# SPEC® CPU2017 Integer Rate Result

## Inspur Corporation
### Inspur NF5270M5 (Intel Xeon Bronze 3104)

**SPECrate2017_int_base** = 33.5

**SPECrate2017_int_peak** = 34.4

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### Hardware
- **CPU Name:** Intel Xeon Bronze 3104
- **Max MHz.:** 1700
- **Nominal:** 1700
- **Enabled:** 12 cores, 2 chips
- **Orderable:** 1,2 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **Cache L2:** 1 MB I+D on chip per core
- **Cache L3:** 8.25 MB I+D on chip per chip
- **Other:** None
- **Memory:** 192 GB (12 x 16 GB 2Rx4 PC4-2666V-R, running at 2133)
- **Storage:** 1 x 200 GB SATA SSD
- **Other:** None

### Software
- **OS:** SUSE Linux Enterprise Server 12 SP2
  - 4.4.120-92.70-default
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux:
  - Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **Firmware:** Version 4.0.0 released Dec-2018
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc: jemalloc memory allocator library
  - V5.0.1

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## Test Details
- **CPU2017 License:** 3358
- **Test Sponsor:** Inspur Corporation
- **Test Date:** May-2019
- **Hardware Availability:** Dec-2018
- **Tested by:** Inspur Corporation
- **Software Availability:** Mar-2018

### Benchmarks Result

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<td>32.7</td>
<td>27.7</td>
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<tr>
<td>gcc_r</td>
<td>12</td>
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<td>mcf_r</td>
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<td>omnetpp_r</td>
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<tr>
<td>xalancbmk_r</td>
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<tr>
<td>x264_r</td>
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<tr>
<td>deepsjeng_r</td>
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<td>22.1</td>
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## References
- Standard Performance Evaluation Corporation (info@spec.org)
- https://www.spec.org/
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Results Table

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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"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "~/home/CPU2017/lib/ia32:/home/CPU2017/lib/intel64:/home/CPU2017/jem5.0.1-32:/home/CPU2017/jem5.0.1-64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
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
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.

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**Test Sponsor:** Inspur Corporation  
**Tested by:** Inspur Corporation  
**Test Date:** May-2019  
**Hardware Availability:** Dec-2018  
**Software Availability:** Mar-2018  

### General Notes (Continued)

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.

jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;  
jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;  

### Platform Notes

BIOS and OS configuration:
- SCALING_GOVERNOR set to Performance  
- Hardware Prefetch set to Disable  
- VT Support set to Disable  
- C1E Support set to Disable  
- IMC (Integrated memory controller) Interleaving set to 1-way  
- Sub NUMA Cluster (SNC) set to Enable  
- Sysinfo program /home/CPU2017/bin/sysinfo  
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
- running on linux-obz8 Wed May 8 17:00:23 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) Bronze 3104 CPU @ 1.70GHz`  
- 2 "physical id"s (chips)  
- 12 "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 : 6  
  - siblings : 6  
  - physical 0: cores 0 1 2 3 4 5  
  - physical 1: cores 0 1 2 3 4 5

From lscpu:
- `Architecture: x86_64`  
- `CPU op-mode(s): 32-bit, 64-bit`  
- `Byte Order: Little Endian`  
- `CPU(s): 12`  
- `On-line CPU(s) list: 0-11`  
- `Thread(s) per core: 1`

(Continued on next page)
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SPECratenew_int_base = 33.5
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Test Date: May-2019
Hardware Availability: Dec-2018
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Platform Notes (Continued)

Core(s) per socket: 6
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Bronze 3104 CPU @ 1.70GHz
Stepping: 4
CPU MHz: 1699.996
CPU max MHz: 1700.0000
CPU min MHz: 800.0000
BogoMIPS: 3392.04
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
NUMA node0 CPU(s): 0-5
NUMA node1 CPU(s): 6-11
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_ts art arch_perfmon pebs bts rep_good nopl xtopology nonstop_ts
aperfmrperf eagerfpu pni pclmulqdq dtes64 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 arat epb invpcid_single pni dtherm hwp
hwp_act_window hwp_epp hwp_pkg_req intel_pt rsb_ctxsw spec_ctrl stibp retpoline
kaiser tpr_shadow vmx flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep
bmi2 erms invpcid rtm cqm mpx avx512f avx512d qdseed adx smap clflushopt clwb
avx512cd avx512bw avx512v1 xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc

/proc/cpuinfo cache data
  cache size : 8448 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0 1 2 3 4 5
  node 0 size: 96208 MB
  node 0 free: 95817 MB
  node 1 cpus: 6 7 8 9 10 11
  node 1 size: 96627 MB
  node 1 free: 96209 MB
  node distances:
    node 0 1
    0:  10 21
    1:  21 10

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### SPECrate2017_int_base = 33.5  
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**Platform Notes (Continued)**

```plaintext
From /proc/meminfo  
   MemTotal: 197464420 kB  
   HugePages_Total: 0  
   Hugepagesize: 2048 kB

/usr/bin/lsb_release -d  
   SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*  
   SuSE-release:  
      SUSE Linux Enterprise Server 12 (x86_64)  
      VERSION = 12  
      PATCHLEVEL = 2  
      # This file is deprecated and will be removed in a future service pack or release.  
      # Please check /etc/os-release for details about this release.  
   os-release:  
      NAME="SLES"  
      VERSION="12-SP2"  
      VERSION_ID="12.2"  
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"  
      ID="sles"  
      ANSI_COLOR="0;32"  
      CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:  
   Linux linux-obz8 4.4.120-92.70-default #1 SMP Wed Mar 14 15:59:43 UTC 2018 (52a83de)  
   x86_64 x86_64 x86_64 GNU/Linux  

run-level 3 May 8 16:58 last=5

SPEC is set to: /home/CPU2017  
   Filesystem Type Size Used Avail Use% Mounted on  
   /dev/sda4 xfs 145G 84G 61G 59% /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 Inspur 4.0.0 12/03/2018  
   Memory:  
      12x Micron 18ASF2G72PZ-2G6D1 16 GB 1 rank 2666, configured at 2133  
      4x NO DIMM NO DIMM

(End of data from sysinfo program)
```
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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) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
CC  500.perlbench_r(peak) 502.gcc_r(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
    541.leela_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
    541.leela_r(peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
FC  548.exchange2_r(base, peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
  icc

C++ benchmarks:
  icpc

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Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

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=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

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Base Other Flags (Continued)

Fortran benchmarks:
-m64

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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

Peak Optimization Flags

C benchmarks:
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

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Peak Optimization Flags (Continued)

505.mcf_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib
-ljemalloc

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -fno-alias
-L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz_r: Same as 505.mcf_r

C++ benchmarks:
520.omnetpp_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc

523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Other Flags

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

502.gcc_r: -m32 -std=c11

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

523.xalancbmk_r: -m32

(Continued on next page)
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Peak Other Flags (Continued)

Fortran benchmarks:
-m64

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V1.1-SKL.xml

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

Tested with SPEC CPU2017 v1.0.2 on 2019-05-08 17:00:21-0400.
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