## SPEC® CPU2017 Integer Speed Result

**ASUSTeK Computer Inc.**  
ASUS RS700-E9(Z11PP-D24) Server System  
(2.70 GHz, Intel Xeon Gold 6150)

<table>
<thead>
<tr>
<th>Test Sponsor:</th>
<th>ASUSTeK Computer Inc.</th>
<th>Hardware Availability:</th>
<th>Jul-2017</th>
</tr>
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<tbody>
<tr>
<td>Tested by:</td>
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<td>Software Availability:</td>
<td>Sep-2017</td>
</tr>
<tr>
<td>CPU2017 License:</td>
<td>9016</td>
<td>Test Date:</td>
<td>Dec-2017</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6150  
- **Max MHz.:** 3700  
- **Nominal:** 2700  
- **Enabled:** 36 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 core  
- **Other:** None  
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)  
- **Storage:** 1 x 240 GB SATA SSD  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.3 (x86_64)  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
- **Parallel:** Yes  
- **Firmware:** Version 0601 released Oct-2017  
- **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

### Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>72</td>
<td>9.42</td>
<td>9.16</td>
</tr>
<tr>
<td>gcc_s</td>
<td>72</td>
<td>11.1</td>
<td>10.1</td>
</tr>
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<td>mcf_s</td>
<td>72</td>
<td>6.35</td>
<td>6.58</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>72</td>
<td>9.46</td>
<td>10.1</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>72</td>
<td>11.8</td>
<td>11.8</td>
</tr>
<tr>
<td>x264_s</td>
<td>72</td>
<td>5.11</td>
<td>4.36</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>72</td>
<td>8.08</td>
<td>4.34</td>
</tr>
<tr>
<td>leela_s</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exchange2_s</td>
<td>72</td>
<td></td>
<td></td>
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<tr>
<td>xz_s</td>
<td>72</td>
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<td></td>
</tr>
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---

**Notes:**  
- SPECspeed2017_int_base = 8.87  
- SPECspeed2017_int_peak = 9.16
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Results Table

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<tr>
<td>600.perlbench_s</td>
<td>72</td>
<td>285</td>
<td>6.24</td>
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<td>6.22</td>
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<tr>
<td>605.mcf_s</td>
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<td>9.11</td>
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<td>11.1</td>
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<td>425</td>
<td>11.1</td>
<td>421</td>
<td>11.2</td>
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<tr>
<td>620.omnetpp_s</td>
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<td>257</td>
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<td>631.deepsjeng_s</td>
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<td>5.08</td>
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<td>641.leela_s</td>
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<td>393</td>
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<td>4.34</td>
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<td>4.36</td>
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<td>648.exchange2_s</td>
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<td>13.4</td>
<td>220</td>
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<td>72</td>
<td>277</td>
<td>22.3</td>
<td>280</td>
<td>22.1</td>
<td>280</td>
<td>22.1</td>
<td>72</td>
<td>277</td>
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</table>

SPECspeed2017_int_base = 8.87
SPECspeed2017_int_peak = 9.16

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"
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
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) 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.

(Continued on next page)
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**CPU2017 License:** 9016  
**Test Sponsor:** ASUSTeK Computer Inc.  
**Tested by:** ASUSTeK Computer Inc.  
**Test Date:** Dec-2017  
**Hardware Availability:** Jul-2017  
**Software Availability:** Sep-2017

---

**General Notes (Continued)**

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:**
SNC = Disabled  
IMC interleaving = AUTO  
Patrol Scrub = Disabled  
VT-d = Disabled  
HyperThreading = Disabled

**Sysinfo program /spec2017/bin/sysinfo**
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f  
running on localhost.localdomain Wed Dec 20 17:58:45 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) Gold 6150 CPU @ 2.70GHz  
- **2 "physical id"s (chips)**  
- **36 "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:** 18  
  - **siblings:** 18  
  - **physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27**  
  - **physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27**

From lscpu:
- **Architecture:** x86_64  
- **CPU op-mode(s):** 32-bit, 64-bit  
- **Byte Order:** Little Endian

(Continued on next page)
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| SPECspeed2017_int_base | 8.87 |
| SPECspeed2017_int_peak | 9.16 |

**Platform Notes (Continued)**

| CPU(s): | 36 |
| On-line CPU(s) list: | 0-35 |
| Thread(s) per core: | 1 |
| Core(s) per socket: | 18 |
| Socket(s): | 2 |
| NUMA node(s): | 2 |
| Vendor ID: | GenuineIntel |
| CPU family: | 6 |
| Model: | 85 |
| Model name: | Intel(R) Xeon(R) Gold 6150 CPU @ 2.70GHz |
| Stepping: | 4 |
| CPU MHz: | 1200.023 |
| BogoMIPS: | 5405.78 |
| Virtualization: | VT-x |
| L1d cache: | 32K |
| L1i cache: | 32K |
| L2 cache: | 1024K |
| L3 cache: | 25344K |
| NUMA node0 CPU(s): | 0-17 |
| NUMA node1 CPU(s): | 18-35 |

/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 8 9 10 11 12 13 14 15 16 17
  node 0 size: 391822 MB
  node 0 free: 382763 MB
  node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
  node 1 size: 393216 MB
  node 1 free: 384335 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10
```

From /proc/meminfo

```
  MemTotal: 790962968 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB
```

From /etc/*release* /etc/*version*

```
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.3 (Maipo)"
```

(Continued on next page)
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Test Sponsor: ASUSTeK Computer Inc.
Test Date: Dec-2017
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Software Availability: Sep-2017

Platform Notes (Continued)

```
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
```

```
uname -a:
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Dec 20 17:57
```

```
SPEC is set to: /spec2017
/dev/sda3     Type  Size  Used Avail Use% Mounted on
             xfs   220G   44G  176G  20% /
```

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. 0601 10/17/2017
Memory:
  24x Samsung M393A4K40BB2-CTD 32 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.
```

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Compiler Version Notes (Continued)

==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
  641.leela_s(base)
==============================================================================
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

(Continued on next page)
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**Base Portability Flags (Continued)**

- 631.deepsjeng_s: -DSPEC_LP64
- 641.leela_s: -DSPEC_LP64
- 648.exchange2_s: -DSPEC_LP64
- 657.xz_s: -DSPEC_LP64

## Base Optimization Flags

**C benchmarks:**

- W1,-z,muldef s -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:**

- W1,-z,muldef s -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

**Fortran benchmarks:**

- W1,-z,muldef s -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

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

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

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

(Continued on next page)
ASUSTeK Computer Inc.
ASUS RS700-E9(Z11PP-D24) Server System (2.70 GHz, Intel Xeon Gold 6150)

Peak Optimization Flags (Continued)

623.xalancbmk_s (continued):
-\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:
-W1,-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

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

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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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