



# SPEC CPU®2017 Floating Point Speed Result

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## Fujitsu

PRIMERGY TX1330 M5, Intel Xeon E-2388G, 3.20GHz

SPECspeed®2017_fp_base =	45.0
SPECspeed®2017_fp_energy_base =	392
SPECspeed®2017_fp_peak =	Not Run
SPECspeed®2017_fp_energy_peak =	Not Run

CPU2017 License: 19

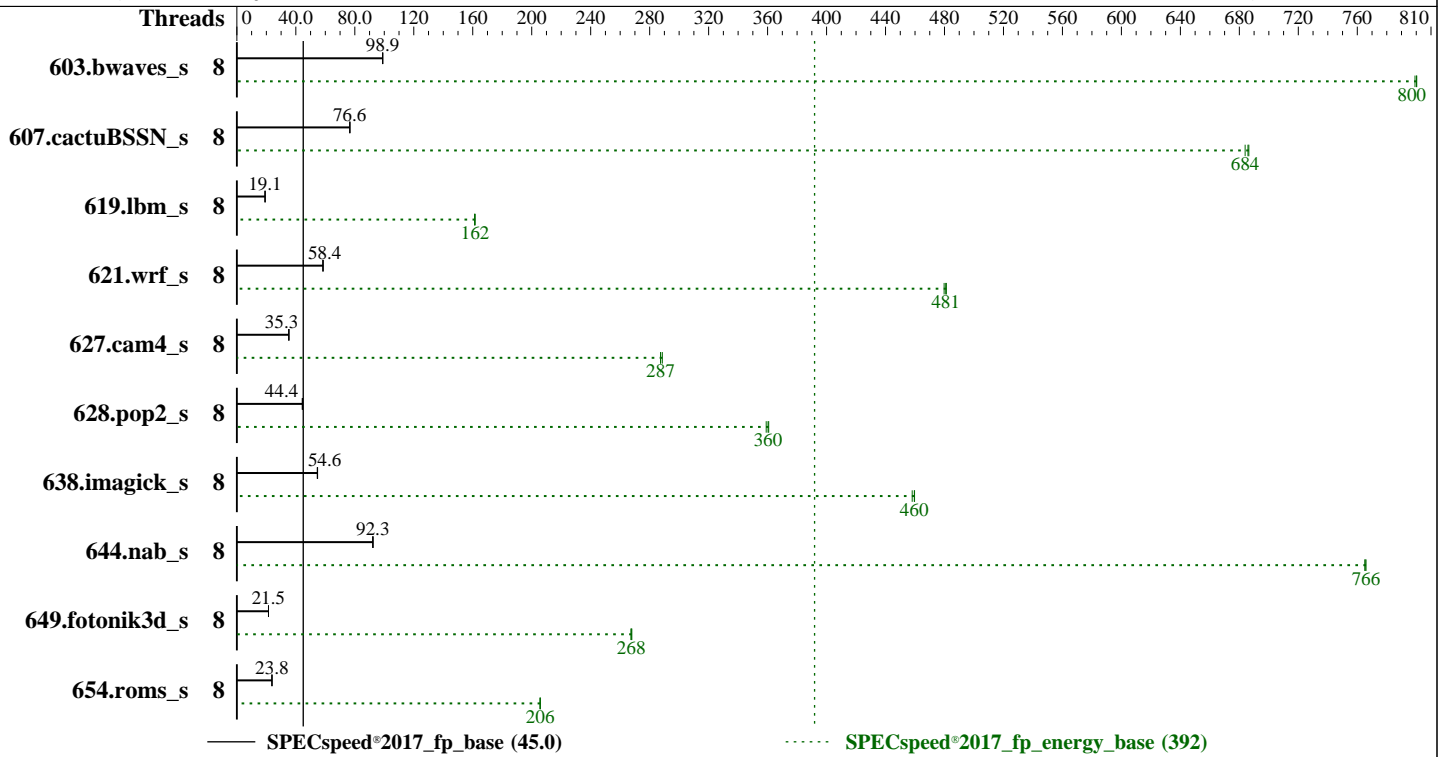
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2021

Hardware Availability: Mar-2022

Software Availability: Jun-2021



### Hardware

CPU Name: Intel Xeon E-2388G  
 Max MHz: 5100  
 Nominal: 3200  
 Enabled: 8 cores, 1 chip  
 Orderable: 1 chip  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 512 KB I+D on chip per core  
 L3: 16 MB I+D on chip per chip  
 Other: None  
 Memory: 32 GB (2 x 16 GB 2Rx8 PC4-3200AA-E)  
 Storage: 1 x SATA M.2 SSD, 240GB  
 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 V5.0.0.22 R1.30.0 for D3931-A1x. Released Mar-2022 tested as V5.0.0.22 R1.15.0 for D3931-A1x Dec-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 and OS set to prefer performance at the cost of additional power usage.

### Power

Max. Power (W): 164.18  
 Idle Power (W): 27.71  
 Min. Temperature (C): 26.94

(Continued on next page)



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### Power (Continued)

Elevation (m): 11  
 Line Standard: 200 V / 50 Hz / 1 phase / 2 wires  
 Provisioning: Line-powered

#### Power Settings

Management FW: Version 1.00m for D3931-A1x of Fujitsu BMC Firmware  
 Memory Mode: Normal

#### Power-Relevant Hardware

Power Supply: 1 x 500 W (non-redundant)  
 Details: Standard power supply part of base unit S26113-E627-V50-1  
 Backplane: 4 x 2.5inch HDD back plane  
 Other Storage: Embedded SATA Controller  
 Storage Model #: S26361-F5787-E240  
 NICs Installed: 2 x Intel I210 @ 1 Gb  
 NICs Enabled (FW/OS): 2 / 2  
 NICs Connected/Speed: 1 @ 1 Gb  
 Other HW Model #: None

#### Power Analyzer

Power Analyzer: 10.26.120.153:8888  
 Hardware Vendor: Hioki  
 Model: Hioki PW3336:1-Channel  
 Serial Number: 170130930  
 Input Connection: USB via USB-Serial CH340  
 Metrology Institute: NICT  
 Calibration By: HIOKI E.E. CORPORATION  
 Calibration Label: H06400086  
 Calibration Date: 08-Mar-2021  
 PTDaemon® Version: 1.9.2 (3976349f; 2020-12-08)  
 Setup Description: Connected to PSU 1  
 Current Ranges Used: 1A  
 Voltage Range Used: 300V

#### Temperature Meter

Temperature Meter: 10.26.120.153:8889  
 Hardware Vendor: Digi International Inc.  
 Model: DigiWATCHPORT\_H  
 Serial Number: W 633 91704  
 Input Connection: USB  
 PTDaemon Version: 1.9.2 (3976349f; 2020-12-08)  
 Setup Description: 5 mm in front of SUT main air intake

### Base Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
603.bwaves_s	8	597	98.9	80.4	800	135	144	596	98.9	80.5	799	135	145	<u>596</u>	<u>98.9</u>	<u>80.4</u>	<u>800</u>	<u>135</u>	<u>146</u>
607.cactuBSSN_s	8	218	76.6	26.6	686	122	134	217	76.7	26.6	686	122	134	<u>218</u>	<u>76.6</u>	<u>26.7</u>	<u>684</u>	<u>123</u>	<u>134</u>
619.lbm_s	8	274	19.1	36.9	161	135	147	274	19.1	36.9	161	135	146	<u>274</u>	<u>19.1</u>	<u>36.8</u>	<u>162</u>	<u>135</u>	<u>145</u>
621.wrf_s	8	226	58.5	30.0	481	133	155	227	58.4	30.1	480	133	155	<u>226</u>	<u>58.4</u>	<u>30.0</u>	<u>481</u>	<u>133</u>	<u>155</u>
627.cam4_s	8	251	35.3	33.6	287	134	153	<u>251</u>	<u>35.3</u>	<u>33.5</u>	<u>287</u>	<u>133</u>	<u>154</u>	252	35.2	33.4	289	133	161
628.pop2_s	8	267	44.4	36.3	359	136	148	267	44.5	36.2	361	135	148	<u>267</u>	<u>44.4</u>	<u>36.2</u>	<u>360</u>	<u>136</u>	<u>147</u>
638.imagick_s	8	264	54.6	34.3	458	130	164	263	54.8	34.2	460	130	163	<u>264</u>	<u>54.6</u>	<u>34.2</u>	<u>460</u>	<u>130</u>	<u>164</u>
644.nab_s	8	189	92.4	24.8	765	131	156	<u>189</u>	<u>92.3</u>	<u>24.8</u>	<u>766</u>	<u>131</u>	<u>156</u>	190	92.2	24.8	765	131	156
649.fotonik3d_s	8	<u>425</u>	<u>21.5</u>	<u>38.3</u>	<u>268</u>	<u>90.0</u>	<u>105</u>	425	21.5	38.3	267	90.1	119	425	21.5	38.2	268	89.9	103
654.roms_s	8	662	23.8	85.5	206	129	142	661	23.8	85.6	206	129	142	<u>661</u>	<u>23.8</u>	<u>85.5</u>	<u>206</u>	<u>129</u>	<u>142</u>

SPECspeed®2017\_fp\_base = 45.0

SPECspeed®2017\_fp\_energy\_base = 392

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



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**CPU2017 License:** 19  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu

**Test Date:** Dec-2021  
**Hardware Availability:** Mar-2022  
**Software Availability:** Jun-2021

## 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/PVT/speccpu-1.1.8\_b/lib/intel64:/home/PVT/speccpu-1.1.8\_b/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  
NA: 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.  
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:  
Hyper Threading = Disabled  
Package C-State un-demotion = Enabled  
REFRESH\_2X\_MODE = 2- Enabled HOT only

Sysinfo program /home/PVT/speccpu-1.1.8\_b/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
running on localhost Sat Dec 18 16:11:41 2021

SUT (System Under Test) info as seen by some common utilities.

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### Platform Notes (Continued)

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-2388G CPU @ 3.20GHz
 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      : 8
siblings       : 8
physical 0:    cores 0 1 2 3 4 5 6 7
```

```
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:    1
Core(s) per socket:    8
Socket(s):              1
NUMA node(s):          1
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  167
Model name:             Intel(R) Xeon(R) E-2388G CPU @ 3.20GHz
Stepping:               1
CPU MHz:                1067.227
CPU max MHz:           5100.0000
CPU min MHz:           800.0000
BogoMIPS:               6384.00
Virtualization:        VT-x
L1d cache:              384 KiB
L1i cache:              256 KiB
L2 cache:                4 MiB
L3 cache:                16 MiB
NUMA node0 CPU(s):     0-7
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:     Not affected
Vulnerability Mds:      Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
```

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### Platform Notes (Continued)

Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and \_\_user pointer sanitization  
 Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling  
 Vulnerability Srbds: Not affected  
 Vulnerability Tsx async abort: Not affected  
 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 tsc\_known\_freq 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 ssbd ibrs ibpb stibp ibrs\_enhanced tpr\_shadow vnmi flexpriority ept vpid ept\_ad fsgsbase tsc\_adjust bmi1 avx2 smep bmi2 erms invpcid mpx avx512f avx512dq rdseed adx smap avx512ifma clflushopt intel\_pt avx512cd sha\_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves dtherm ida arat pln pts hwp hwp\_notify hwp\_act\_window hwp\_epp hwp\_pkg\_req avx512vbmi umip pku ospke avx512\_vbmi2 gfni vaes vpclmulqdq avx512\_vnni avx512\_bitalg avx512\_vpopcntdq rdpid fsrm md\_clear flush\_lld arch\_capabilities

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	384K	12	Data	1	64	1	64
L1i	32K	256K	8	Instruction	1	64	1	64
L2	512K	4M	8	Unified	2	1024	1	64
L3	16M	16M	16	Unified	3	16384	1	64

/proc/cpuinfo cache data  
cache size : 16384 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: 31515 MB  
 node 0 free: 31076 MB  
 node distances:  
 node 0  
 0: 10

From /proc/meminfo

MemTotal: 32272268 kB  
 HugePages\_Total: 0  
 Hugepagesize: 2048 kB

(Continued on next page)



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### Platform Notes (Continued)

```
/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):	Not affected
CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	Not affected
CVE-2017-5754 (Meltdown):	Not affected
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: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

```
run-level 3 Dec 18 16:10
```

```
SPEC is set to: /home/PVT/speccpu-1.1.8_b
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4       xfs   180G   41G  140G  23% /home
```

```
From /sys/devices/virtual/dmi/id
Vendor:          FUJITSU
Product:         PRIMERGY TX1330 M5
Product Family: SERVER
```

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### Platform Notes (Continued)

Serial: EWBUxxxxxxx

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:  
2x Samsung M391A2K43DB1-CWE 16 GB 2 rank 3200

BIOS:  
 BIOS Vendor: FUJITSU // American Megatrends International, LLC.  
 BIOS Version: V5.0.0.22 R1.15.0 for D3931-Alx  
 BIOS Date: 12/03/2021  
 BIOS Revision: 1.15

(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.
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)
-----
```

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## Compiler Version Notes (Continued)

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

## 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

## 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

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## Base Portability Flags (Continued)

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/Fujitsu-Platform-Settings-V1.0-RKL-RevC.html>  
[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.html](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html)

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

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-RKL-RevC.xml>  
[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml)



# SPEC CPU®2017 Floating Point Speed Result

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## Fujitsu

PRIMERGY TX1330 M5, Intel Xeon E-2388G, 3.20GHz

SPECspeed®2017\_fp\_base = 45.0

SPECspeed®2017\_fp\_energy\_base = 392

SPECspeed®2017\_fp\_peak = Not Run

SPECspeed®2017\_fp\_energy\_peak = Not Run

**CPU2017 License:** 19

**Test Sponsor:** Fujitsu

**Tested by:** Fujitsu

**Test Date:** Dec-2021

**Hardware Availability:** Mar-2022

**Software Availability:** Jun-2021

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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