## SPEC® CPU2017 Floating Point Speed Result

**Supermicro**  
SuperWorkstation 5039C-T (X11SCA, Intel Core i3-8300T)  

<table>
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<tr>
<th>CPU2017 License: 001176</th>
<th>SPECspeed2017_fp_base = 20.8</th>
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<td>SPECspeed2017_fp_peak = 21.1</td>
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### Hardware

**CPU Name:** Intel Core i3-8300T  
**Max MHz.:** 3200  
**Nominal:** 3200  
**Enabled:** 4 cores, 1 chip  
**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:** 8 MB I+D on chip per chip  
**Other:** None  
**Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)  
**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 18.0.2.199 of Intel C/C++  
**Compiler for Linux:** Fortran: Version 18.0.2.199 of Intel Fortran  
**Compiler for Linux:**  
**Parallel:** Yes  
**Firmware:** Version 1.0a released Sep-2018  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** 64-bit  
**Other:** jemalloc memory allocator library V5.0.1

### SPECspeed2017_fp_base (20.8)

<table>
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<tr>
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</table>

| 603.bwaves_s | 4 | 73.8 |
| 607.cactuBSSN_s | 4 | 16.1 |
| 619.lbm_s | 4 | 13.8 |
| 621.wrf_s | 4 | 28.9 |
| 627.cam4_s | 4 | 27.1 |
| 628.pop2_s | 4 | 25.7 |
| 638.imagick_s | 4 | 14.8 |
| 644.nab_s | 4 | 15.0 |
| 649.fotonik3d_s | 4 | 16.1 |
| 654.roms_s | 4 | 6.57 |

Threads 0 3.0 7.0 11.0 15.0 19.0 23.0 27.0 31.0 35.0 39.0 43.0 47.0 51.0 55.0 59.0 63.0 67.0 71.0 75.0
## Results Table

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<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>
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<tr>
<td>603.bwaves_s</td>
<td>4</td>
<td>794</td>
<td>74.3</td>
<td>800</td>
<td>73.8</td>
<td>802</td>
<td>73.6</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>4</td>
<td>506</td>
<td>33.0</td>
<td>500</td>
<td>33.3</td>
<td>498</td>
<td>33.4</td>
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<tr>
<td>619.lbm_s</td>
<td>4</td>
<td>797</td>
<td>6.57</td>
<td>797</td>
<td>6.57</td>
<td>795</td>
<td>6.59</td>
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<tr>
<td>621.wrf_s</td>
<td>4</td>
<td>510</td>
<td>25.9</td>
<td>513</td>
<td>25.8</td>
<td>504</td>
<td>26.3</td>
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<tr>
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<td>603</td>
<td>14.7</td>
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<td>602</td>
<td>14.7</td>
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<tr>
<td>628.pop2_s</td>
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<td>25.7</td>
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<tr>
<td>638.imagick_s</td>
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<td>14.8</td>
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<td>14.8</td>
<td>974</td>
<td>14.8</td>
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<tr>
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<td>4</td>
<td>604</td>
<td>28.9</td>
<td>604</td>
<td>28.9</td>
<td>604</td>
<td>28.9</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
<td>566</td>
<td>16.1</td>
<td>566</td>
<td>16.1</td>
<td>565</td>
<td>16.1</td>
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<tr>
<td>654.roms_s</td>
<td>4</td>
<td>1146</td>
<td>13.7</td>
<td>1145</td>
<td>13.8</td>
<td>1145</td>
<td>13.8</td>
</tr>
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</table>

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

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## 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,compact"
- 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 i7-6700K 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.

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-65nv Sat Feb 2 13:14:07 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) Core(TM) i3-8300T CPU @ 3.20GHz
  1 "physical id"s (chips)
  4 "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 : 4
siblings : 4
physical 0: cores 0 1 2 3

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 1
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Core(TM) i3-8300T CPU @ 3.20GHz
Stepping: 11
CPU MHz: 3200.197
CPU max MHz: 3200.0000
CPU min MHz: 800.0000
BogoMIPS: 6383.96
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3
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 rdtsscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmon perf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg fma

(Continued on next page)
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SPECspeed2017_fp_base = 20.8

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Platform Notes (Continued)

cx16 xtpr pcid pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnwprefetch arat epb invpcid_single pfn pts dtherm hwp
hwp_notify hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline kaiser
tpr_shadow vmni fxlfloat priority epf fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms
invpcid mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1

/proc/cpuinfo cache data
 cache size: 8192 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
 node 0 size: 64284 MB
 node 0 free: 45372 MB
 node distances:
  node 0
    0: 10

From /proc/meminfo
 MemTotal: 65827380 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

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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 Feb 1 17:19

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 145G 31G 115G 21% /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. 1.0a 09/27/2018
Memory:
4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
CC   619.lbm_s(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
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------------------------------------------------------------------------------

==============================================================================
FC  607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.2 20180210
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**Compiler Version Notes (Continued)**

```plaintext
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base, peak)
---
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---
FC 603.bwaves_s(peak) 649.fotonik3d_s(peak)
---
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---
CC 621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
---
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---
CC 621.wrf_s(peak) 628.pop2_s(peak)
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ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

---

**Base Compiler Invocation**

**C benchmarks:**

```plaintext
icc -m64 -std=c11
```

**Fortran benchmarks:**

```plaintext
ifort -m64
```

**Benchmarks using both Fortran and C:**

```plaintext
ifort -m64 icc -m64 -std=c11
```

**Benchmarks using Fortran, C, and C++:**

```plaintext
icpc -m64 icc -m64 -std=c11 ifort -m64
```
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Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using both Fortran and C:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

(Continued on next page)
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## Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
```bash
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:
```bash
icpc -m64 icc -m64 -std=c11 ifort -m64
```

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

- `619.lbm_s`: basepeak = yes
- `638.imagick_s`: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
- `644.nab_s`: basepeak = yes

Fortran benchmarks:

- `603.bwaves_s`: basepeak = yes
- `649.fotonik3d_s`: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -O2 -xCORE-AVX2 -qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -qopenmp -nostandard-realloc-lhs
- `654.roms_s`: basepeak = yes

Benchmarks using both Fortran and C:

- `621.wrf_s`: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2 -qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -nostandard-realloc-lhs
- `627.cam4_s`: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp

(Continued on next page)
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Peak Optimization Flags (Continued)

627.cam4_s (continued):
-DSPEC_OPENMP -nostandard-realloc-lhs

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_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/Intel-ic18.0-official-linux64.2017-12-21.xml
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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