### Supermicro SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed2017 fp_base</th>
<th>SPECspeed2017 fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>607.cactusBSSN_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>36.3</td>
<td>36.6</td>
</tr>
</tbody>
</table>

### Hardware
- CPU Name: Intel Xeon W-2133
- Max MHz.: 3900
- Nominal: 3600
- Enabled: 6 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: 8.25 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 18.0.2.199 of Intel C/C++
  Compiler for Linux:
  Fortran: Version 18.0.2.199 of Intel Fortran
- 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: 64-bit
- Other: jemalloc memory allocator library V5.0.1
### Results Table

<table>
<thead>
<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>
<th>Threads</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>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>6</td>
<td>420</td>
<td>140</td>
<td>421</td>
<td>140</td>
<td>422</td>
<td>140</td>
<td>6</td>
<td>421</td>
<td>140</td>
<td>422</td>
<td>140</td>
<td>422</td>
<td>140</td>
<td>422</td>
<td>140</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>6</td>
<td>344</td>
<td>48.4</td>
<td>346</td>
<td>48.1</td>
<td>346</td>
<td>48.1</td>
<td>6</td>
<td>344</td>
<td>48.4</td>
<td>346</td>
<td>48.1</td>
<td>346</td>
<td>48.1</td>
<td>346</td>
<td>48.1</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>6</td>
<td>384</td>
<td>13.6</td>
<td>384</td>
<td>13.6</td>
<td>387</td>
<td>13.5</td>
<td>6</td>
<td>384</td>
<td>13.6</td>
<td>384</td>
<td>13.6</td>
<td>387</td>
<td>13.5</td>
<td>387</td>
<td>13.5</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>6</td>
<td>324</td>
<td>40.8</td>
<td>328</td>
<td>40.3</td>
<td>324</td>
<td>40.8</td>
<td>6</td>
<td>303</td>
<td>43.6</td>
<td>303</td>
<td>43.7</td>
<td>304</td>
<td>43.5</td>
<td>304</td>
<td>43.5</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>6</td>
<td>383</td>
<td>23.2</td>
<td>382</td>
<td>23.2</td>
<td>382</td>
<td>23.2</td>
<td>6</td>
<td>381</td>
<td>23.2</td>
<td>381</td>
<td>23.2</td>
<td>381</td>
<td>23.2</td>
<td>381</td>
<td>23.2</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>6</td>
<td>302</td>
<td>39.3</td>
<td>303</td>
<td>39.2</td>
<td>303</td>
<td>39.2</td>
<td>6</td>
<td>297</td>
<td>40.0</td>
<td>297</td>
<td>40.0</td>
<td>296</td>
<td>40.1</td>
<td>296</td>
<td>40.1</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>6</td>
<td>542</td>
<td>26.6</td>
<td>542</td>
<td>26.6</td>
<td>543</td>
<td>26.6</td>
<td>6</td>
<td>542</td>
<td>26.6</td>
<td>542</td>
<td>26.6</td>
<td>543</td>
<td>26.6</td>
<td>543</td>
<td>26.6</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>6</td>
<td>330</td>
<td>52.9</td>
<td>330</td>
<td>52.9</td>
<td>330</td>
<td>52.9</td>
<td>6</td>
<td>330</td>
<td>52.9</td>
<td>330</td>
<td>52.9</td>
<td>330</td>
<td>52.9</td>
<td>330</td>
<td>52.9</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>6</td>
<td>311</td>
<td>29.3</td>
<td>313</td>
<td>29.2</td>
<td>311</td>
<td>29.3</td>
<td>6</td>
<td>311</td>
<td>29.4</td>
<td>310</td>
<td>29.4</td>
<td>310</td>
<td>29.4</td>
<td>310</td>
<td>29.4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>6</td>
<td>562</td>
<td>28.0</td>
<td>562</td>
<td>28.0</td>
<td>565</td>
<td>27.9</td>
<td>6</td>
<td>562</td>
<td>28.0</td>
<td>564</td>
<td>27.9</td>
<td>562</td>
<td>28.0</td>
<td>562</td>
<td>28.0</td>
</tr>
</tbody>
</table>

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,compact"
- `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 i7-6700K 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

BIOS Settings:
Hyper-Threading [ALL] = Disable
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-k7zv Wed Sep 19 20:06:17 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-2133 CPU @ 3.60GHz
  "physical id"s (chips)
  6 "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 : 6
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): 6
On-line CPU(s) list: 0-5
Thread(s) per core: 1
Core(s) per socket: 6
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) W-2133 CPU @ 3.60GHz
Stepping: 4
CPU MHz: 2100.000
CPU max MHz: 3601.0000
CPU min MHz: 1200.0000
BogoMIPS: 7199.78
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
NUMA node0 CPU(s): 0-5
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

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

SPECspeed2017_fp_base = 36.3
SPECspeed2017_fp_peak = 36.6

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

Platform Notes (Continued)

lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmrperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtrr 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 ret Polynomial kaiser tpr_shadow vmmi flexpriority
vpt vpid fsqmbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mp
avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsavemt opt
xsavec xgetbv1 cqm_l1c cqm_occu_l1c

*/proc/cpuinfo cache data
    cache size : 8448 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
temporary chip.
    available: 1 nodes (0)
    node 0 cpus: 0 1 2 3 4 5
    node 0 size: 64120 MB
    node 0 free: 56340 MB
    node distances:
    node 0
    0: 10

From /proc/meminfo
    MemTotal: 65659672 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

(Continued on next page)
**SPEC CPU2017 Floating Point Speed Result**

**Supermicro**

SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.3</td>
<td>36.6</td>
</tr>
</tbody>
</table>

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

---

**Platform Notes (Continued)**

Kernel self-reported vulnerability status:

- CVE-2017-5754 (Meltdown): Mitigation: PTI
- CVE-2017-5753 (Spectre variant 1): Mitigation: Barriers
- CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

**run-level 3 Sep 19 14:32**

**SPEC is set to:** /home/cpu2017

```
Filesystem       Type Size  Used Avail Use% Mounted on
/dev/sda4        xfs  145G  23G  122G  16% /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  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.
==============================================================================
```

```
==============================================================================
 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.
```

(Continued on next page)
Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11
SPEC CPU2017 Floating Point Speed Result

Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.3</td>
<td>36.6</td>
</tr>
</tbody>
</table>

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

Base Compiler Invocation (Continued)

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

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-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using both Fortran and C:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc
SPEC CPU2017 Floating Point Speed Result

Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

SPECspeed2017_fp_base = 36.3
SPECspeed2017_fp_peak = 36.6

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

Test Date: Sep-2018
Hardware Availability: Jul-2017
Software Availability: Mar-2018

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

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

Benchmarks using Fortran, C, and C++:
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: basepeak = yes
644.nab_s: basepeak = yes

Fortran benchmarks:
603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -gopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -gopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div
-gopt-prefetch -ffinite-math-only -gopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs

Benchmarks using both Fortran and C:

(Continued on next page)
**SPEC CPU2017 Floating Point Speed Result**

**Supermicro**
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_peak</th>
<th>SPECspeed2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.6</td>
<td>36.3</td>
</tr>
</tbody>
</table>

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

**Peak Optimization Flags (Continued)**

621.wrf_s:  
- `-prof-gen(pass 1)`  
- `-prof-use(pass 2)`  
- `-O2`  
- `-xCORE-AVX512`  
- `-qopt-prefetch`  
- `-ipo`  
- `-O3`  
- `-ffinite-math-only`  
- `-no-prec-div`  
- `-DSPEC_SUPPRESS_OPENMP`  
- `-qopenmp`  
- `-O2`  
- `-xCORE-AVX512`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-DSPEC_SUPPRESS_OPENMP`  
- `-qopenmp`  
- `-nostandard-realloc-lhs`

627.cam4_s:  
- `-xCORE-AVX512`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-ffinite-math-only`  
- `-qopt-mem-layout-trans=3`  
- `-qopenmp`  
- `-DSPEC_SUPPRESS_OPENMP`  
- `-qopenmp`  
- `-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:


---

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2017 v1.0.5 on 2018-09-19 08:06:17-0400.
Originally published on 2018-10-16.