SPEC® CPU2017 Floating Point Speed Result

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Fujitsu
PRIMERGY TX1330 M4, Intel Xeon E-2144G, 3.60GHz

SPECspeed2017_fp_base = 26.7
SPECspeed2017_fp_peak = Not Run

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

Threads

<table>
<thead>
<tr>
<th>Spec benchmark</th>
<th>Avg.</th>
<th>SPECspeed2017_fp_base (26.7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>4</td>
<td>39.3</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>4</td>
<td>39.3</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>4</td>
<td>31.4</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>4</td>
<td>31.8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>4</td>
<td>36.7</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>4</td>
<td>31.8</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>4</td>
<td>20.1</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>4</td>
<td>17.8</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
<td>15.3</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon E-2144G
Max MHz.: 4500
Nominal: 3600
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: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
Storage: 1 x SATA M.2 SSD, 240 GB
Other: None

Software

OS: Red Hat Enterprise Linux Server release 7.5 (Maipo)
Compiler: C/C++: Version 19.0.0.117 of Intel C/C++
Compiler for Linux:
Fortran: Version 19.0.0.117 of Intel Fortran
Compiler for Linux
Parallel: Yes
Firmware: Fujitsu BIOS Version V5.0.0.13 R1.4.0 for D3673-A1x. Released Nov-2018 tested as V5.0.0.13 R1.0.0 for D3673-A1x Sep-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
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**SPECspeed2017_fp_base = 26.7**

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---

### 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>
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<tbody>
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<td>...</td>
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<td>621.wrf_s</td>
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<td>31.2</td>
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<td>627.cam4_s</td>
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<td>18.6</td>
<td>476</td>
<td>18.6</td>
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<tr>
<td>628.pop2_s</td>
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<td>31.8</td>
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<td>31.8</td>
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<td>31.9</td>
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<tr>
<td>638.imagick_s</td>
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<td>20.0</td>
<td>718</td>
<td>20.1</td>
<td>717</td>
<td>20.1</td>
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<tr>
<td>644.nab_s</td>
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<td>475</td>
<td>36.8</td>
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<td>36.7</td>
<td>476</td>
<td>36.7</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
<td>513</td>
<td>17.8</td>
<td>513</td>
<td>17.8</td>
<td>513</td>
<td>17.8</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>4</td>
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<td>15.3</td>
<td>1030</td>
<td>15.3</td>
<td>1029</td>
<td>15.3</td>
</tr>
</tbody>
</table>

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**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,1,0"
- **OMP_STACKSIZE** = "192M"
- **LD_LIBRARY_PATH** = "/home/Benchmark/speccpu2017-ic19/ic19.0-lib/intel64"

Binaries compiled on a system with 1x Intel Xeon E-2186G CPU + 64GB RAM memory using Red Hat Enterprise Linux Server release 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.

(Continued on next page)
General Notes (Continued)

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
Sysinfo program /home/Benchmark/speccpu2017-ic19/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Wed Oct 31 10:01:16 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) E-2144G CPU @ 3.60GHz
 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:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
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-2144G CPU @ 3.60GHz
Stepping: 10
CPU MHz: 4269.067
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K

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CPU2017 License: 19
Test Date: Oct-2018
Test Sponsor: Fujitsu
Hardware Availability: Nov-2018
Tested by: Fujitsu
Software Availability: Sep-2018

Platform Notes (Continued)

L1 cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-7

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 rdtsscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref 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 3nowprefetch epb intel_pt tpr_shadow vnmi
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1 ibpb ibrs stibp dtherm ida
arat pln pts hwp hwp_notify hwp_act_window hwp_epp spec_ctrl intel_stibp

/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: 65278 MB
node 0 free: 63195 MB
node distances:
node 0
0: 10

From /proc/meminfo
MemTotal: 65545552 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server

uname -a:

(Continued on next page)
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**Platform Notes (Continued)**

Linux localhost.localdomain 3.10.0-862.el7.x86_64 #1 SMP Wed Mar 21 18:14:51 EDT 2018  
x86_64 x86_64 x86_64 GNU/Linux  
run-level 3 Oct 31 09:58

SPEC is set to: /home/Benchmark/speccpu2017-ic19  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/mapper/rhel-home xfs 150G 33G 118G 22% /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 // American Megatrends Inc. V5.0.0.13 R1.0.0 for D3673-A1x  
09/14/2018  
Memory: 4x SK Hynix HMA82GU7CJR8N-VK 16 GB 2 rank 2667

(End of data from sysinfo program)

**Compiler Version Notes**

==============================================================================  
CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)  
------------------------------------------------------------------------------

icc (ICC) 19.0.0.117 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

==============================================================================

FC 607.cactuBSSN_s(base)  
------------------------------------------------------------------------------

icpc (ICC) 19.0.0.117 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
icc (ICC) 19.0.0.117 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
ifort (IFORT) 19.0.0.117 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

==============================================================================

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

ifort (IFORT) 19.0.0.117 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

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**Compiler Version Notes (Continued)**

<table>
<thead>
<tr>
<th>Base Compiler Invocation</th>
</tr>
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<tbody>
<tr>
<td>C benchmarks:</td>
</tr>
<tr>
<td>icc -m64 -std=c11</td>
</tr>
<tr>
<td>Fortran benchmarks:</td>
</tr>
<tr>
<td>ifort -m64</td>
</tr>
<tr>
<td>Benchmarks using both Fortran and C:</td>
</tr>
<tr>
<td>ifort -m64 icc -m64 -std=c11</td>
</tr>
<tr>
<td>Benchmarks using Fortran, C, and C++:</td>
</tr>
<tr>
<td>icpc -m64 icc -m64 -std=c11 ifort -m64</td>
</tr>
</tbody>
</table>

**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
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Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0.2-CFL-RevB.xml

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

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