



# SPEC® CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

CPU2017 License: 9016

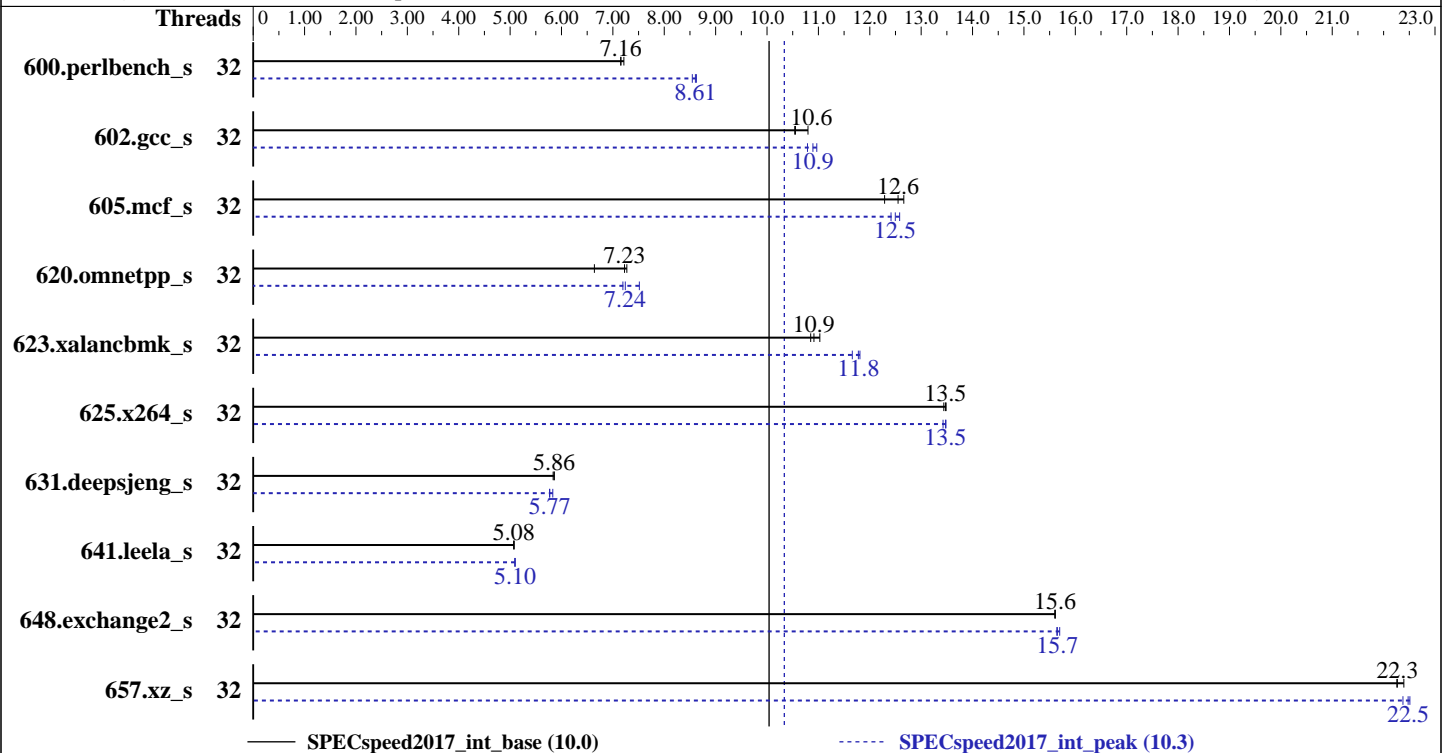
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: May-2018

Hardware Availability: Feb-2018

Software Availability: Mar-2018



### Hardware

CPU Name: Intel Xeon Gold 6144  
 Max MHz.: 4200  
 Nominal: 3500  
 Enabled: 16 cores, 2 chips  
 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: 24.75 MB I+D on chip per chip  
 Other: None  
 Memory: 192 GB (12 x 16 GB 2Rx4 PC4-2666V-R)  
 Storage: 1 x 240 GB SATA SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 12 (x86\_64) SP3  
 Kernel 4.4.120-94.17-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: Yes  
 Firmware: Version 0905 released Mar-2018  
 File System: btrfs  
 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



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: May-2018

Hardware Availability: Feb-2018

Software Availability: Mar-2018

## Results Table

Benchmark	Base						Peak							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	32	248	7.15	246	7.21	<b>248</b>	<b>7.16</b>	32	208	8.55	<b>206</b>	<b>8.61</b>	206	8.63
602.gcc_s	32	369	10.8	378	10.5	<b>377</b>	<b>10.6</b>	32	369	10.8	363	11.0	<b>366</b>	<b>10.9</b>
605.mcf_s	32	<b>376</b>	<b>12.6</b>	373	12.7	384	12.3	32	375	12.6	<b>378</b>	<b>12.5</b>	380	12.4
620.omnetpp_s	32	224	7.27	246	6.64	<b>226</b>	<b>7.23</b>	32	217	7.52	<b>225</b>	<b>7.24</b>	227	7.20
623.xalancbmk_s	32	128	11.0	131	10.8	<b>130</b>	<b>10.9</b>	32	120	11.8	<b>120</b>	<b>11.8</b>	122	11.7
625.x264_s	32	131	13.4	131	13.5	<b>131</b>	<b>13.5</b>	32	131	13.5	<b>131</b>	<b>13.5</b>	131	13.4
631.deepsjeng_s	32	<b>245</b>	<b>5.86</b>	245	5.86	245	5.84	32	246	5.83	248	5.77	<b>248</b>	<b>5.77</b>
641.leela_s	32	<b>336</b>	<b>5.08</b>	336	5.08	336	5.07	32	<b>335</b>	<b>5.10</b>	335	5.10	335	5.09
648.exchange2_s	32	188	15.6	188	15.6	<b>188</b>	<b>15.6</b>	32	187	15.7	<b>188</b>	<b>15.7</b>	188	15.6
657.xz_s	32	<b>278</b>	<b>22.3</b>	278	22.3	276	22.4	32	276	22.4	<b>275</b>	<b>22.5</b>	275	22.5

SPECspeed2017\_int\_base = **10.0**

SPECspeed2017\_int\_peak = **10.3**

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,scatter"

LD\_LIBRARY\_PATH = "/spec2017/lib/ia32:/spec2017/lib/intel64:/spec2017/je5.0.1-32:/spec2017/je5.0.1-64"

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
```

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;

jemalloc: sources available from jemalloc.net or

<https://github.com/jemalloc/jemalloc/releases>

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.



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** May-2018

**Hardware Availability:** Feb-2018

**Software Availability:** Mar-2018

## Platform Notes

BIOS Configuration:

SNC = Disabled

IMC interleaving = AUTO

Patrol Scrub = Disabled

VT-d = Disabled

HyperThreading = Disabled

Sysinfo program /spec2017/bin/sysinfo

Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f

running on linux-pmm5 Mon May 14 09:33:45 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 6144 CPU @ 3.50GHz

2 "physical id"s (chips)

16 "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 : 8

physical 0: cores 0 2 3 4 16 19 25 26

physical 1: cores 0 4 5 6 16 19 20 22

From lscpu:

Architecture: x86\_64

CPU op-mode(s): 32-bit, 64-bit

Byte Order: Little Endian

CPU(s): 16

On-line CPU(s) list: 0-15

Thread(s) per core: 1

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) Gold 6144 CPU @ 3.50GHz

Stepping: 4

CPU MHz: 3501.000

CPU max MHz: 3501.0000

CPU min MHz: 1200.0000

BogoMIPS: 7210.16

Virtualization: VT-x

L1d cache: 32K

L1i cache: 32K

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: May-2018

Hardware Availability: Feb-2018

Software Availability: Mar-2018

### Platform Notes (Continued)

L2 cache: 1024K  
L3 cache: 25344K  
NUMA node0 CPU(s): 0-7  
NUMA node1 CPU(s): 8-15

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 aperfmperf eagerfpu pni pclmulqdq dtes64 monitor 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 ida arat epb invpcid\_single pln pts dtherm intel\_pt rsb\_ctxsw spec\_ctrl stibp retpoline kaiser tpr\_shadow vnmi flexpriority ept vpid fsgsbase tsc\_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm\_llc cqm\_occup\_llc pku ospke

```
/proc/cpuinfo cache data
cache size : 25344 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
node 0 size: 95299 MB
node 0 free: 94983 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 96749 MB
node 1 free: 96338 MB
node distances:
node 0 1
0: 10 21
1: 21 10
```

```
From /proc/meminfo
MemTotal: 196658936 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"
```

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: May-2018

Hardware Availability: Feb-2018

Software Availability: Mar-2018

### Platform Notes (Continued)

```
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="/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
```

run-level 3 May 14 09:32

SPEC is set to: /spec2017

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2        btrfs    203G   26G  176G  13% /
```

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 Micron 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666

(End of data from sysinfo program)

### Compiler Version Notes

```
=====  
CC 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base,  
peak) 657.xz_s(base)  
-----
```

icc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
=====  
CC 600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)  
-----
```

icc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
=====  
CXXC 620.omnetpp_s(base) 623.xalanbmk_s(base) 631.deepsjeng_s(base)  
641.leela_s(base)  
-----
```

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## ASUSTeK Computer Inc.

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: May-2018

Hardware Availability: Feb-2018

Software Availability: Mar-2018

## Compiler Version Notes (Continued)

-----  
icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
-----

=====  
CXXC 620.omnetpp\_s(peak) 623.xalancbmk\_s(peak) 631.deepsjeng\_s(peak)  
641.leela\_s(peak)  
-----

icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
-----

=====  
FC 648.exchange2\_s(base, peak)  
-----

ifort (IFORT) 18.0.0 20170811  
Copyright (C) 1985-2017 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

600.perlbench\_s: -DSPEC\_LP64 -DSPEC\_LINUX\_X64

602.gcc\_s: -DSPEC\_LP64

605.mcf\_s: -DSPEC\_LP64

620.omnetpp\_s: -DSPEC\_LP64

623.xalancbmk\_s: -DSPEC\_LP64 -DSPEC\_LINUX

625.x264\_s: -DSPEC\_LP64

631.deepsjeng\_s: -DSPEC\_LP64

641.leela\_s: -DSPEC\_LP64

648.exchange2\_s: -DSPEC\_LP64

657.xz\_s: -DSPEC\_LP64



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** May-2018

**Hardware Availability:** Feb-2018

**Software Availability:** Mar-2018

## Base Optimization Flags

C benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP  
-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
```

## Peak Compiler Invocation

C benchmarks:

```
icc -m64 -std=c11
```

C++ benchmarks (except as noted below):

```
icpc -m64
```

```
623.xalancbmk_s: icpc -m32 -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
```

Fortran benchmarks:

```
ifort -m64
```

## Peak Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64  
602.gcc_s: -DSPEC_LP64  
605.mcf_s: -DSPEC_LP64  
620.omnetpp_s: -DSPEC_LP64  
623.xalancbmk_s: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX  
625.x264_s: -DSPEC_LP64  
631.deepsjeng_s: -DSPEC_LP64  
641.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64  
657.xz_s: -DSPEC_LP64
```



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** May-2018

**Hardware Availability:** Feb-2018

**Software Availability:** Mar-2018

## Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
625.x264_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

657.xz\_s: Same as 602.gcc\_s

C++ benchmarks:

```
620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
623.xalancbmk_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-32/lib -ljemalloc
```

631.deepsjeng\_s: Same as 620.omnetpp\_s

641.leela\_s: Same as 620.omnetpp\_s

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
```





# SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**ASUSTeK Computer Inc.**

ASUS RS720Q-E9(Z11PH-D12) Server System  
(3.50 GHz, Intel Xeon Gold 6144)

SPECspeed2017\_int\_base = 10.0

SPECspeed2017\_int\_peak = 10.3

**CPU2017 License:** 9016

**Test Sponsor:** ASUSTeK Computer Inc.

**Tested by:** ASUSTeK Computer Inc.

**Test Date:** May-2018

**Hardware Availability:** Feb-2018

**Software Availability:** Mar-2018

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z11-V2.0-revD.html>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.html>

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

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z11-V2.0-revD.xml>

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml>

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

Tested with SPEC CPU2017 v1.0.2 on 2018-05-13 21:33:44-0400.

Report generated on 2018-10-31 17:52:11 by CPU2017 PDF formatter v6067.

Originally published on 2018-06-12.