# SPEC® CPU2017 Floating Point Speed Result

## Fujitsu

PRIMEQUEST 3800B2, Intel Xeon Platinum 8280L, 2.70GHz

**SPECspeed2017_fp_base** = 233

**SPECspeed2017_fp_peak** = Not Run

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Feb-2019</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Platinum 8280L
- **Max MHz.:** 4000
- **Nominal:** 2700
- **Enabled:** 168 cores, 6 chips
- **Orderable:** 2,4,6,8 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 38.5 MB I+D on chip per chip
- **Memory:** 2304 GB (72 x 32 GB 2Rx4 PC4-2933Y-R)
- **Storage:** 1 x SAS HDD, 900GB, 15K RPM, SAS HDD
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.6 (Maipo) 3.10.0-957.el7.x86_64
- **Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Fujitsu BIOS Version V1.0.0.0 R1.21.0 for D3858-B1x. Released Jan-2019 updated as V1.0.0.0 R91.11.0 for D3858-B1x Mar-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** None

### Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>168</td>
<td>0</td>
<td>Not Run</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>168</td>
<td>232</td>
<td>Not Run</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>168</td>
<td>159</td>
<td>Not Run</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>168</td>
<td>118</td>
<td>Not Run</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>168</td>
<td>195</td>
<td>Not Run</td>
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<tr>
<td>628.pop2_s</td>
<td>168</td>
<td>66.8</td>
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<tr>
<td>638.imagick_s</td>
<td>168</td>
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<tr>
<td>644.nab_s</td>
<td>168</td>
<td>505</td>
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<tr>
<td>649.fotonik3d_s</td>
<td>168</td>
<td>130</td>
<td>Not Run</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>168</td>
<td>354</td>
<td>Not Run</td>
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*Standard Performance Evaluation Corporation (info@spec.org) [https://www.spec.org/](https://www.spec.org/)*
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Results Table

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SPECspeed2017_fp_base = 233
SPECspeed2017_fp_peak = Not Run

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"
Kernel Boot Parameter set with : nohz_full=1-167

General Notes

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

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
Transparent Huge Pages disabled by default
echo never > /sys/kernel/mm/transparent_hugepage/enabled
echo never > /sys/kernel/mm/transparent_hugepage/defrag
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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**Fujitsu**  
PRIMEQUEST 3800B2, Intel Xeon Platinum 8280L, 2.70GHz

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**CPU2017 License:** 19  
**Test Date:** Apr-2019  
**Test Sponsor:** Fujitsu  
**Tested by:** Fujitsu  
**Hardware Availability:** Apr-2019  
**Software Availability:** Feb-2019

## Platform Notes

BIOS configuration:
- Adjacent Cache Line Prefetch = Disabled
- Fan Control = Full
- Hyper-Threading = Disabled
- Intel Virtualization Technology = Disabled
- P-State Coordination = SW_ANY
- Stale AtoS = Enabled
- Sub NUMA Clustering = Disabled
- Uncore Frequency Scaling = Disabled

Sysinfo program /home/Benchmark/speccpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9  
running on localhost.localdomain Sat Apr 13 07:26:18 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) Platinum 8280L CPU @ 2.70GHz  
- 6 "physical id"s (chips)
- 168 "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 : 28
  - siblings : 28
  - physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - physical 4: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - physical 5: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

From lscpu:
- Architecture: x86_64  
- CPU op-mode(s): 32-bit, 64-bit  
- Byte Order: Little Endian  
- CPU(s): 168  
- On-line CPU(s) list: 0-167  
- Thread(s) per core: 1  
- Core(s) per socket: 28  
- Socket(s): 6

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

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**SPECspeed2017_fp_base =** 233  
**SPECspeed2017_fp_peak =** Not Run

---

**Platform Notes (Continued)**

NUMA node(s): 6  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz  
Stepping: 6  
CPU MHz: 999.975  
CPU max MHz: 4000.0000  
CPU min MHz: 1000.0000  
BogoMIPS: 5400.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 39424K  
NUMA node0 CPU(s): 0–27  
NUMA node1 CPU(s): 28–55  
NUMA node2 CPU(s): 56–83  
NUMA node3 CPU(s): 84–111  
NUMA node4 CPU(s): 112–139  
NUMA node5 CPU(s): 140–167  
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 dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpb cat_13 cdp_13 intel_ppin intel_pt ssbd mba ibrs ibpb stibp ibrs_enhanced trp_shadow vnmic flexpriority ept vpid fsbgbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xgetbv1 cqm_llc cqm_occup_llc cqm_mbb_total cqm_mmb_local dtherm ida arat plnr pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni spec_ctrl intel_stibp flush_l1d arch_capabilities

```
/proc/cpuinfo cache data
  cache size : 39424 KB
```

--

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

```
From /proc/meminfo
  MemTotal: 2376423872 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB
```

From /etc/*release* /etc/*version*

```
os-release:
```

(Continued on next page)
Fujitsu
PRIMEQUEST 3800B2, Intel Xeon Platinum 8280L, 2.70GHz

SPECspeed2017_fp_base = 233
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Platform Notes (Continued)

NAME="Red Hat Enterprise Linux Server"
VERSION="7.6 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.6"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)

uname -a:
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-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS

run-level 3 Apr 12 23:24

SPEC is set to: /home/Benchmark/speccpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 783G 7.7G 775G 1% /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 FUJITSU V1.0.0.0 R91.11.0 for D3858-B1x 03/15/2019
Memory:
56x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933
16x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes
==============================================================================
CC  619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
(Continued on next page)
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PRIMEQUEST 3800B2, Intel Xeon Platinum 8280L, 2.70GHz

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Compiler Version Notes (Continued)

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FC 607.cactuBSSN_s(base)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------------------------------------------

CC 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
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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

(Continued on next page)
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### 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:**

- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP`

**Fortran benchmarks:**

- `-DSPEC_OPENMP -xCORE-AVX512 -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-AVX512 -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-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP`
- `-nostandard-realloc-lhs`
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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:

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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 2019-04-12 18:26:17-0400.  