## SPEC CPU® 2017 Floating Point Rate Result

### Hardware

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux release 8.2</td>
<td>CPU Name: Intel Xeon Gold 6248</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 19.1.1.217 of Intel C/C++ Build 20200306</td>
<td>Max MHz: 3900</td>
</tr>
<tr>
<td>Firmware: Version 3.3 released Feb-2020</td>
<td>Nominal: 2500</td>
</tr>
<tr>
<td>Compiler for Linux: Fortran: Version 19.1.1.217 of Intel Fortran Build 20200306</td>
<td></td>
</tr>
<tr>
<td>File System: xfs</td>
<td></td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td></td>
</tr>
<tr>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage</td>
<td></td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
<td>Other: None</td>
</tr>
<tr>
<td></td>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L2: 1 MB I+D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L3: 27.5 MB I+D on chip per chip</td>
</tr>
<tr>
<td></td>
<td>Orderable: 1,2 chips</td>
</tr>
<tr>
<td></td>
<td>Memory: 384 GB (12 x 32 GB 2Rx4 PC4-3200AA-R, running at 2933)</td>
</tr>
<tr>
<td></td>
<td>Storage: 1 x 400 GB NVMe SSD</td>
</tr>
<tr>
<td></td>
<td>Other: None</td>
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</table>

### Supermicro

SYS-2029BT-HNC0R  
(X11DPT-B , Intel Xeon Gold 6248)

| SPECrate®2017_fp_base = 238 | SPECrate®2017_fp_peak = 252 |

| Test Date: | Jun-2020 |
| Hardware Availability: | Sep-2019 |
| Software Availability: | Apr-2020 |

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<td>510.parest_r</td>
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<td>511.povray_r</td>
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<tr>
<td>519.lbm_r</td>
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<td>527.cam4_r</td>
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<tr>
<td>538.imagick_r</td>
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<tr>
<td>544.nab_r</td>
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<tr>
<td>549.fotonik3d_r</td>
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<tr>
<td>554.roms_r</td>
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<td>80</td>
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[Standard Performance Evaluation Corporation](https://www.spec.org/)
Supermicro
SYS-2029BT-HNC0R (X11DPT-B , Intel Xeon Gold 6248)

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jun-2020
Hardware Availability: Sep-2019
Software Availability: Apr-2020

Results Table

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<th>Benchmark</th>
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<th>Ratio</th>
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<th>Ratio</th>
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<td>1328</td>
<td>95.7</td>
<td>1326</td>
<td>95.9</td>
</tr>
</tbody>
</table>

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux. The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux.

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2017/lib/intel64:/root/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
SPEC CPU® 2017 Floating Point Rate Result

Supermicro
SYS-2029BT-HNC0R (X11DPT-B, Intel Xeon Gold 6248)

SPECrate® 2017_fp_base = 238
SPECrate® 2017_fp_peak = 252

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
Filesystm page cache synced and cleared with:
  sync; echo 3 > /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
  numactl --interleave=all runcpu <etc>
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.

Platform Notes

BIOS Settings:
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode = Extreme Performance
SNC = Enable
Stale AtoS = Disable
IMC Interleaving = 1-way Interleave
Patrol Scrub = Disable

Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011
running on localhost.localdomain Fri Jun 19 11:50:31 2020

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) Gold 6248 CPU @ 2.50GHz
  2 "physical id"s (chips)
  80 "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 : 20
siblings : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

(Continued on next page)
Supermicro
SYS-2029BT-HNC0R
(X11DPT-B , Intel Xeon Gold 6248)

CPU2017 License:  001176
Test Sponsor:    Supermicro
Tested by:      Supermicro

 SPECrate®2017_fp_base = 238
 SPECrate®2017_fp_peak = 252

Test Date:      Jun-2020
Hardware Availability: Sep-2019
Software Availability: Apr-2020

---

**Platform Notes (Continued)**

```
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                80
On-line CPU(s) list:   0-79
Thread(s) per core:    2
Core(s) per socket:    20
Socket(s):             2
NUMA node(s):          4
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Gold 6248 CPU @ 2.50GHz
Stepping:              6
CPU MHz:               3199.987
CPU max MHz:           3900.0000
CPU min MHz:           1000.0000
BogoMIPS:              5000.00
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K
L3 cache:              28160K
NUMA node0 CPU(s):     0-2,5,6-10,12,15,16,40-42,45,46,50-52,55,56
NUMA node1 CPU(s):     3,4,7-9,13,14,17-19,43,44,47-49,53,54,57-59
NUMA node2 CPU(s):     20-22,25,26,30-32,35,36,60-62,65,66,70-72,75,76
NUMA node3 CPU(s):     23,24,27-29,33,34,37-39,63,64,67-69,73,74,77-79
Flags:                 fp 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
aperfmerpf pni pclmulqdq dtes64 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
rdram lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single
intel_pip ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmii flexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cmq mpx rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsavesopt xsavec xsave xsaveopt xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local
dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_l1d arch_capabilities
```

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
Platform Notes (Continued)

available: 4 nodes (0-3)
node 0 cpus: 0 1 2 5 6 10 11 12 15 16 40 41 42 45 46 50 51 52 55 56
node 1 cpus: 3 4 7 8 9 13 14 17 18 44 47 48 49 53 54 57 58 59
node 1 size: 96735 MB
node 1 free: 88213 MB
node 2 cpus: 20 21 22 25 26 30 31 32 35 36 60 61 62 65 66 70 71 72 75 76
node 2 size: 96763 MB
node 2 free: 88342 MB
node 3 cpus: 23 24 27 28 33 34 37 38 39 63 64 67 68 69 73 74 77 78 79
node 3 size: 96762 MB
node 3 free: 88412 MB
node distances:
node 0 1 2 3
0: 10 11 21 21
1: 11 10 21 21
2: 21 21 10 11
3: 21 21 11 10

From /proc/meminfo
MemTotal: 394863148 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.2 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga
uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
itlb_multihit: KVM: Mitigation: Split huge pages
CVE-2018-3620 (L1 Terminal Fault): Not affected

(Continued on next page)
Supermicro
SYS-2029BT-HNC0R
(X11DPT-B, Intel Xeon Gold 6248)

SPECrate®2017_fp_base = 238
SPECrate®2017_fp_peak = 252

Test Date: Jun-2020
Hardware Availability: Sep-2019
Software Availability: Apr-2020

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Platform Notes (Continued)

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
tsx_async_abort: Mitigation: Clear CPU buffers; SMT vulnerable

run-level 3 Jun 19 03:53

SPEC is set to: /root/cpu2017
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs   367G   61G  307G  17% /

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 3.3 02/22/2020
Vendor: Supermicro
Product: Super Server
Serial: 0123456789

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:
12x NO DIMM NO DIMM
12x SK Hynix HMA84GR7CJR4N-XN 32 GB 2 rank 3200

(End of data from sysinfo program)
Sysinfo incorrectly parsed dmidecode output. Configured memory speed is 2933.

Compiler Version Notes

==============================================================================
| C       | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak) |
|---------|========================================================================|
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
| C++     | 508.namd_r(base, peak) 510.parest_r(base, peak) |

(Continued on next page)
Compiler Version Notes (Continued)

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C | 511.povray_r(base) 526.blender_r(base, peak)

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C | 511.povray_r(base) 526.blender_r(base, peak)

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++, C | 511.povray_r(peak)

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Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
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(Continued on next page)
Supermicro
SYS-2029BT-HNC0R
(X11DPT-B , Intel Xeon Gold 6248)

SPECrater®2017_fp_base = 238
SPECrater®2017_fp_peak = 252

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jun-2020
Hardware Availability: Sep-2019
Software Availability: Apr-2020

Compiler Version Notes (Continued)

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

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
                   Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
                   NextGen Build 20200304
                   Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
                   Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
                   NextGen Build 20200304
                   Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
                   Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
                   64, Version 19.1.1.217 Build 20200306
                   Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
                   554.roms_r(base, peak)
                   Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
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Fortran, C      | 521.wrf_r(base) 527.cam4_r(base, peak)
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                   Intel(R) C Compiler for applications running on Intel(R) 64,
                   Version 19.1.1.217 Build 20200306
                   Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
Fortran, C      | 521.wrf_r(peak)
                   Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
                   64, Version 19.1.1.217 Build 20200306
                   Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
                   Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
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(Continued on next page)
## Supermicro
**SYS-2029BT-HNC0R**  
(X11DPT-B, Intel Xeon Gold 6248)

### SPECrate®2017 Floating Point Rate Result

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<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
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<td>252</td>
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### Compiler Version Notes (Continued)

#### Fortran, C

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<td>521.wrf_r(base) 527.cam4_r(base, peak)</td>
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</tbody>
</table>

#### Base Compiler Invocation

- **C benchmarks:**
  - icc

- **C++ benchmarks:**
  - icpc

- **Fortran benchmarks:**
  - ifort

- **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
Supermicro  
SYS-2029BT-HNCO (X11DPT-B, Intel Xeon Gold 6248)

CPU2017 License: 001176  
Test Sponsor: Supermicro  
Tested by: Supermicro

`SPECrate®2017_fp_base = 238`

`SPECrate®2017_fp_peak = 252`

--

**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_LINUX -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**

For C benchmarks:

```bash
-m64 -qnextgen -std=c11
-wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

For C++ benchmarks:

```bash
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

For Fortran benchmarks:

```bash
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

For benchmarks using both Fortran and C:

```bash
-m64 -qnextgen -std=c11
-wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs
```

(Continued on next page)
Supermicro
SYS-2029BT-HNC0R
(X11DPT-B , Intel Xeon Gold 6248)

SPECrate®2017_fp_base = 238
SPECrate®2017_fp_peak = 252

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
-align array32byte -auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both C and C++:
-m64 -qnxtgen -std=c11
-W1,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -qnxtgen -std=c11
-W1,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-fuse-ld=gold -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs
-align array32byte -auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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
# SPEC CPU®2017 Floating Point Rate Result

## Supermicro

SYS-2029BT-HNC0R (X11DPT-B, Intel Xeon Gold 6248)

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<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
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<tr>
<td>Software Availability:</td>
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</tr>
</tbody>
</table>

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

### C benchmarks:

- `519.lbm_r`: basepeak = yes
- `538.imagick_r`: basepeak = yes
- `544.nab_r`: basepeak = yes

### C++ benchmarks:

- `508.namd_r`: -m64 -qnextgen
  -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
  -Wl,-z,muldefs -fuse-ld=gold -xCORE-AVX512 -Ofast
  -ffast-math -flto -mfpmath=sse -funroll-loops
  -qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib
  -ljemalloc

### Fortran benchmarks:

- `503.bwaves_r`: -m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
  -Wl,-z,muldefs -fuse-ld=gold -xCORE-AVX512 -O3 -ipo
  -no-prec-div -qopt-prefetch -ffinite-math-only
  -qopt-multiple-gather-scatter-by-shuffles
  -qopt-mem-layout-trans=4 -nostandard-realloc-lhs
  -align array32byte -auto -mbranches-within-32B-boundaries
  -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- `549.fotonik3d_r`: basepeak = yes
- `554.roms_r`: Same as `503.bwaves_r`

### Benchmarks using both Fortran and C:

- `521.wrf_r`: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
  -ipo -no-prec-div -qopt-prefetch -ffinite-math-only
  -qopt-multiple-gather-scatter-by-shuffles
  -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
  -nostandard-realloc-lhs -align array32byte -auto

(Continued on next page)
Peak Optimization Flags (Continued)

521.wrf_r (continued):
- L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: basepeak = yes
   -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
   -ipo -no-prec-div -qopt-prefetch -ffinite-math-only
   -qopt-multiple-gather-scatter-by-shuffles
   -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
   -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revG.xml

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