M Computers s.r.o.
HPC S2600WFT
(2.10 GHz, Intel Xeon Silver 4110)

CPU2017 License: 4204
Test Sponsor: M Computers s.r.o.
Tested by: M Computers s.r.o.

Test Date: Dec-2017
Hardware Availability: Oct-2017
Software Availability: Sep-2017

 SPECrate®2017_fp_base = 76.4
 SPECrate®2017_fp_peak = Not Run

Hardware

CPU Name: Intel Xeon Silver 4110
Max MHz: 3000
Nominal: 2100
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1, 2 chip(s)
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 11 MB I+D on chip per chip
Other: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2400V-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2
Compiler: C/C++; Version 18.0.1 of Intel C/C++ Compiler for Linux;
Fortran: Version 18.0.1 of Intel Fortran Compiler for Linux
Firmware: Intel Version SE5C620.86B.00.01.0009.101920170742 released Oct-2017
Parallel: No
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --
SPEC CPU®2017 Floating Point Rate Result

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Results Table

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SPECrate®2017_fp_base = 76.4
SPECrate®2017_fp_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"
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>

General Notes

Environment variables set by runcpu before the start of the run:
    LD_LIBRARY_PATH = "/opt/intel/compilers_and_libraries/linux/lib/ia32_lin
                      /opt/intel/compilers_and_libraries/linux/lib/intel64_lin"
    Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
    memory using Redhat Enterprise Linux 7.4
No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)

(Continued on next page)
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General Notes (Continued)

is mitigated in the system as tested and documented.
No: 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.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS Configuration:
Patrol Scrub=Disabled
CPU and Power Performance Policy=Performance
Set Fan Profile=Performance
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on taborlin3 Tue Dec 26 20:40:51 2017

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) Silver 4110 CPU @ 2.10GHz
  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 0 1 2 3 4 5 6 7
    physical 1: cores 0 1 2 3 4 5 6 7

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
Platform Notes (Continued)

Byte Order: Little Endian
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): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4110 CPU @ 2.10GHz
Stepping: 4
CPU MHz: 2101.000
CPU max MHz: 2101.0000
CPU min MHz: 800.0000
BogoMIPS: 4190.16
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 11264K
NUMA node0 CPU(s): 0-7,16-23
NUMA node1 CPU(s): 8-15,24-31
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
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fms cx16 xtpr pdcm pcd cda sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pln pts dtherm intel_pt
tpr_shadow vmmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
erm s invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512v1 xsaveopt xsavec xgetbv1 cqm_11c cqm_occup_llc

/platform/cpuid cache data
cache size: 11264 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 6 7 16 17 18 19 20 21 22 23
node 0 size: 193000 MB
node 0 free: 192215 MB
node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
node 1 size: 193368 MB
node 1 free: 192679 MB
node distances:
node 0 1

(Continued on next page)
## Platform Notes (Continued)

0: 10 21
1: 21 10

From /proc/meminfo
- MemTotal: 395641224 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:
  - 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.

From /etc/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 taborlin3 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67) x86_64
  x86_64 x86_64 GNU/Linux

run-level 3 Dec 26 20:36

SPEC is set to: /spec2017
- Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda1 xfs 660G 42G 619G 7% /

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 Intel Corporation SE5C620.86B.00.01.0009.10192017042 10/19/2017
- Memory:
  - 24x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400

(End of data from sysinfo program)
SPEC CPU®2017 Floating Point Rate Result

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Compiler Version Notes

==============================================================================
C  | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
---
icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
---

==============================================================================
C++ | 508.namd_r(base) 510.parest_r(base)
---
icpc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
---

==============================================================================
C++, C  | 511.povray_r(base) 526.blender_r(base)
---
icpc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
---

==============================================================================
C++, C, Fortran  | 507.cactuBSSN_r(base)
---
icpc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
---

==============================================================================
Fortran  | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
---
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
---

==============================================================================
Fortran, C  | 521.wrf_r(base) 527.cam4_r(base)
---
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.1 20171018

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**Compiler Version Notes (Continued)**

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**Base Compiler Invocation**

C benchmarks:
- icc

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort

Benchmarks using both Fortran and C:
- ifort icc

Benchmarks using both C and C++:
- icpc icc

Benchmarks using Fortran, C, and C++:
- icpc icc ifort

---

**Base Portability Flags**

- 503.bwaves_r: -DSPEC_LP64
- 507.cactuBSSN_r: -DSPEC_LP64
- 508.namd_r: -DSPEC_LP64
- 510.parest_r: -DSPEC_LP64
- 511.povray_r: -DSPEC_LP64
- 519.lbm_r: -DSPEC_LP64
- 521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
- 527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 538.imagick_r: -DSPEC_LP64
- 544.nab_r: -DSPEC_LP64
- 549.fotonik3d_r: -DSPEC_LP64
- 554.roms_r: -DSPEC_LP64
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### Base Optimization Flags

**C benchmarks:**
- xCORE-AVX2
- -ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- -ffinite-math-only
- -qopt-mem-layout-trans=3

**C++ benchmarks:**
- xCORE-AVX2
- -ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- -ffinite-math-only
- -qopt-mem-layout-trans=3

**Fortran benchmarks:**
- xCORE-AVX2
- -ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- -ffinite-math-only
- -qopt-mem-layout-trans=3
- -nostandard-realloc-lhs
- -align array32byte

**Base Other Flags**

**C benchmarks:**
- -m64
- -std=c11

**C++ benchmarks:**
- -m64

**Fortran benchmarks:**
- -m64

**Benchmarks using both Fortran and C:**
- -m64
- -std=c11

**Benchmarks using both C and C++:**
- -m64
- -std=c11

**Benchmarks using Fortran, C, and C++:**
- -m64
- -std=c11
**SPEC CPU®2017 Floating Point Rate Result**

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


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


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

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