Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
Tyrone Camarero ID1100C2R-28
(2.20 GHz, Intel Xeon Gold 6338N)

SPECspeed®2017_fp_base = 175
SPECspeed®2017_fp_peak = 177

CPU2017 License: 006042
Test Sponsor: Netweb Pte Ltd
Tested by: Tyrone Systems

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_fp_base (175)</th>
<th>SPECspeed®2017_fp_peak (177)</th>
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<tr>
<td>510</td>
<td>540</td>
<td>584</td>
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</table>

Hardware

CPU Name: Intel Xeon Gold 6338N
Max MHz: 3500
Nominal: 2200
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1.2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 48 MB I+D on chip per chip
Other: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2666)
Storage: 1 x 250 GB SATA SSD
Other: None

Software

OS: CentOS Linux release 8.4.2105
Kernel 4.18.0-305.3.1.el8.x86_64
Compiler: C/C++, Version 2021.1 of Intel oneAPI DPC++/C++
Compiler Build 20201113 for Linux;
Fortran: Version 2021.1 of Intel Fortran Compiler
Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler
Classic Build 20201112 for Linux
Parallel: Yes
Firmware: Version SE5C620.86B.01.01.0003.2104260124 released Apr-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Floating Point Speed Result

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SPECspeed®2017_fp_base = 175
SPECspeed®2017_fp_peak = 177

Results Table

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<td>72.7</td>
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</tr>
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SPECspeed®2017_fp_base = 175
SPECspeed®2017_fp_peak = 177

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled locally by Netweb
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
runcpu command invoked through numactl i.e.:
umactl --interleave=all runcpu <etc>

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

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CPU2017 License: 006042
Test Sponsor: Netweb Pte Ltd
Tested by: Tyrone Systems
Test Date: Aug-2021
Hardware Availability: Apr-2021
Software Availability: Jun-2021

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.
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.
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS Settings:
Power Technology set to Custom
Power Performance Tuning set to BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode set to Performance
LLC Dead Line Alloc set to Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca64d
running on localhost.localdomain Wed Aug 25 15:04:09 2021

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 6338N CPU @ 2.20GHz
  2 "physical id"s (chips)
  128 "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 : 32
siblings : 64
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 128
On-line CPU(s) list: 0-127

(Continued on next page)
**SPEC CPU®2017 Floating Point Speed Result**

**Tyrone Systems**  
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**Tyrone Camarero ID1100C2R-28**  
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<td>Software Availability:</td>
<td>Jun-2021</td>
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</table>

<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread(s) per core: 2</td>
</tr>
<tr>
<td>Core(s) per socket: 32</td>
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<tr>
<td>Socket(s): 2</td>
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<tr>
<td>NUMA node(s): 4</td>
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<tr>
<td>Vendor ID: GenuineIntel</td>
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<tr>
<td>BIOS Vendor ID: Intel(R) Corporation</td>
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<tr>
<td>CPU family: 6</td>
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<td>Model: 106</td>
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<tr>
<td>Model name: Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz</td>
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<tr>
<td>BIOS Model name: Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz</td>
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<td>Stepping: 6</td>
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<tr>
<td>CPU MHz: 1211.905</td>
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<td>CPU min MHz: 800.0000</td>
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<tr>
<td>BogoMIPS: 4400.00</td>
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<tr>
<td>Virtualization: VT-x</td>
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<tr>
<td>L1d cache: 48K</td>
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<tr>
<td>L1i cache: 32K</td>
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<tr>
<td>L2 cache: 1280K</td>
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<tr>
<td>L3 cache: 49152K</td>
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<tr>
<td>NUMA node0 CPU(s): 0-15,64-79</td>
</tr>
<tr>
<td>NUMA node1 CPU(s): 16-31,80-95</td>
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<tr>
<td>NUMA node2 CPU(s): 32-47,96-111</td>
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<tr>
<td>NUMA node3 CPU(s): 48-63,112-127</td>
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<tr>
<td>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_tcb art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tcb cpiu aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_13 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced fsqfsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xsavec qsaves cqm llc cqm _occup llc cqm _mbm _total cqm _mbm _local split _lock _detect wnoinvd dtherm ida arat ptn pts hwf_act_window hwp_epp hwp_pkg_req avx512vbi umip pk u ospke avx512_vbmi2 gfn vi vaes vpcm uldq avx512_vnvi avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsr m md_ea r pconfig flush_l1d arch_capabilities</td>
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</table>

/proc/cpuinfo cache data  
| cache size : 49152 KB |

From numactl --hardware  
WARNING: a numactl 'node' might or might not correspond to a physical chip.  
| available: 4 nodes (0-3) |
| node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 |
| node 0 size: 128645 MB |

(Continued on next page)
**SPEC CPU®2017 Floating Point Speed Result**

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**Tyrone Camarero IDI100C2R-28**
(2.20 GHz, Intel Xeon Gold 6338N)

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<table>
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<tr>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
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<td>= 175</td>
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**CPU2017 License:** 006042  
**Test Date:** Aug-2021  
**Test Sponsor:** Netweb Pte Ltd  
**Hardware Availability:** Apr-2021  
**Tested by:** Tyrone Systems  
**Software Availability:** Jun-2021

---

**Platform Notes (Continued)**

```
node 0 free: 106480 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 80 81 82 83 84 85 86 87 88
89 90 91 92 93 94 95
node 1 size: 129017 MB
node 1 free: 110672 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 96 97 98 99 100 101 102
103 104 105 106 107 108 109 110 111
node 2 size: 128979 MB
node 2 free: 104572 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 112 113 114 115 116 117
118 119 120 121 122 123 124 125 126 127
node 3 size: 129014 MB
node 3 free: 109832 MB
node distances:
node 0  1  2  3
0:   10  11  20  20
1:   11  10  20  20
2:   20  20  10  11
3:   20  20  11  10
```

From /proc/meminfo

- MemTotal: 528032644 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/sbin/tuned-adm active

- Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor

- has performance

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

- centos-release: CentOS Linux release 8.4.2105
- centos-release-upstream: Derived from Red Hat Enterprise Linux 8.4
- os-release:
  - NAME="CentOS Linux"
  - VERSION="8"
  - ID="centos"
  - ID_LIKE="rhel fedora"
  - VERSION_ID="8"
  - PLATFORM_ID="platform:el8"
  - PRETTY_NAME="CentOS Linux 8"
  - ANSI_COLOR="0;31"

-redhat-release: CentOS Linux release 8.4.2105
-system-release: CentOS Linux release 8.4.2105
-system-release-cpe: cpe:/o:centos:centos:8

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

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CPU2017 License: 006042
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Platform Notes (Continued)

uname -a:
   Linux localhost.localdomain 4.18.0-305.3.1.el8.x86_64 #1 SMP Tue Jun 1 16:14:33 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multi-hit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
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
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected
run-level 3 Aug 24 02:09

SPEC is set to: /home/cpu2017
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/mapper/cl-home xfs 163G 143G 20G 88% /home

From /sys/devices/virtual/dmi/id
   Vendor: Intel Corporation
   Product: WHITLEY
   Product Family: Family
   Serial: UNKNOWN

Additional information from dmidecode 3.2 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:
   16x Micron 18ASF4G72PZ-3G2E1 32 GB 1 rank 3200, configured at 2666

BIOS:
   BIOS Vendor: Intel Corporation
   BIOS Version: SE5C620.86B.01.01.0003.2104260124
   BIOS Date: 04/26/2021

(End of data from sysinfo program)
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Compiler Version Notes
==============================================================================
| C                      | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base) |
==============================================================================
| Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
-----------------------------------------------------------------------------
| C                      | 644.nab_s(peak) |
-----------------------------------------------------------------------------
| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
-----------------------------------------------------------------------------
| C                      | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base) |
-----------------------------------------------------------------------------
| Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
-----------------------------------------------------------------------------
| C                      | 644.nab_s(peak) |
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| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
-----------------------------------------------------------------------------
| C++, C, Fortran | 607.cactuBSSN_s(base, peak) |
-----------------------------------------------------------------------------
| Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
| Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
| Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000 |
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<td>1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<th>Fortran, C</th>
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### Base Compiler Invocation

C benchmarks:
- icc

Fortran benchmarks:
- ifort

Benchmarks using both Fortran and C:
- ifort icc

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

### 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`

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
Tyrone Camarero ID1100C2R-28
(2.20 GHz, Intel Xeon Gold 6338N)

SPECspeed®2017_fp_base = 175
SPECspeed®2017_fp_peak = 177

CPU2017 License: 006042
Test Sponsor: Netweb Pte Ltd
Tested by: Tyrone Systems

Test Date: Aug-2021
Hardware Availability: Apr-2021
Software Availability: Jun-2021

Base Portability Flags (Continued)

628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
-assume byte_recl
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:
-m64 -std=c11 -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs
-mbranches-within-32B-boundaries -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-LL/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-LL/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icc

644.nab_s: icx

Fortran benchmarks:
ifort

(Continued on next page)
Tyrone Systems  
(Test Sponsor: Netweb Pte Ltd)  
Tyrone Camarero IDI100C2R-28  
(2.20 GHz, Intel Xeon Gold 6338N)  

**SPECspeed®2017_fp_base = 175**  
**SPECspeed®2017_fp_peak = 177**

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<td>Software Availability: Jun-2021</td>
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</tbody>
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---

**Peak Compiler Invocation (Continued)**

Benchmarks using both Fortran and C:

```plaintext
ifort icc
```

Benchmarks using Fortran, C, and C++:

```plaintext
icpc icc ifort
```

---

**Peak Portability Flags**

Same as Base Portability Flags

---

**Peak Optimization Flags**

C benchmarks:

- `619.lbm_s`: basepeak = yes
- `638.imagick_s`: basepeak = yes

Fortran benchmarks:

- `603.bwaves_s`: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPLYPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -gopenmp -nostandard-realloc-lhs -mbranches-within-32B-boundaries -L/usr/local/je5.0.1-64/lib -ljemalloc
- `649.fotonik3d_s`: Same as `603.bwaves_s`
- `654.roms_s`: basepeak = yes

Benchmarks using both Fortran and C:

```plaintext
621.wrf_s: -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div
```

(Continued on next page)
# SPEC CPU®2017 Floating Point Speed Result

## Tyrone Systems

(Test Sponsor: Netweb Pte Ltd)

**CPU2017 License:** 006042  
**Test Sponsor:** Netweb Pte Ltd  
**Tested by:** Tyrone Systems

**Tyrone Camarero IDI100C2R-28**  
**Test Date:** Aug-2021  
**Hardware Availability:** Apr-2021

**2.20 GHz, Intel Xeon Gold 6338N**  
**Tested by:** Tyrone Systems  
**Software Availability:** Jun-2021

### SPECspeed®2017_fp_base = 175

### SPECspeed®2017_fp_peak = 177

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<tr>
<td>607.cactuBSSN_s</td>
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<tr>
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</tr>
<tr>
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<tr>
<td>628.pop2_s</td>
<td>basepeak = yes</td>
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### Peak Optimization Flags (Continued)


- 627.cam4_s: basepeak = yes
- 628.pop2_s: basepeak = yes

### 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:

- http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-CLX-revI.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 CPU®2017 v1.1.8 on 2021-08-25 15:04:09-0400.  
Originally published on 2021-09-28.