were used to format this result can be browsed at  
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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You can also download the XML flags sources by saving the following links:
- [Intel-ic18.0-official-linux64.2017-12-21.xml](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml)
- [Fujitsu-Platform-Settings-V1.2-BDW-RevF.xml](http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevF.xml)

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