### SPEC CPU® 2017 Integer Speed Result

**ASUSTeK Computer Inc.**

ASUS RS100-E10(P11C-M/4L) Server System  
(3.30 GHz, Intel Xeon E-2136)

**SPECspeed®2017_int_base = 11.1**  
**SPECspeed®2017_int_peak = 11.4**

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Jul-2019</th>
<th>Hardware Availability:</th>
<th>Jun-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License:</td>
<td>9016</td>
<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
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<tr>
<td>Test Sponsor:</td>
<td>ASUSTeK Computer Inc.</td>
<td>Software Availability:</td>
<td>May-2019</td>
</tr>
</tbody>
</table>

#### Hardware

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel Xeon E-2136</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>4500</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3300</td>
</tr>
<tr>
<td>Enabled:</td>
<td>6 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>12 MB I+D on chip per core</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 500 GB SATA HDD, 7200RPM</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

#### Software

| OS: | SUSE Linux Enterprise Server 15 |
| Compiler: | C/C++: Version 19.0.4.227 of Intel C/C++  
Compiler Build 20190416 for Linux; |
| Fortran: | Version 19.0.4.227 of Intel Fortran  
Compiler Build 20190416 for Linux |
| Parallel: | Yes |
| Firmware: | Version 0703 released Jun-2019 |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| Other: | jemalloc: jemalloc memory allocator library V5.0.1 |
| Power Management: | -- |

---

| Threads | 0 | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 7.00 | 8.00 | 9.00 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 |
|---------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 600.perlbhall_s | 12 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 | 7.33 |
| 602.gcc_s | 12 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 |
| 605.mcf_s | 12 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 |
| 625.x264_s | 12 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 |
| 641.leela_s | 12 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 | 5.43 |
| 657.xz_s | 12 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 |

---

<spec>spec</spec>
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### SPECspeed®2017_int_base = 11.1
### SPECspeed®2017_int_peak = 11.4

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>12</td>
<td>236</td>
<td>7.53</td>
<td>237</td>
<td>7.49</td>
<td>232</td>
<td>7.64</td>
<td>12</td>
<td>197</td>
<td>9.01</td>
<td>197</td>
<td>9.01</td>
<td>197</td>
<td>9.00</td>
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<tr>
<td>602.gcc_s</td>
<td>12</td>
<td>324</td>
<td>12.3</td>
<td>324</td>
<td>12.3</td>
<td>322</td>
<td>12.4</td>
<td>12</td>
<td>315</td>
<td>12.7</td>
<td>314</td>
<td>12.7</td>
<td>314</td>
<td>12.7</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>12</td>
<td>297</td>
<td>15.9</td>
<td>300</td>
<td>15.7</td>
<td>297</td>
<td>15.9</td>
<td>12</td>
<td>300</td>
<td>15.8</td>
<td>300</td>
<td>15.8</td>
<td>296</td>
<td>15.9</td>
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<tr>
<td>620.omnetpp_s</td>
<td>12</td>
<td>207</td>
<td>7.89</td>
<td>203</td>
<td>8.04</td>
<td>206</td>
<td>7.93</td>
<td>12</td>
<td>201</td>
<td>8.11</td>
<td>201</td>
<td>8.12</td>
<td>201</td>
<td>8.12</td>
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<tr>
<td>623.xalanchmk_s</td>
<td>12</td>
<td>97.0</td>
<td>14.6</td>
<td>95.2</td>
<td>14.9</td>
<td>95.3</td>
<td>14.9</td>
<td>12</td>
<td>95.6</td>
<td>14.8</td>
<td>94.6</td>
<td>15.0</td>
<td>95.1</td>
<td>14.9</td>
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<tr>
<td>625.x264_s</td>
<td>12</td>
<td>104</td>
<td>17.0</td>
<td>103</td>
<td>17.1</td>
<td>103</td>
<td>17.1</td>
<td>12</td>
<td>103</td>
<td>17.1</td>
<td>103</td>
<td>17.1</td>
<td>104</td>
<td>17.0</td>
</tr>
<tr>
<td>641.leea_s</td>
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<td>315</td>
<td>5.42</td>
<td>314</td>
<td>5.43</td>
<td>314</td>
<td>5.43</td>
<td>12</td>
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<td>5.43</td>
<td>314</td>
<td>5.44</td>
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<tr>
<td>648.exchange2_s</td>
<td>12</td>
<td>150</td>
<td>19.6</td>
<td>149</td>
<td>19.8</td>
<td>150</td>
<td>19.6</td>
<td>12</td>
<td>148</td>
<td>19.8</td>
<td>150</td>
<td>19.6</td>
<td>149</td>
<td>19.8</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.1
SPECspeed®2017_int_peak = 11.4

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_19u4/lib/intel64:/spec2017_19u4/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5
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
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.
ASUSTeK Computer Inc.

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SPECspeed®2017_int_base = 11.1
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BIOS Configuration:
VT-d = Disabled
AES = Disabled

Sysinfo program /spec2017_19u4/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-ngvl Wed Jul 31 09:56:09 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) E-2136 CPU @ 3.30GHz
 1 "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 : 12
physical 0: 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:  2
Core(s) per socket:  6
Socket(s):           1
NUMA node(s):        1
Vendor ID:           GenuineIntel
CPU family:          6
Model:               158
Model name:          Intel(R) Xeon(R) E-2136 CPU @ 3.30GHz
Stepping:            10
CPU MHz:             3300.000
CPU max MHz:         4500.0000
CPU min MHz:         800.0000
BogoMIPS:            6624.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            256K
L3 cache:            12288K
NUMA node0 CPU(s):   0-11
Flags:               fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

(Continued on next page)
Platform Notes (Continued)

pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx p沽elgb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref tsc_known_freg pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdbr fna cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer
xsavx avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single pti
ssbd ibrs ibpb stibp trp_shadow vmmi flexpriority ept vpid fsqsbse tsc_adjust bmi1
hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt intel_pt xsaveopt
xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp
flush_l1d

'/proc/cpuinfo cache data
  cache size : 12288 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
  physical chip.
  available: 1 nodes (0)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11
    node 0 size: 64320 MB
    node 0 free: 63801 MB
    node distances:
      node 0
        0:  10

From /proc/meminfo
  MemTotal:       65864004 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15"
    VERSION_ID="15"
    PRETTY_NAME="SUSE Linux Enterprise Server 15"
    ID="sles"
    ID_LIKE="suse"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15"

  uname -a:
    Linux linux-ngvl 4.12.14-150.17-default #1 SMP Thu May 2 15:15:46 UTC 2019 (bf13fb8)
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

(Continued on next page)
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Platform Notes (Continued)

CVE-2017-5715 (Spectre variant 2): Mitigation: Full generic retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling
run-level 3 Jul 31 09:42

SPEC is set to: /spec2017_19u4
Filesystem     Type  Size  Used  Avail  Use% Mounted on
/dev/sda4      xfs   442G   23G  419G   6% /

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. 0703 06/13/2019
Memory:
4x Samsung M391A2K43BB1-CTD 16 GB 2 rank 2667, configured at 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<p>| C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak) |
|---------------------------------------------------------------|
| Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |</p>
<table>
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<th>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</th>
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<p>| C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak) |
|---------------------------------------------------------------|
| Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |</p>
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| Fortran | 648.exchange2_s(base, peak) |
|---------------------------------------------------------------|
| Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |
| Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |
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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

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs
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Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2 -qopt-mem-layout-trans=4 -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-AVX2 -qopt-mem-layout-trans=4 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_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-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
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C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

623.xalancbmk_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

631.deepsjeng_s: Same as 623.xalancbmk_s

641.leela_s: Same as 623.xalancbmk_s

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

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:

Peak Optimization Flags (Continued)

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

Tested with SPEC CPU®2017 v1.0.5 on 2019-07-30 21:56:08-0400.
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