# SPEC® CPU2017 Integer Speed Result

## Supermicro

SuperWorkstation 5039A-i (X11SRA , Intel Xeon W-2195)

$SPECspeed2017\_int\_base =$ 10.1

$SPECspeed2017\_int\_peak =$ 10.3

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

**Test Date:** Sep-2018
**Hardware Availability:** Jul-2017
**Software Availability:** Feb-2018

**Threads**

| Benchmark | Threads | base | peak |
|---|---|---|---|
| 600.perlbench_s | 18 | 7.20 | 8.53 |
| 602.gcc_s | 18 | 10.9 | 11.0 |
| 605.mcf_s | 18 | 12.9 | |
| 620.omnetpp_s | 18 | 7.35 | |
| 623.xalancbmk_s | 18 | 10.9 | 11.7 |
| 625.x264_s | 18 | 13.6 | 13.6 |
| 631.deepsjeng_s | 18 | 5.97 | |
| 641.leela_s | 18 | 5.03 | 5.05 |
| 648.exchange2_s | 18 | 15.5 | 15.5 |
| 657.xz_s | 18 | 21.1 | 21.4 |

SPECspeed2017_int_base (10.1)    SPECspeed2017_int_peak (10.3)

## Hardware

CPU Name: Intel Xeon W-2195
  Max MHz.: 4300
  Nominal: 2300
Enabled: 18 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: 24.75 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

## Software

OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
    Kernel 4.4.114-94.11-default
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++
    Compiler for Linux;
    Fortran: Version 18.0.0.128 of Intel Fortran
    Compiler for Linux
Parallel: Yes
Firmware: Supermicro BIOS version 1.2 released Aug-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator library V5.0.1

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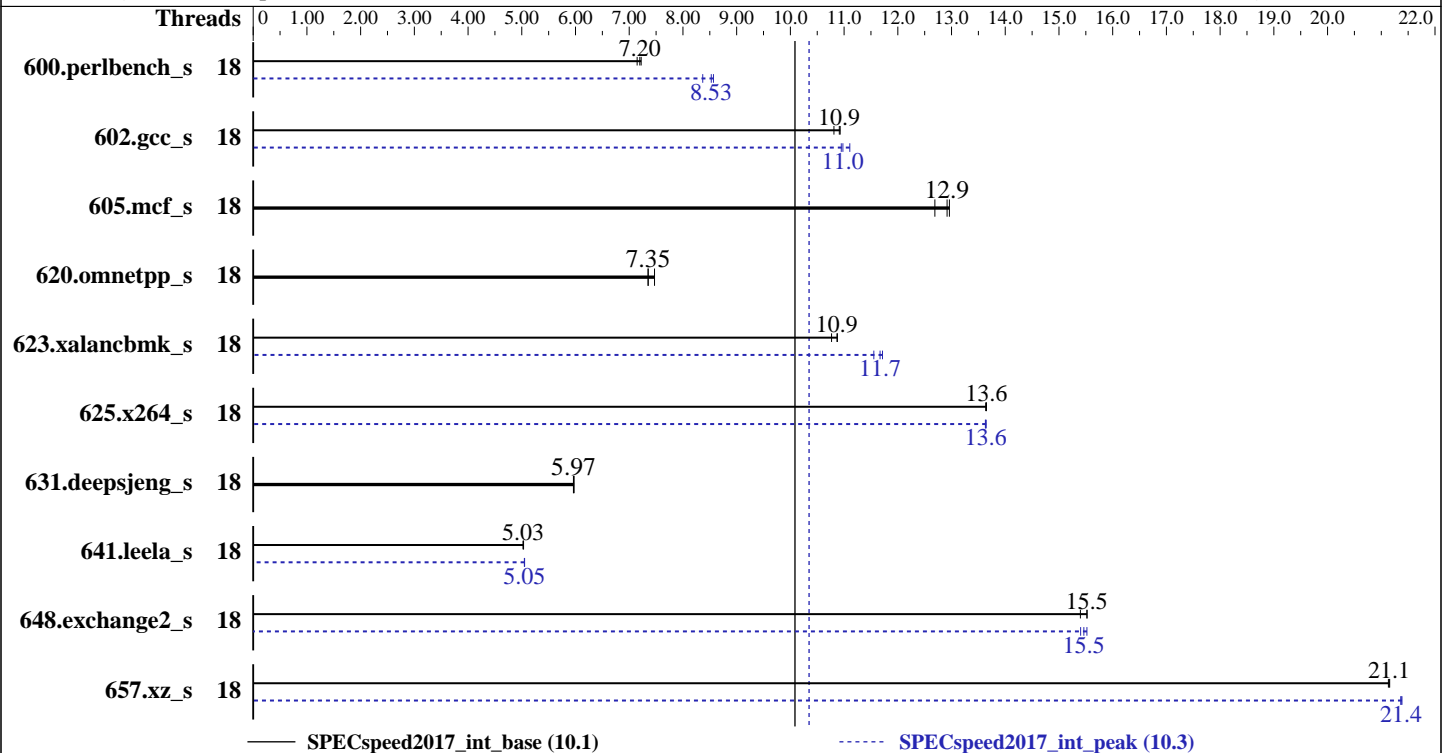Copyright 2017-2018 Standard Performance Evaluation Corporation

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## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 600.perlbench_s | 18 | 248 | 7.15 | **247** | **7.20** | 246 | 7.22 | 18 | **208** | **8.53** | 207 | 8.57 | 212 | 8.37 |
| 602.gcc_s | 18 | 364 | 10.9 | **365** | **10.9** | 368 | 10.8 | 18 | 359 | 11.1 | 364 | 10.9 | **363** | **11.0** |
| 605.mcf_s | 18 | **365** | **12.9** | 364 | 13.0 | 372 | 12.7 | 18 | **365** | **12.9** | 364 | 13.0 | 372 | 12.7 |
| 620.omnetpp_s | 18 | **222** | **7.35** | 218 | 7.47 | 222 | 7.35 | 18 | **222** | **7.35** | 218 | 7.47 | 222 | 7.35 |
| 623.xalancbmk_s | 18 | 132 | 10.8 | **130** | **10.9** | 130 | 10.9 | 18 | 121 | 11.7 | 123 | 11.6 | **121** | **11.7** |
| 625.x264_s | 18 | **129** | **13.6** | 129 | 13.6 | 129 | 13.6 | 18 | **129** | **13.6** | 129 | 13.6 | 129 | 13.6 |
| 631.deepsjeng_s | 18 | **240** | **5.97** | 240 | 5.96 | 240 | 5.97 | 18 | **240** | **5.97** | 240 | 5.96 | 240 | 5.97 |
| 641.leela_s | 18 | 340 | 5.02 | 339 | 5.03 | **339** | **5.03** | 18 | 338 | 5.05 | **338** | **5.05** | 338 | 5.05 |
| 648.exchange2_s | 18 | 189 | 15.5 | 191 | 15.4 | **189** | **15.5** | 18 | **190** | **15.5** | 189 | 15.5 | 191 | 15.4 |
| 657.xz_s | 18 | **292** | **21.1** | 292 | 21.2 | 293 | 21.1 | 18 | **289** | **21.4** | 289 | 21.4 | 289 | 21.4 |
| SPECspeed2017_int_base = | | **10.1** | | | | | | | | | | | | |
| SPECspeed2017_int_peak = | | **10.3** | | | | | | | | | | | | |

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/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
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 https://github.com/jemalloc/jemalloc/releases

 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.

# SPEC CPU2017 Integer Speed Result

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## Supermicro

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SPECspeed2017_int_base =   10.1

SPECspeed2017_int_peak =   10.3

| | | | |
|---|---|---|---|
| **CPU2017 License:** 001176 | | **Test Date:** | Sep-2018 |
| **Test Sponsor:** | Supermicro | **Hardware Availability:** | Jul-2017 |
| **Tested by:** | Supermicro | **Software Availability:** | Feb-2018 |

## Platform Notes

```
BIOS Settings:
Hyper-Threading [ALL] = Disable
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-k7zv Tue Sep 11 17:01:31 2018

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) W-2195 CPU @ 2.30GHz
      1  "physical id"s (chips)
      18 "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

From lscpu:
    Architecture:          x86_64
    CPU op-mode(s):        32-bit, 64-bit
    Byte Order:            Little Endian
    CPU(s):                18
    On-line CPU(s) list:   0-17
    Thread(s) per core:    1
    Core(s) per socket:    18
    Socket(s):             1
    NUMA node(s):          1
    Vendor ID:             GenuineIntel
    CPU family:            6
    Model:                 85
    Model name:            Intel(R) Xeon(R) W-2195 CPU @ 2.30GHz
    Stepping:              4
    CPU MHz:               1000.000
    CPU max MHz:           2301.0000
    CPU min MHz:           1000.0000
    BogoMIPS:              4607.78
    Virtualization:        VT-x
    L1d cache:             32K
    L1i cache:             32K
    L2 cache:              1024K
    L3 cache:              25344K
    NUMA node0 CPU(s):     0-17
    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
```

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## Supermicro

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$SPECspeed2017\_int\_base = 10.1$

$SPECspeed2017\_int\_peak = 10.3$

## Platform Notes (Continued)

```
     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
     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 ida arat epb invpcid_single pln pts
     dtherm 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 cqm mpx
     avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt
     xsavec xgetbv1 cqm_llc cqm_occup_llc

 /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: 1 nodes (0)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
   node 0 size: 64119 MB
   node 0 free: 63573 MB
   node distances:
   node   0
     0:  10

 From /proc/meminfo
    MemTotal:       65657936 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-k7zv 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
```

## Supermicro

SuperWorkstation 5039A-i (X11SRA , Intel Xeon W-2195)

SPECspeed2017_int_base =   10.1

SPECspeed2017_int_peak =   10.3

## Platform Notes (Continued)

```
 run-level 3 Sep 11 16:53

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda4       xfs   145G   25G  120G  18% /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. 1.2 08/23/2018
   Memory:
    4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2666
    4x NO DIMM NO DIMM

 (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.
------------------------------------------------------------------------------


==============================================================================
 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)
------------------------------------------------------------------------------
```

**(Continued on next page)**

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## Compiler Version Notes (Continued)

```
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`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

## 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-AVX512 -ipo -O3 -no-prec-div`
`-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
`-L/usr/local/je5.0.1-64/lib -ljemalloc`

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**Test Date:** Sep-2018

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## Base Optimization Flags (Continued)

C++ benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
```

Fortran benchmarks:
```
-Wl,-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
```

## Base Other Flags

C benchmarks:
```
-m64 -std=c11
```

C++ benchmarks:
```
-m64
```

Fortran benchmarks:
```
-m64
```

## Peak Compiler Invocation

C benchmarks:
```
icc
```

C++ benchmarks:
```
icpc
```

Fortran benchmarks:
```
ifort
```

## Peak 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`

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SPECspeed2017_int_base =   10.1

SPECspeed2017_int_peak =   10.3

# Peak Portability Flags (Continued)

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: basepeak = yes

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: basepeak = yes

623.xalancbmk_s: `-L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32`
`-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/je5.0.1-32/lib -ljemalloc`

631.deepsjeng_s: basepeak = yes

641.leela_s: `-Wl,-z,muldefs` -prof-gen(pass 1) -prof-use(pass 2) `-ipo`
`-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3`

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# Peak Optimization Flags (Continued)

641.leela_s (continued):
```
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

Fortran benchmarks:
```
-Wl,-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
```

# Peak Other Flags

C benchmarks:
```
-m64 -std=c11
```

C++ benchmarks (except as noted below):
```
-m64
```

623.xalancbmk_s: `-m32`

Fortran benchmarks:
```
-m64
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-BSF-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-BSF-revA.xml

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

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