Supermicro

SuperServer 5019C-WR (X11SCW-F , Intel Xeon E-2146G)

SPECspeed2017_int_base = 10.6
SPECspeed2017_int_peak = 10.8

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro
Test Date: Aug-2019
Hardware Availability: Nov-2018
Software Availability: Nov-2018

Threads

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_base (10.6)</td>
<td>SPECspeed2017_int_peak (10.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPEC</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>0.86</td>
<td>11.8</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>12.1</td>
<td>15.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>7.37</td>
<td>14.6</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>7.40</td>
<td>16.8</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>12</td>
<td>16.8</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>6.42</td>
<td>16.0</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.36</td>
<td>13.2</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>5.36</td>
<td>14.1</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>12</td>
<td>16.0</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>12</td>
<td>13.2</td>
</tr>
</tbody>
</table>

CPU Name: Intel Xeon E-2146G
Max MHz.: 4500
Nominal: 3500
Enabled: 6 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 256 KB I+D on chip per core
L3: 12 MB I+D on chip per chip
Other: None
Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
Storage: 1 x 200 GB SATA III SSD
Other: None

OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
Kernel 4.4.114-94.11-default
Compiler: C/C++: Version 19.0.1.144 of Intel C/C++
Fortran: Version 19.0.1.144 of Intel Fortran
Compiler for Linux
Parallel: Yes
Firmware: Version 1.0b released May-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
SPEC CPU2017 Integer Speed Result

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2146G)

SPECspeed2017_int_base = 10.6
SPECspeed2017_int_peak = 10.8

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Threads</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>12</td>
<td>235</td>
<td>7.55</td>
<td>12</td>
<td>202</td>
<td>8.77</td>
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<tr>
<td>602.gcc_s</td>
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<td>11.9</td>
<td>12</td>
<td>330</td>
<td>12.1</td>
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<tr>
<td>605.mcf_s</td>
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<td>309</td>
<td>15.3</td>
<td>12</td>
<td>309</td>
<td>15.3</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
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<td>221</td>
<td>7.38</td>
<td>12</td>
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<td>7.31</td>
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<td>14.6</td>
<td>12</td>
<td>96.9</td>
<td>14.6</td>
</tr>
<tr>
<td>625.x264_s</td>
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<td>105</td>
<td>16.8</td>
<td>12</td>
<td>105</td>
<td>16.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>12</td>
<td>223</td>
<td>6.43</td>
<td>12</td>
<td>223</td>
<td>6.42</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>12</td>
<td>318</td>
<td>5.36</td>
<td>12</td>
<td>318</td>
<td>5.36</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>12</td>
<td>184</td>
<td>16.0</td>
<td>12</td>
<td>183</td>
<td>16.0</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>12</td>
<td>465</td>
<td>13.3</td>
<td>12</td>
<td>467</td>
<td>13.2</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 10.6
SPECspeed2017_int_peak = 10.8

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 = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X 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

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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
SPEC CPU2017 Integer Speed Result

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2146G)

SPECspeed2017_int_base = 10.6
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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Aug-2019
Hardware Availability: Nov-2018
Software Availability: Nov-2018

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-65nv Sat Aug 3 18:58:41 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-2146G CPU @ 3.50GHz
  - 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-2146G CPU @ 3.50GHz
- Stepping: 10
- CPU MHz: 4321.951
- CPU max MHz: 4500.0000
- CPU min MHz: 800.0000
- BogoMIPS: 7007.98
- 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 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

(Continued on next page)
SPEC CPU2017 Integer Speed Result

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2146G)

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CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Aug-2019
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Platform Notes (Continued)

fma cx16 xtpr pdcm 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 hwp hwp_notify hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline
kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep
bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsaves xgetbv1

/proccpuinfo 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: 64331 MB
  node 0 free: 46488 MB
  node distances:
    node 0
      0: 10

From /proc/meminfo
  MemTotal: 65875644 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"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
  Linux linux-65nv 4.4.114-94.11-default #1 SMP Thu Feb 1 19:28:26 UTC 2018 (4309ff9)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Mitigation: PTI

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Platform Notes (Continued)
CVE-2017-5753 (Spectre variant 1): Mitigation: Barriers
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Aug 2 16:43

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 145G 29G 116G 20% /home

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. 1.0b 05/16/2019
Memory:
4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667

(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)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
CC   600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
CXXC 620.omnetpp_s(base) 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 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2146G)

SPEC CPU2017 Integer Speed Result

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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Aug-2019
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Software Availability: Nov-2018

Compiler Version Notes (Continued)

==============================================================================
CXXC 620.omnetpp_s(peak)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
FC 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 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

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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_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

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

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 -gopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
SPEC CPU2017 Integer Speed Result
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Supermicro
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Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Aug-2019
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Peak Optimization Flags (Continued)

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass1) -prof-use(pass2) -O2
-xCORE-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP
-/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: basepeak = yes

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

657.xz_s: -Wl,-z,muldefs -prof-gen(pass1) -prof-use(pass2) -O2
-xCORE-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass1) -prof-use(pass2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP
-/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

641.leela_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP
-/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

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:
## SPEC CPU2017 Integer Speed Result

| Supermicro | SPECspeed2017_int_base = 10.6 |
| SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2146G) | SPECspeed2017_int_peak = 10.8 |

| CPU2017 License: 001176 | Test Date: Aug-2019 |
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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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