**ASUSTeK Computer Inc.**  
**ASUS RS720Q-E9(Z11PH-D12) Server System**  
(2.40 GHz, Intel Xeon Gold 5115)

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
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<tbody>
<tr>
<td>20</td>
<td>79.5</td>
<td>80.2</td>
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**CPU2017 License:** 9016  
**Test Date:** Aug-2018  
**Test Sponsor:** ASUSTeK Computer Inc.  
**Hardware Availability:** Mar-2018  
**Tested by:** ASUSTeK Computer Inc.  
**Software Availability:** Jun-2018

**Hardware**
- **OS:** SUSE Linux Enterprise Server 12 (x86_64) SP3
- **Compiler:** C/C++: Version 18.0.3.222 of Intel C/C++
  Compiler for Linux;
- **Firmware:** Version 0905 released Mar-2018
- **File System:** btrfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** None

**Software**
- **CPU Name:** Intel Xeon Gold 5115
- **Max MHz.:** 3200
- **Nominal:** 2400
- **Enabled:** 20 cores, 2 chips
- **Orderable:** 1, 2 chip(s)
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB 1+D on chip per core
- **L3:** 13.75 MB 1+D on chip per chip
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)
- **Storage:** 1 x 240 GB SATA SSD
- **Other:** None
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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</tbody>
</table>

**SPECspeed2017_fp_base = 79.5**

**SPECspeed2017_fp_peak = 80.2**

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

### 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:

- KMP_AFFINITY = "granularity=fine,compact"
- OMP_STACKSIZE = "192M"

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
```

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:

- SNC = Disabled
- IMC interleaving = AUTO

(Continued on next page)
Platform Notes (Continued)

Patrol Scrub = Disabled
VT-d = Disabled
HyperThreading = Disabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-pmm5 Sat Aug 25 15:58:38 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) Xeon(R) Gold 5115 CPU @ 2.40GHz
  2 "physical id"s (chips)
  20 "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 : 10
siblings : 10
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 20
On-line CPU(s) list: 0-19
Thread(s) per core: 1
Core(s) per socket: 10
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5115 CPU @ 2.40GHz
Stepping: 4
CPU MHz: 2401.000
CPU max MHz: 2401.0000
CPU min MHz: 1000.0000
BogoMIPS: 4896.21
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9

(Continued on next page)
# SPEC CPU2017 Floating Point Speed Result

**ASUSTeK Computer Inc.**

ASUS RS720Q-E9(Z11PH-D12) Server System  
(2.40 GHz, Intel Xeon Gold 5115)

**SPEC**

**SPECspeed2017_fp_base** = 79.5  
**SPECspeed2017_fp_peak** = 80.2

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9016</th>
<th>Test Date:</th>
<th>Aug-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
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<td>Hardware Availability:</td>
<td>Mar-2018</td>
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<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
<td>Software Availability:</td>
<td>Jun-2018</td>
</tr>
</tbody>
</table>

---

**Platform Notes (Continued)**

NUMA node1 CPU(s):     10-19  
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov  
                         pat pse36 clf flush 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  
                         aperfmperf eagerfpu npi pclmulqdq dtls64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg  
                         fma cx16 xtr pdcn cnc pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes  
                         xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts  
                         dtherm intel_pt rsb_cnt xs spec ctrl stibp retpoline kaiser tpr_shadow vmi  
                         flexpriority ept vpid fsq sbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm  
                         cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512f cd avx512bw avx512vl  
                         xsaveopt xsave xgetbv1 cqm_llc cqm_occup_llc pk ospke

```
/proc/cpuinfo cache data  
  cache size: 14080 KB  
```

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  
available: 2 nodes (0-1)  
nod 0 cpus: 0 1 2 3 4 5 6 7 8 9  
nod 0 size: 192067 MB  
nod 0 free: 189814 MB  
nod 1 cpus: 10 11 12 13 14 15 16 17 18 19  
nod 1 size: 193517 MB  
nod 1 free: 185827 MB  
nod distances:  
nod 0 1  
  0: 10 21  
  1: 21 10

From /proc/meminfo  
MemTotal: 394839504 kB  
HugePages_Total: 0  
Hugepagesize: 2048 KB

From /etc/*release*/etc/*version*  
SuSE-release:  
  SUSE Linux Enterprise Server 12 (x86_64)  
  VERSION = 12  
  PATCHLEVEL = 3  
  # 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-SP3"  
    VERSION_ID=12.3  
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"  
    ID="sles"

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

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
    Linux linux-pmm5 4.4.120-94.17-default #1 SMP Wed Mar 14 17:23:00 UTC 2018 (cf3a7bb)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Aug 24 16:24

SPEC is set to: /spec2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>btrfs</td>
<td>203G</td>
<td>109G</td>
<td>93G</td>
<td>54%</td>
<td>/</td>
</tr>
</tbody>
</table>

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 American Megatrends Inc. 0905 03/19/2018
Memory: 12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

## Compiler Version Notes

```
==============================================================================
 CC   619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)□
==============================================================================
```  

```
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
==============================================================================
 CC   619.lbm_s(peak)
==============================================================================
```  

```
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
ASUSTeK Computer Inc.  
ASUS RS720Q-E9(Z11PH-D12) Server System  
(2.40 GHz, Intel Xeon Gold 5115)  

MARCH 2018  

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPEC CPU2017 Floating Point Speed Result

SPECspeed2017_fp_base = 79.5  
SPECspeed2017_fp_peak = 80.2

CPU2017 License:  9016  
Test Sponsor:  ASUSTeK Computer Inc.  
Test Date:  Aug-2018  
Hardware Availability:  Mar-2018  
Tested by:  ASUSTeK Computer Inc.  
Software Availability:  Jun-2018

Compiler Version Notes (Continued)

FC  607.cactuBSSN_s(base)
________________________________________
icpc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

FC  607.cactuBSSN_s(peak)
________________________________________
icpc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

FC  607.cactuBSSN_s(base)
________________________________________
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

FC  607.cactuBSSN_s(peak)
________________________________________
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

FC  607.cactuBSSN_s(base)
________________________________________
ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

FC  607.cactuBSSN_s(peak)
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ifort (IFORT) 18.0.3 20180410
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.

(Continued on next page)
### SPEC CPU2017 Floating Point Speed Result

**ASUSTeK Computer Inc.**

ASUS RS720Q-E9(Z11PH-D12) Server System (2.40 GHz, Intel Xeon Gold 5115)

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**CPU2017 License:** 9016  
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**Tested by:** ASUSTeK Computer Inc.

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</tbody>
</table>

### Compiler Version Notes (Continued)

```plaintext
ifort (IFORT) 18.0.3 20180410  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.3 20180410  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

---

### Base Compiler Invocation

**C benchmarks:**  
```plaintext
icc -m64 -std=c11
```

**Fortran benchmarks:**  
```plaintext
ifort -m64
```

**Benchmarks using both Fortran and C:**  
```plaintext
ifort -m64 icc -m64 -std=c11
```

**Benchmarks using Fortran, C, and C++:**  
```plaintext
icpc -m64 icc -m64 -std=c11 ifort -m64
```

---

### Base Portability Flags

```plaintext
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
   -assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
```

---

### Base Optimization Flags

**C benchmarks:**  
```plaintext
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
```

(Continued on next page)
ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System
(2.40 GHz, Intel Xeon Gold 5115)

SPECspeed2017_fp_peak = 80.2
SPECspeed2017_fp_base = 79.5

Base Optimization Flags (Continued)

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

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

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
(Continued on next page)
## ASUSTeK Computer Inc.

**Server System**

- **Model:** ASUSTeK RS720Q-E9(Z11PH-D12)
- **CPU:** Intel Xeon Gold 5115
- **Frequency:** 2.40 GHz

### SPEC CPU2017 Floating Point Speed Result

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**Hardware Availability:** Mar-2018  
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**Software Availability:** Jun-2018

### Peak Optimization Flags (Continued)

#### Fortran benchmarks:

- **619.lbm_s**: (continued)
  - `-DSPEC_OPENMP`

- **638.imagick_s**: `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
  - `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp`
  - `-DSPEC_OPENMP`

- **644.nab_s**: Same as **638.imagick_s**

#### Benches using both Fortran and C:

- **621.wrf_s**: `-prof-gen(pass 1)` `-prof-use(pass 2)` `-DSPEC_SUPPRESS_OPENMP`
  - `-DSPEC_OPENMP` `-O2` `-xCORE-AVX512` `-qopt-prefetch` `-ipo` `-O3`
  - `-ffinite-math-only` `-no-prec-div` `-qopt-mem-layout-trans=3` `-qopenmp`
  - `-DSPEC_OPENMP` `-nostandard-realloc-lhs` `-align array32byte`

- **627.cam4_s**: `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
  - `-ffinite-math-only` `-qopt-mem-layout-trans=3` `-qopenmp`
  - `-DSPEC_OPENMP` `-nostandard-realloc-lhs` `-align array32byte`

- **628.pop2_s**: Same as **621.wrf_s**

#### Benches using Fortran, C, and C++:

- **621.wrf_s**: `-prof-gen(pass 1)` `-prof-use(pass 2)` `-O2` `-xCORE-AVX512` `-qopt-prefetch`
  - `-ipo` `-O3` `-ffinite-math-only` `-no-prec-div` `-qopt-mem-layout-trans=3`
  - `-DSPEC_SUPPRESS_OPENMP` `-qopenmp` `-DSPEC_OPENMP` `-nostandard-realloc-lhs` `-align array32byte`

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:

ASUSTeK Computer Inc.  
ASUS RS720Q-E9(Z11PH-D12) Server System  
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Hardware Availability: Mar-2018  
Software Availability: Jun-2018

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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 v1.0.5 on 2018-08-25 03:58:37-0400.  
Originally published on 2018-10-02.