ASUSTeK Computer Inc.  

ASUS RS700-E9(Z11PP-D24) Server System  
(2.10 GHz, Intel Xeon Platinum 8176)

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Dec-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>ASUSTeK Computer Inc.</td>
</tr>
<tr>
<td>Tested by:</td>
<td>ASUSTeK Computer Inc.</td>
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<tr>
<td>Hardware</td>
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</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Platinum 8176</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.80 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2100</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>56 cores, 2 chips, 28 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
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<tr>
<td>L3 Cache:</td>
<td>38.5 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Memory:</td>
<td>384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)</td>
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<tr>
<td>Other Cache:</td>
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<tr>
<td>Disk Subsystem:</td>
<td>1 x 240 GB SATA SSD</td>
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<tr>
<td>Other Hardware:</td>
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<tr>
<td>Software</td>
<td></td>
</tr>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release (x86_64)</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
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<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.2</td>
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SPECint®2006 = 84.2  
SPECint_base2006 = 81.7  

CPU2006 license: 9016  
Test date: Dec-2017  
Test sponsor: ASUSTeK Computer Inc.  
Tested by: ASUSTeK Computer Inc.  
Hardware Availability: Jul-2017  
Software Availability: Apr-2017  

<table>
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<tr>
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<tr>
<td>400.perlbench: 54.6</td>
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<tr>
<td>401.bzip2: 48.0</td>
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<tr>
<td>403.gcc: 48.0</td>
</tr>
<tr>
<td>429.mcf: 47.6</td>
</tr>
<tr>
<td>445.gobmk: 34.7</td>
</tr>
<tr>
<td>456.hmmer: 34.7</td>
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<tr>
<td>458.sjeng: 34.7</td>
</tr>
<tr>
<td>462.libquantum: 34.7</td>
</tr>
<tr>
<td>464.h264ref: 48.3</td>
</tr>
<tr>
<td>471.omnetpp: 49.5</td>
</tr>
<tr>
<td>473.astar: 40.5</td>
</tr>
<tr>
<td>483.xalancbmk: 40.5</td>
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Hardware

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ASUSTeK Computer Inc.
## SPEC CINT2006 Result

### ASUSTeK Computer Inc.
ASUS RS700-E9(Z11PP-D24) Server System  
(2.10 GHz, Intel Xeon Platinum 8176)

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**SPECint_base2006 =** 81.7

**CPU2006 license:** 9016  
**Test date:** Dec-2017  
**Test sponsor:** ASUSTeK Computer Inc.  
**Tested by:** ASUSTeK Computer Inc.

### Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td></td>
<td><strong>Base</strong></td>
<td></td>
<td><strong>Peak</strong></td>
<td></td>
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<td>401.bzip2</td>
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<td>29.0</td>
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<td><strong>332</strong></td>
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<td>403.mcf</td>
<td>169</td>
<td>47.7</td>
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<td>47.6</td>
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<td>47.6</td>
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<td>429.gcc</td>
<td>111</td>
<td>82.2</td>
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<td>81.3</td>
<td><strong>115</strong></td>
<td>79.1</td>
<td>115</td>
<td>79.6</td>
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<td>445.gobmk</td>
<td><strong>302</strong></td>
<td><strong>34.8</strong></td>
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<td>456.hmmer</td>
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<td>458.sjeng</td>
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<td>462.libquantum</td>
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<td><strong>10200</strong></td>
<td>2.02</td>
<td>10300</td>
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<td>10200</td>
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<td>464.h264ref</td>
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<td><strong>68.3</strong></td>
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<tr>
<td>471.omnetpp</td>
<td>128</td>
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<td>50.1</td>
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<td>473.astar</td>
<td>174</td>
<td>40.3</td>
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<td><strong>40.5</strong></td>
<td>173</td>
<td>40.5</td>
<td><strong>175</strong></td>
<td><strong>40.2</strong></td>
<td>174</td>
<td>40.2</td>
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<tr>
<td>483.xalancbmk</td>
<td>78.7</td>
<td>87.7</td>
<td><strong>78.5</strong></td>
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<td>78.5</td>
<td>87.9</td>
<td>74.7</td>
<td>92.4</td>
<td>72.7</td>
<td>94.9</td>
</tr>
</tbody>
</table>

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

### Submit Notes

The config file option 'submit' was used.

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### Platform Notes

**BIOS Configuration:**  
SNC = Disabled  
IMC interleaving = AUTO  
Patrol Scrub = Disabled  
VT-d = Disabled  
HyperThreading = Disabled  
Sysinfo program /spec2006/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b0e6b51e28d7f9b696cbe290c1)  
running on localhost.localdomain Thu Dec 7 14:04:35 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo  
- model name : Intel(R) Xeon(R) Platinum 8176 CPU @ 2.10GHz  
- 2 "physical id"s (chips)  
- 56 "processors"  
- cores, siblings (Caution: counting these is hw and system dependent. The Continued on next page
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CPU2006 license: 9016
Test date: Dec-2017
Test sponsor: ASUSTeK Computer Inc.
Hardware Availability: Jul-2017
Tested by: ASUSTeK Computer Inc.
Software Availability: Apr-2017

Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 28
  siblings : 28
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
  25 26 27 28 29 30
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
  25 26 27 28 29 30
  cache size : 39424 KB

From /proc/meminfo
  MemTotal:       394626172 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.3 (Maipo)"
    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 7 09:16

SPEC is set to: /spec2006
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda3      xfs   220G  16G  204G  8% /

Additional information from dmidecode:

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
American Megatrends Inc. 0601
10/17/2017
Memory:
  48x Micron 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)
The inconsistent memory information found under Platform Notes
Continued on next page
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Platform Notes (Continued)

is due to a dmidecode issue. The benchmark tool provided by Spec.org was processed on a server with 24 x 16GB RAM.

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,3"
LD_LIBRARY_PATH = "/spec2006/lib/ia32:/spec2006/lib/intel64:/spec2006/sh10.2"
OMP_NUM_THREADS = "56"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled by default.
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run

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.

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.

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64
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Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
-auto-p32

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
473.astar: icpc -m64
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Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: --prof-gen(pass 1) --prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -qopt-prefetch
401.bzip2: --prof-gen(pass 1) --prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div -auto-ilp32 -qopt-prefetch
403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
           -qopt-malloc-options=3 -auto-ilp32
429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
           -qopt-prefetch -auto-p32
445.gobmk: --prof-gen(pass 1) --prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2)
456.hmmer: basepeak = yes
458.sjeng: --prof-gen(pass 1) --prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -unroll14
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:

Continued on next page
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Peak Optimization Flags (Continued)

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-ra-region-strategy=block
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/ASUSTekPlatform-Settings-z11-V1.3-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/ASUSTekPlatform-Settings-z11-V1.3-revC.xml

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

Tested with SPEC CPU2006 v1.2.
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