



# SPEC CPU®2017 Floating Point Speed Result

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## Fujitsu

PRIMERGY TX1320 M4, Intel Xeon E-2134, 3.50GHz

SPECspeed®2017\_fp\_base = 27.0

SPECspeed®2017\_fp\_peak = Not Run

CPU2017 License: 19

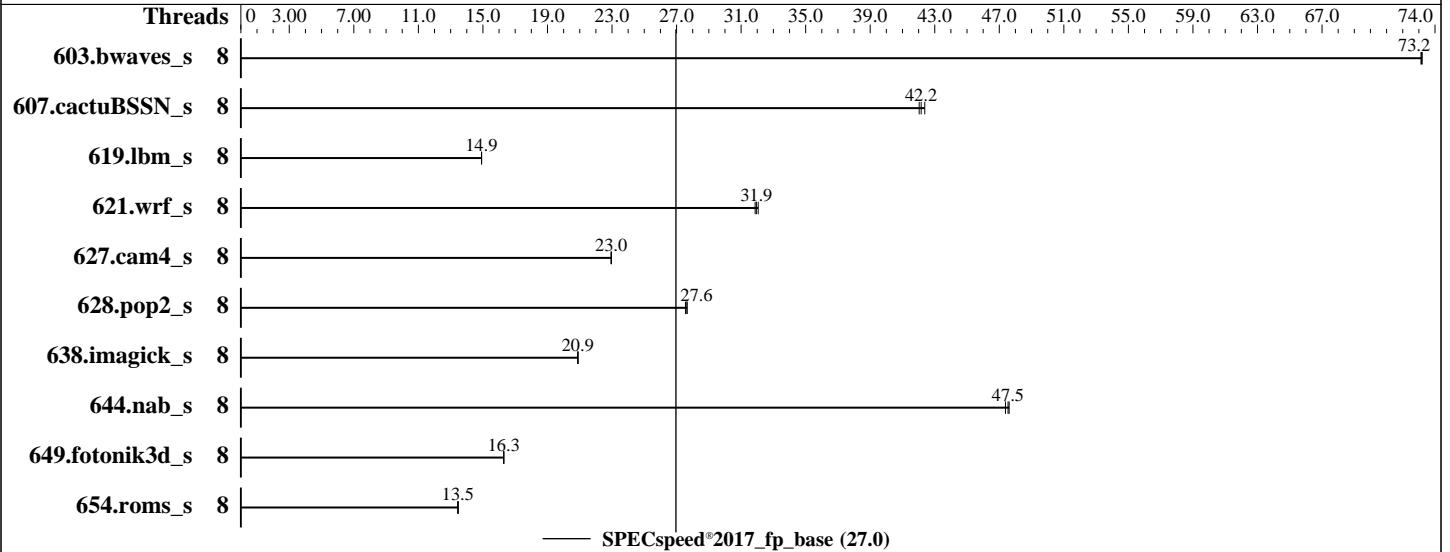
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2021

Hardware Availability: Nov-2018

Software Availability: Jun-2021



### Hardware

CPU Name: Intel Xeon E-2134  
 Max MHz: 4500  
 Nominal: 3500  
 Enabled: 4 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: 8 MB I+D on chip per chip  
 Other: None  
 Memory: 128 GB (4 x 32 GB 2Rx8 PC4-2666V-E)  
 Storage: 1 x SATA M.2 SSD, 480GB  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP3 5.3.18-57-default  
 Compiler: Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux  
 Parallel: Yes  
 Firmware: Fujitsu BIOS Version V5.0.0.13 R1.18.0 for D3673-A1x. Released Jul-2021  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: jemalloc memory allocator V5.0.1  
 Power Management: BIOS set to prefer performance at the cost of additional power usage



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## Results Table

Benchmark	Base						Peak							
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	8	807	73.1	<b>806</b>	<u>73.2</u>	806	73.2							
607.cactuBSSN_s	8	393	42.4	397	42.0	<b>395</b>	<u>42.2</u>							
619.lbm_s	8	351	14.9	351	14.9	<b>351</b>	<u>14.9</u>							
621.wrf_s	8	<b>414</b>	<u>31.9</u>	413	32.1	415	31.9							
627.cam4_s	8	386	23.0	<b>386</b>	<u>23.0</u>	386	22.9							
628.pop2_s	8	<b>430</b>	<u>27.6</u>	429	27.7	431	27.6							
638.imagick_s	8	<b>691</b>	<u>20.9</u>	691	20.9	690	20.9							
644.nab_s	8	<b>368</b>	<u>47.5</u>	369	47.4	367	47.6							
649.fotonik3d_s	8	<b>559</b>	<u>16.3</u>	559	16.3	560	16.3							
654.roms_s	8	1172	13.4	1169	13.5	<b>1171</b>	<u>13.5</u>							

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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"

## Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
KMP\_AFFINITY = "granularity=fine,compact"  
LD\_LIBRARY\_PATH =  
"/home/benchmark/speccpu/lib/intel64:/home/benchmark/speccpu/je5.0.1-64"  
MALLOC\_CONF = "retain:true"  
OMP\_STACKSIZE = "192M"

## General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM  
memory using Redhat Enterprise Linux 8.0  
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.

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### General Notes (Continued)

jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

### Platform Notes

BIOS configuration:  
Energy Efficient Turbo = Disabled

Sysinfo program /home/benchmark/speccpu/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
running on localhost Sat Dec 18 12:50:22 2021

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-2134 CPU @ 3.50GHz  
1 "physical id"s (chips)  
8 "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 : 8  
physical 0: cores 0 1 2 3

From lscpu from util-linux 2.36.2:  
Architecture: x86\_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
Address sizes: 39 bits physical, 48 bits virtual  
CPU(s): 8  
On-line CPU(s) list: 0-7  
Thread(s) per core: 2  
Core(s) per socket: 4  
Socket(s): 1  
NUMA node(s): 1  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 158  
Model name: Intel(R) Xeon(R) E-2134 CPU @ 3.50GHz  
Stepping: 10  
CPU MHz: 4339.635  
CPU max MHz: 4500.0000  
CPU min MHz: 800.0000

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### Platform Notes (Continued)

```

BogoMIPS: 6999.82
Virtualization: VT-x
L1d cache: 128 KiB
L1i cache: 128 KiB
L2 cache: 1 MiB
L3 cache: 8 MiB
NUMA node0 CPU(s): 0-7
Vulnerability Itlb multihit: KVM: Mitigation: VMX disabled
Vulnerability L1tf: Mitigation; PTE Inversion; VMX conditional cache
flushes, SMT vulnerable
Vulnerability Mds: Mitigation; Clear CPU buffers; SMT vulnerable
Vulnerability Meltdown: Mitigation; PTI
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user
pointer sanitization
Vulnerability Spectre v2: Mitigation; Full generic retpoline, IBPB
conditional, IBRS_FW, STIBP conditional, RSB filling
Vulnerability Srbds: Mitigation; Microcode
Vulnerability Tsx async abort: Mitigation; Clear CPU buffers; SMT vulnerable
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 cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2
ssse3 sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt
tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
epb invpcid_single pti ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid
ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm mpx rdseed adx
smap clflushopt intel_pt xsaveopt xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp
hwp_notify hwp_act_window hwp_epp md_clear flush_l1d

```

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	32K	128K	8	Data	1	64	1	64
L1i	32K	128K	8	Instruction	1	64	1	64
L2	256K	1M	4	Unified	2	1024	1	64
L3	8M	8M	16	Unified	3	8192	1	64

/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 4 5 6 7
node 0 size: 128303 MB
node 0 free: 127822 MB

```

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### Platform Notes (Continued)

```
node distances:
node      0
0:      10
```

```
From /proc/meminfo
MemTotal:      131383072 kB
HugePages_Total:      0
Hugepagesize:      2048 kB
```

```
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
powersave
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP3"
VERSION_ID="15.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp3"
```

```
uname -a:
Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021
(ba3c2e9/lp-5d9e8aa) x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
CVE-2018-12207 (iTLB Multihit):      KVM: Mitigation: VMX disabled
CVE-2018-3620 (L1 Terminal Fault):  Mitigation: PTE Inversion; VMX:
conditional cache flushes, SMT
vulnerable
```

```
Microarchitectural Data Sampling:  Mitigation: Clear CPU buffers; SMT
vulnerable
```

```
CVE-2017-5754 (Meltdown):           Mitigation: PTI
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store
Bypass disabled via prctl and
seccomp
```

```
CVE-2017-5753 (Spectre variant 1):  Mitigation: usercopy/swapgs
barriers and __user pointer
sanitization
```

```
CVE-2017-5715 (Spectre variant 2):  Mitigation: Full generic
retpoline, IBPB: conditional,
IBRS_FW, STIBP: conditional, RSB
filling
```

```
CVE-2020-0543 (Special Register Buffer Data Sampling): Mitigation: Microcode
```

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### Platform Notes (Continued)

CVE-2019-11135 (TSX Asynchronous Abort): Mitigation: Clear CPU buffers; SMT vulnerable

run-level 3 Dec 18 03:15

```
SPEC is set to: /home/benchmark/speccpu
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda8        xfs   121G   19G  103G   16% /home
```

```
From /sys/devices/virtual/dmi/id
Vendor:          FUJITSU
Product:         PRIMERGY TX1320 M4
Product Family: SERVER
Serial:          YMJKXXXXXX
```

Additional information from dmidecode 3.2 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.

Memory:  
4x Samsung M391A4G43MB1-CTD 32 GB 2 rank 2667

```
BIOS:
BIOS Vendor:     FUJITSU // American Megatrends Inc.
BIOS Version:    V5.0.0.13 R1.18.0 for D3673-A1x
BIOS Date:       07/12/2021
BIOS Revision:   1.18
```

(End of data from sysinfo program)

### Compiler Version Notes

=====  
C | 619.lbm\_s(base) 638.imagick\_s(base) 644.nab\_s(base)  
=====

```
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

=====  
C++, C, Fortran | 607.cactuBSSN\_s(base)  
=====

```
Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

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### Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112\_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112\_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

=====  
Fortran | 603.bwaves\_s(base) 649.fotonik3d\_s(base) 654.roms\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112\_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

=====  
Fortran, C | 621.wrf\_s(base) 627.cam4\_s(base) 628.pop2\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112\_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112\_000000

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### Base Compiler Invocation

C benchmarks:

icc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

ifort icc

Benchmarks using Fortran, C, and C++:

icpc icc ifort



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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:

```
-m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries
```

Fortran benchmarks:

```
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using both Fortran and C:

```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, C, and C++:

```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

The flags files that were used to format this result can be browsed at

[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.html](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html)

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevD.html>





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You can also download the XML flags sources by saving the following links:

[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml)

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevD.xml>

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