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<th>Test Date:</th>
<th>Jun-2018</th>
</tr>
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<tr>
<td>Hardware Availability:</td>
<td>May-2018</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Apr-2018</td>
</tr>
</tbody>
</table>

### Hardware

- CPU Name: Intel Xeon D-1521
- Max MHz.: 2700
- Nominal: 2400
- 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: 6 MB I+D on chip per core
- Other: None
- Memory: 128 GB (4 x 32 GB 2Rx4 PC4-2400T-R, running at 2133)
- Storage: 1 x SAS HDD, 1 TB, 7200 RPM
- Other: None

### Software

- OS: SUSE Linux Enterprise Server 12 SP2
- Compiler: C/C++: Version 18.0.1.163 of Intel C/C++ Compiler for Linux;
  Fortran: Version 18.0.1.163 of Intel Fortran Compiler for Linux
- Parallel: No
- Firmware: American Megatrends BIOS Version C419A020. Released Apr-2018
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 64-bit
- Peak Pointers: Not Applicable
- Other: None
### Results Table

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<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
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<th>Ratio</th>
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<td>1259</td>
<td>10.1</td>
<td></td>
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</tr>
</tbody>
</table>

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

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Set CPU frequency governor to maximum performance with:
cpupower -c all frequency-set -g performance
cpu idle state set with:
cpupower idle-set -d 1

### General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/SPECcpu/speccpu2017-ic18.1-20171215/icc18.1-lib/intel64"
Binaries compiled on a system with 4x Intel Xeon Platinum 8180 CPU + 768GB RAM memory using SUSE Linux Enterprise Server 12 SP2
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 1 > /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
General Notes (Continued)

numactl --interleave=all runcpu <etc>
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.

Platform Notes

BIOS configuration:
Intel Virtualization Technology = Disabled
HWPM Support = Disabled
 Sysinfo program /home/SPECcpu/speccpu2017-ic18.1-20171215/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on linux-grrg Tue Jun 19 13:39:58 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) CPU D-1521 @ 2.40GHz
 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: 86
Model name: Intel(R) Xeon(R) CPU D-1521 @ 2.40GHz
Stepping: 3

(Continued on next page)
Platform Notes (Continued)

- CPU MHz: 2382.528
- CPU max MHz: 2700.0000
- CPU min MHz: 800.0000
- BogoMIPS: 4799.54
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 256K
- L3 cache: 6144K
- 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 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 ida arat epb invpcid_single pln pts dtherm
  intel_pt spec_ctrl retpoline kaiser tpr_shadow vni flopxiorty ept vpid fsgsbase
  tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm rdsed adx smap xsaveopt
  cqm_llc cqm_occup_llc

/proc/cpuinfo cache data
  cache size: 6144 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: 128659 MB
  node 0 free: 128152 MB
  node distances:
    node   0
    0:  10

From /proc/meminfo
  MemTotal: 131746916 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 2
    # This file is deprecated and will be removed in a future service pack or release.

(Continued on next page)
Fujitsu

PRIMERGY CX1430 M1, Intel Xeon D-1521, 2.40GHz

SPEC CPU2017 Floating Point Rate Result

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Fujitsu

PRIMERGY CX1430 M1, Intel Xeon D-1521, 2.40GHz

SPECrate2017_fp_base = 19.4

SPECrate2017_fp_peak = Not Run

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

Test Date: Jun-2018
Hardware Availability: May-2018
Software Availability: Apr-2018

Platform Notes (Continued)

# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
Linux linux-grrg 4.4.114-92.64-default #1 SMP Thu Feb 1 19:18:19 UTC 2018 (c6ce5db)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 19 13:37

SPEC is set to: /home/SPECcpu/speccpu2017-ic18.1-20171215

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda9 xfs 530G 18G 513G 4% /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 American Megatrends Inc. C419A020 04/03/2018
Memory:
4x Hynix Semiconductor HMA84GR7AFR4N-UH 32 GB 2 rank 2400, configured at 2133

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
==============================================================================
icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================
CXXC 508.namd_r(base) 510.parest_r(base)
==============================================================================
icpc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

(Continued on next page)
Fujitsu

PRIMERGY CX1430 M1, Intel Xeon D-1521, 2.40GHz

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Compiler Version Notes (Continued)

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------------------------------------------------------------------------------
icpc (ICC) 18.0.1 20171018
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icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
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FC  507.cactuBSSN_r(base)
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Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  503.bwaves_r(base)  549.fotonik3d_r(base)  554.roms_r(base)
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ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
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CC  521.wrf_r(base)  527.cam4_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LP64 -DSPEC_CASE_FLAG -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

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

**Fujitsu**

PRIMERGY CX1430 M1, Intel Xeon D-1521, 2.40GHz

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**Test Date:** Jun-2018

**Hardware Availability:** May-2018

**Software Availability:** Apr-2018

---

## Base Optimization Flags (Continued)

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

- Benchmarks using both C and C++:
  - `xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3`

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

---

## Base Other Flags

- C benchmarks:
  - `-m64 -std=c11`

- C++ benchmarks:
  - `-m64`

- Fortran benchmarks:
  - `-m64`

- Benchmarks using both Fortran and C:
  - `-m64 -std=c11`

- Benchmarks using both C and C++:
  - `-m64 -std=c11`

- Benchmarks using Fortran, C, and C++:
  - `-m64 -std=c11`

---

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:


http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevD.xml
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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 v1.0.2 on 2018-06-19 00:39:57-0400.
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