## SPEC CPU®2017 Floating Point Speed Result

**Tyrone Systems**  
(Test Sponsor: Netweb Pte Ltd)  
Tyrone Camarero SDI100A2R-22  
(2.60 GHz, Intel Xeon Gold 6348)

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

<table>
<thead>
<tr>
<th>Threading</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads:</td>
<td>184</td>
<td>187</td>
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</table>

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<tr>
<th>Benchmark</th>
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<tr>
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<td>56</td>
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<td>607.cactuBSSN_s</td>
<td>56</td>
<td>261</td>
<td>297</td>
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<td>56</td>
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<td>445</td>
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<tr>
<td>649.fotonik3d_s</td>
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<td>134</td>
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<tr>
<td>654.roms_s</td>
<td>56</td>
<td>187</td>
<td>224</td>
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</tbody>
</table>

### Hardware

**CPU Name:** Intel Xeon Gold 6348  
**Max MHz:** 3500  
**Nominal:** 2600  
**Enabled:** 56 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:** 42 MB I+D on chip per core  
**Memory:** 256 GB (16 x 16 GB 1Rx4 PC4-3200AA-R)  
**Storage:** 1 x 480 GB SATA SSD  
**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 1.1a released Jun-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 set to prefer performance at the cost of additional power usage.
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Results Table

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<th>Seconds</th>
<th>Ratio</th>
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<td>184</td>
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</table>

SPECspeed®2017_fp_base = 184
SPECspeed®2017_fp_peak = 187

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"

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"
MALLOCONF = "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

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

(Continued on next page)
General Notes (Continued)


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 98a61e0915b55891e6a6acaf64d
running on localhost.localdomain Sat Jul 31 09:27:37 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 6348 CPU @ 2.60GHz
  2 "physical id"s (chips)
  112 "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 : 56
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
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

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):             112
On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s):          2
NUMA node(s):       2
Vendor ID:          GenuineIntel
BIOS Vendor ID:     Intel(R) Corporation
CPU family:         6
Model:              106
Model name:         Intel(R) Xeon(R) Gold 6348 CPU @ 2.60GHz

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

Platform Notes (Continued)

BIOS Model name: Intel(R) Xeon(R) Gold 6348 CPU @ 2.60GHz
Stepping: 6
CPU MHz: 1641.530
CPU max MHz: 3500.00000
CPU min MHz: 800.00000
BogoMIPS: 5200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 43008K
NUMA node0 CPU(s): 0-27,56-83
NUMA node1 CPU(s): 28-55,84-111
Flags: fpu vme de pse tsc msr pae mce 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 aperfmperf 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 3nowprefetch cpuid_fault epb cat_l3 invpcid_single intel_pppin ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdtrim aevtx512f avx512fd rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_local split_lock_detect wbinvd dtherm ida arat pln pts avx512vbmi umip pku ospke avx512_vmbmi2 gfni vaes vpmcmqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rpdpid fsrm md_clear pconfig flush_l1d arch_capabilities

/platforminfo cache data

cache size: 43008 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)
node 0 cpus: 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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
node 0 size: 128601 MB
node 0 free: 126284 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
node 1 size: 128972 MB
node 1 free: 123175 MB
node distances:
node 0 0 1
0: 10 20
1: 20 10

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From /proc/meminfo  
MemTotal: 263755836 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

/sbin/tuned-adm active  
Current active profile: throughput-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

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 Multihit): 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/swaps 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

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Platform Notes (Continued)

run-level 3 Jul 31 05:30

SPEC is set to: /home/cpu2017
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/mapper/cl-home xfs 163G 88G 75G 55% /home

From /sys/devices/virtual/dmi/id
  Vendor:         Tyrone Systems
  Product:        Tyrone Camarero SDI100A2R-22
  Product Family: SMC X12
  Serial:         123456789

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 Samsung M393A2K40DB3-CWE 16 GB 1 rank 3200

  BIOS:
    BIOS Vendor:       American Megatrends International, LLC.
    BIOS Version:      1.1a
    BIOS Date:         06/25/2021
    BIOS Revision:     5.22

(End of data from sysinfo program)

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.
==============================================================================

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Compiler Version Notes (Continued)

==============================================================================
| 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++, 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                          |
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved.           |
------------------------------------------------------------------------------

==============================================================================
| Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak) |
------------------------------------------------------------------------------
| Intel(R) Fortran 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.           |
------------------------------------------------------------------------------

==============================================================================
| Fortran, C      | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak) |
------------------------------------------------------------------------------
| Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  |
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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. 
----------------------------------------------------------

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  
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: 
  -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

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Base Optimization Flags (Continued)

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
- L/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
- L/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

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
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

644.nab_s: -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -fiopenmp
-DSPEC_OPENMP -qopt-mem-layout-trans=4
-fimf-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries
-L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:

603.bwaves_s: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512
-03 -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

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1)
-prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/je5.0.1-64/lib -ljemalloc

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactusBSSN_s: basepeak = yes
**SPEC CPU®2017 Floating Point Speed Result**

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**Tyrone Systems**  
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI100A2R-22  
(2.60 GHz, Intel Xeon Gold 6348)

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**CPU2017 License:** 006042  
**Test Date:** Jul-2021

**Test Sponsor:** Netweb Pte Ltd  
**Hardware Availability:** Apr-2021

**Tested by:** Tyrone Systems  
**Software Availability:** Jun-2021

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](http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-CLX-revI.xml)

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