### CPU2017 Integer Speed Result

**Supermicro**  
SuperServer 5019P-MT (X11SPi-TF, Intel Xeon Platinum 8280L)

#### SPEC Speed2017
- **int_base**: 8.83
- **int_peak**: 9.05

#### Test Details
- **CPU2017 License**: 001176
- **Test Sponsor**: Supermicro
- **Test Date**: Mar-2019
- **Hardware Availability**: Apr-2019
- **Tested by**: Supermicro
- **Software Availability**: Dec-2018

#### Software
- **OS**: SUSE Linux Enterprise Server 12 SP4 (x86_64)  
  Kernel 4.12.14-94.41-default
- **Compiler**: C/C++: Version 19.0.1.144 of Intel C/C++  
  Fortran: Version 19.0.1.144 of Intel Fortran
- **Parallel**: Yes
- **Firmware**: Version 3.0b released Mar-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

#### Hardware
- **CPU Name**: Intel Xeon Platinum 8280L
- **Max MHz.**: 4000
- **Nominal**: 2700
- **Enabled**: 28 cores, 1 chip
- **Orderable**: 1 chip
- **Cache L1**: 32 KB I + 32 KB D on chip per core
- **L2**: 1 MB I+D on chip per core
- **L3**: 38.5 MB I+D on chip per chip
- **Other**: None
- **Memory**: 192 GB (6 x 32 GB 2Rx4 PC4-2933Y-R)
- **Storage**: 1 x 4 TB SATA III HDD, 7200 RPM
- **Other**: None

#### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>28</td>
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<tr>
<td>602.gcc_s</td>
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<td>605.mcf_s</td>
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<td>620.omnetpp_s</td>
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<td>623.xalancbmk_s</td>
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<tr>
<td>625.x264_s</td>
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<td>631.deepsjeng_s</td>
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<tr>
<td>641.leela_s</td>
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<tr>
<td>657.xz_s</td>
<td>28</td>
<td>20.7</td>
<td>20.7</td>
</tr>
</tbody>
</table>

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**Note**: The table above shows the SPECspeed2017 integer performance results for various benchmarks run on the Supermicro SuperServer 5019P-MT with the specified hardware configuration. The results are compared against SPECspeed2017_int_base and SPECspeed2017_int_peak.
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Supermicro
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Platinum 8280L)

SPECspeed2017_int_base = 8.83
SPECspeed2017_int_peak = 9.05

Results Table

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<tr>
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<th>Ratio</th>
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<td>299</td>
<td>20.7</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 8.83
SPECspeed2017_int_peak = 9.05

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.
Supermicro
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Platinum 8280L)

SPEC CPU2017 Integer Speed Result

SPECspeed2017_int_base = 8.83
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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes

BIOS Settings:
Hyper-Threading = Disable
LLC prefetch = Disable
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode = Performance
Hardware P-state = Out of Band Mode
XPT Prefetch = Disable
Stale AtoS = Disable
LLC dead line alloc = Enable
SDDC Plus One = Disable
ADDDC Sparing = Disable
Patrol Scrub = Disable
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-cq1s Mon Mar 18 12:01:35 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) Platinum 8280L CPU @ 2.70GHz
   1 "physical id"s (chips)
   28 "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: 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

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 28
On-line CPU(s) list: 0-27
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz
Stepping: 6

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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

Platform Notes (Continued)

CPU MHz: 2700.000
BogoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-27
Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 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 cpuid_fault epb cat_l3 cdp_l3 invpcid_single intel_pni ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm mpx rtm aemodel dxt aemodel pdcm dtes64_64bit avx2 smep bmi2 erts invpcid rtm cqm mpx rtm aemodel dxt aemodel pdcm dtes64_64bit

/proc/cpuinfo cache data
   cache size: 39424 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 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
   node 0 size: 191757 MB
   node 0 free: 190873 MB
   node distances:
   node 0
   0: 10

From /proc/meminfo
   MemTotal: 196359188 KB
   HugePages_Total: 0
   Hugepagesize: 2048 KB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP4

From /etc/*release* /etc/*version*
   SUSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 4
      # This file is deprecated and will be removed in a future service pack or release.

(Continued on next page)
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Test Date: Mar-2019
Tested by: Supermicro
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes (Continued)

# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Mar 18 11:57

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 3.6T 70G 3.6T 2% /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. 3.0b 03/04/2019
Memory:
2x NO DIMM NO DIMM
6x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)

Compiler Version Notes

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

Intel(R) C Compiler (R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018

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Supermicro
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Platinum 8280L)

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Compiler Version Notes (Continued)

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.

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
## SPEC CPU2017 Integer Speed Result

**Supermicro**
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<tbody>
<tr>
<td>001176</td>
<td>Supermicro</td>
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### Base Portability Flags

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<th>Benchmark</th>
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### Base Optimization Flags

- **C benchmarks:**
  -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
  -qopt-mem-layout-trans=4 -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=4
  -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
  -lqkmalloc

- **Fortran benchmarks:**
  -xCORE-AVX512 -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
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**Tested by:** Supermicro

**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-AVX512 -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-AVX512 -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-AVX512 -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-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

**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=4
-DSPEC_SUPPRESS_OPENMP
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc

623.xalancbmk_s: -Wl,-z,muldefs -xCORE-AVX512 -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

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<tr>
<th>CPU2017 License: 001176</th>
<th>SPECspeed2017_int_base = 8.83</th>
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<td>SPECspeed2017_int_peak = 9.05</td>
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<td>Test Date: Mar-2019</td>
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<td>Hardware Availability: Apr-2019</td>
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</table>

### Peak Optimization Flags (Continued)

631.deepsjeng_s: Same as 623.xalancbmk_s

641.leela_s: Same as 623.xalancbmk_s

Fortran benchmarks:

648.exchange2_s: basepeak = yes

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/Supermicro-Platform-Settings-V1.2-SKL-revD.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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