## SPEC CPU®2017 Floating Point Speed Result

**Fujitsu**

PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

### SPECspeed®2017_fp_base = 33.3

### SPECspeed®2017_fp_peak = 33.6

| Test Date: | Nov-2019 |
| Test Sponsor: | Fujitsu |
| Tested by: | Fujitsu |
| Hardware Availability: | Oct-2019 |
| Software Availability: | Sep-2019 |

#### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
<td>603.bwaves_s</td>
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<tr>
<td>607.cactuBSSN_s</td>
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<tr>
<td>619.lbm_s</td>
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</tr>
<tr>
<td>621.wrf_s</td>
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<td>627.cam4_s</td>
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</tr>
<tr>
<td>628.pop2_s</td>
<td>6</td>
</tr>
<tr>
<td>638.imagick_s</td>
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<tr>
<td>644.nab_s</td>
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<tr>
<td>649.fotonik3d_s</td>
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<td>654.roms_s</td>
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#### SPECspeed®2017_fp_base (33.3)

<table>
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<tr>
<td>627.cam4_s</td>
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<tr>
<td>628.pop2_s</td>
<td>32.3</td>
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<td>638.imagick_s</td>
<td>60.7</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>17.4</td>
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<td>649.fotonik3d_s</td>
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#### SPECspeed®2017_fp_peak (33.6)

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<td>644.nab_s</td>
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<td>16.8</td>
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<tr>
<td>654.roms_s</td>
<td>32.4</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name**: Intel Xeon E-2286G
- **Max MHz**: 4900
- **Nominal**: 4000
- **Enabled**: 6 cores, 1 chip
- **Orderable**: 1 chip
- **Cache L1**: 32 KB I + 32 KB D on chip per core
- **Cache L2**: 256 KB I+D on chip per core
- **Cache L3**: 12 MB I+D on chip per chip
- **Memory**: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
- **Storage**: 1 x SATA M.2 SSD, 480 GB
- **Other**: None

### Software

- **OS**: Red Hat Enterprise Linux Server release 7.6 (Maipo), 3.10.0-957.el7.x86_64
- **Compiler**: C/C++: Version 19.0.5.281 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.5.281 of Intel Fortran Compiler for Linux
- **Parallel**: Yes
- **Firmware**: Fujitsu BIOS Version V5.0.0.13 R1.12.0 for D3673-A1x, Released Sep-2019
- **File System**: xfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: 64-bit
- **Other**: None
- **Power Management**: BIOS set to prefer performance at the cost of additional power usage
Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

SPECspeed®2017_fp_base = 33.3
SPECspeed®2017_fp_peak = 33.6

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
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<td>6</td>
<td>938</td>
<td>16.8</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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-1.1.0/lib/intel64"
- OMP_STACKSIZE = "192M"

General Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,compact"
- LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-1.1.0/lib/intel64"
- OMP_STACKSIZE = "192M"
- echo 100000000 > sched_min_granularity_ns
- echo 100000000 > sched_max_granularity_ns
- echo 150000000 > sched_wakeup_granularity_ns
- echo 240000000 > sched_latency_ns
- Binaries compiled on a system with 1x Intel Xeon E-2288G CPU + 64GB RAM memory using Redhat Enterprise Linux 7.6
- 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)

(Continued on next page)
General Notes (Continued)

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 configuration:
Energy Efficient Turbo = Disabled
Fan Control = Full
Hyper-Threading = Disabled
SW Guard Extensions (SGX) = Enabled

Sysinfo program /home/Benchmark/speccpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7eddb1e6e46a485a0011
running on localhost.localdomain Thu Nov 21 12:54:54 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) Xeon(R) E-2286G CPU @ 4.00GHz
  1 "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:                 158
  Model name:            Intel(R) Xeon(R) E-2286G CPU @ 4.00GHz
SPEC CPU®2017 Floating Point Speed Result

Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

| SPECspeed®2017_fp_base = 33.3 | SPECspeed®2017_fp_peak = 33.6 |

CPU2017 License: 19
Test Sponsor: Fujitsu
Test Date: Nov-2019
Tested by: Fujitsu
Hardware Availability: Oct-2019
Software Availability: Sep-2019

Platform Notes (Continued)

Stepping: 10
CPU MHz: 4866.455
CPU max MHz: 4900.0000
CPU min MHz: 800.0000
BogoMIPS: 8016.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 12288K
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
lm constant_tsc 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 sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid tm2 tse xtpr pdcm pcid sse4_1
move stp smapRndds32 xsaveopt xsavec xgetbv1 dtherm ida
arat pln pts hwp hwp_notify hwp_act_window hwp_epp spec_ctrl intel_stibp flush_ll1d

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

From /proc/meminfo
MemTotal: 65596340 kB
MemFree: 17353204 kB
Buffers: 429840 kB
Cached: 11306896 kB

From /proc/cpuinfo
cache size : 12288 KB

From /proc/cpuinfo

uname -a:

(Continued on next page)
Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

SPECspec®2017_fp_base = 33.3
SPECspec®2017_fp_peak = 33.6

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

Test Date: Nov-2019
Hardware Availability: Oct-2019
Software Availability: Sep-2019

Platform Notes (Continued)

Linux localhost.localdomain 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: SMT disabled,
L1D conditional cache flushes
Microarchitectural Data Sampling: No status reported
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: Load fences, __user pointer
sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Nov 21 12:51

SPEC is set to: /home/Benchmark/speccpu2017-1.1.0

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 392G 33G 359G 9%/home

From /sys/devices/virtual/dmi/id
    BIOS: FUJITSU // American Megatrends Inc. V5.0.0.13 R1.12.0 for D3673-A1x
    09/06/2019
    Vendor: FUJITSU
    Product: PRIMERGY TX1330 M4
    Serial: YMJLXXXXXX

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.
Memory:
4x SK Hynix HMA82GU7CJR8N-VK 16 GB 2 rank 2667

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
  644.nab_s(base, peak)
==============================================================================

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.5.281 Build 20190815
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

(Continued on next page)
## Fujitsu

**PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz**

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</tr>
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<td>Nov-2019</td>
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**SPECspeed®2017_fp_base = 33.3**  
**SPECspeed®2017_fp_peak = 33.6**

### Compiler Version Notes (Continued)

```plaintext
C++, C, Fortran | 607.cactuBSSN_s(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.5.281 Build 20190815  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.5.281 Build 20190815  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.5.281 Build 20190815  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)  
| 654.roms_s(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.5.281 Build 20190815  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Fortran, C     | 621.wrf_s(base, peak) 627.cam4_s(base, peak)  
| 628.pop2_s(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
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Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.5.281 Build 20190815  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
```

### Base Compiler Invocation

C benchmarks:

```bash
icc -m64 -std=c11
```

Fortran benchmarks:

```bash
ifort -m64
```

(Continued on next page)
Base Compiler Invocation (Continued)

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

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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs
Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

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<tr>
<td>Tested by: Fujitsu</td>
<td>Software Availability: Sep-2019</td>
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</tbody>
</table>

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: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP

638.imagick_s: Same as 619.lbm_s

644.nab_s: basepeak = yes

Fortran benchmarks:
603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

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=4 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs

(Continued on next page)
Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2286G, 4.00 GHz

SPECspeed®2017_fp_base = 33.3
SPECspeed®2017_fp_peak = 33.6

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

Peak Optimization Flags (Continued)

627.cam4_s: basepeak = yes
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: