SPEC CPU®2017 Integer Speed Result

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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI100A3U-212
(3.00 GHz,Intel Xeon Gold 5317)

$SPECspeed^{®}2017\_int\_base = 10.2$

$SPECspeed^{®}2017\_int\_peak = 10.3$

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Tyrone Systems

Test Date: Aug-2022

Hardware Availability: Jun-2021

Software Availability: May-2022

Threads			
600.perlbench_s	48	6.01	6.60
602.gcc_s	48	9.14	9.55
605.mcf_s	48	17.4	
620.omnetpp_s	48	6.13	
623.xalancbmk_s	48	17.6	
625.x264_s	48	14.6	15.1
631.deepsjeng_s	48	5.20	
641.leela_s	48	4.24	
648.exchange2_s	48	17.4	
657.xz_s	48	20.5	

SPECspeed®2017_int_base (10.2) ———

SPECspeed®2017_int_peak (10.3) - - - -

Hardware

CPU Name: Intel Xeon Gold 5317

 Max MHz: 3600

 Nominal: 3000

Enabled: 24 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: 18 MB I+D on chip per chip

 Other: None

Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R, running at 2933)

Storage: 1 x 512 GB NVMe SSD

Other: None

Software

OS: Red Hat Enterprise Linux release 8.5 (Ootpa) Kernel 4.18.0-348.el8.x86_64

Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;

Parallel: Yes

Firmware: Version 1.2a released May-2022

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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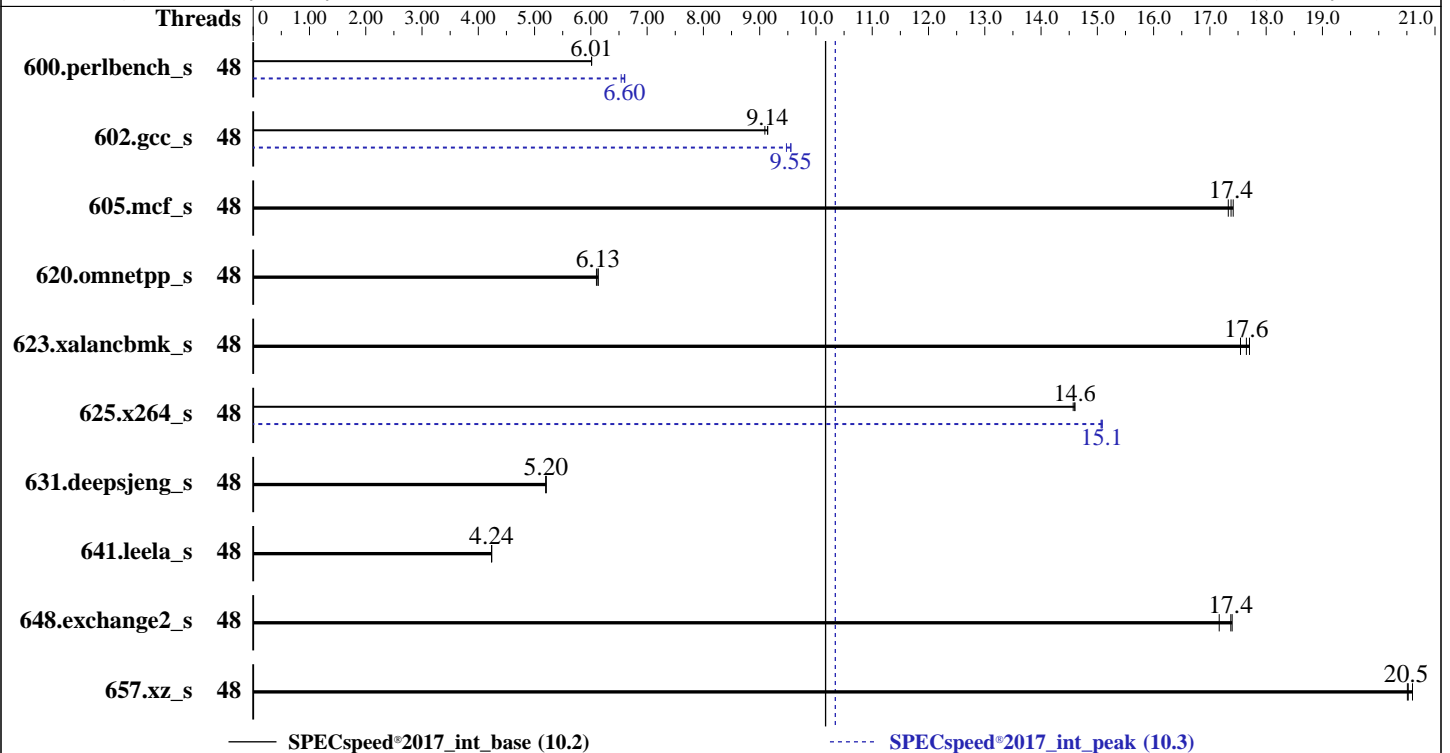
CPU2017 License: 006042	**Test Date:** Aug-2022
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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	48	295	6.01	**295**	**6.01**	295	6.01	48	**269**	**6.60**	271	6.54	269	6.60
602.gcc_s	48	438	9.09	436	9.14	**436**	**9.14**	48	417	9.55	**417**	**9.55**	420	9.48
605.mcf_s	48	272	17.3	271	17.4	**272**	**17.4**	48	272	17.3	271	17.4	**272**	**17.4**
620.omnetpp_s	48	**266**	**6.13**	266	6.13	267	6.10	48	**266**	**6.13**	266	6.13	267	6.10
623.xalancbmk_s	48	80.0	17.7	80.8	17.5	**80.3**	**17.6**	48	80.0	17.7	80.8	17.5	**80.3**	**17.6**
625.x264_s	48	121	14.6	**121**	**14.6**	121	14.6	48	117	15.1	**117**	**15.1**	117	15.1
631.deepsjeng_s	48	275	5.21	276	5.20	**275**	**5.20**	48	275	5.21	276	5.20	**275**	**5.20**
641.leela_s	48	**403**	**4.24**	403	4.24	403	4.24	48	**403**	**4.24**	403	4.24	403	4.24
648.exchange2_s	48	171	17.2	169	17.4	**169**	**17.4**	48	171	17.2	169	17.4	**169**	**17.4**
657.xz_s	48	301	20.5	300	20.6	**301**	**20.5**	48	301	20.5	300	20.6	**301**	**20.5**
SPECspeed®2017_int_base =		**10.2**												
SPECspeed®2017_int_peak =		**10.3**												

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

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

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,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
```

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General Notes (Continued)

```
 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
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
BIOS Settings:
Power Technology = Custom
ENERGY_PERF_BIAS_CFG mode = Maximum Performance
SNC (Sub NUMA) = Enable
KTI Prefetch = Enable
LLC Dead Line Alloc = Disable
Hyper-Threading = Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on icelake2 Tue Aug 30 17:06:25 2022

 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 5317 CPU @ 3.00GHz
       2  "physical id"s (chips)
      48 "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 : 12
       siblings  : 24
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11
       physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11

 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):              48
      On-line CPU(s) list: 0-47
      Thread(s) per core:  2
      Core(s) per socket:  12
      Socket(s):           2
      NUMA node(s):        4
      Vendor ID:           GenuineIntel
      BIOS Vendor ID:      Intel(R) Corporation
      CPU family:          6
      Model:               106
      Model name:          Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz
      BIOS Model name:     Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz
      Stepping:            6
      CPU MHz:             3000.000
```

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Software Availability: May-2022

Platform Notes (Continued)

```
       BogoMIPS:            6000.00
       Virtualization:      VT-x
       L1d cache:           48K
       L1i cache:           32K
       L2 cache:            1280K
       L3 cache:            18432K
       NUMA node0 CPU(s):   0-5,24-29
       NUMA node1 CPU(s):   6-11,30-35
       NUMA node2 CPU(s):   12-17,36-41
       NUMA node3 CPU(s):   18-23,42-47
       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 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 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single
     intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept
     vpid ept_ad fsgsbase tsc_adjust sgx 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 xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
     cqm_mbm_local split_lock_detect wbnoinvd dtherm ida arat pln pts avx512vbmi umip pku
     ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
     avx512_vpopcntdq la57 rdpid sgx_lc fsrm md_clear pconfig flush_l1d arch_capabilities

  /proc/cpuinfo cache data
     cache size : 18432 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 24 25 26 27 28 29
     node 0 size: 257596 MB
     node 0 free: 245101 MB
     node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
     node 1 size: 258045 MB
     node 1 free: 250545 MB
     node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
     node 2 size: 258045 MB
     node 2 free: 250227 MB
     node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
     node 3 size: 258042 MB
     node 3 free: 250184 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:       1056491376 kB
     HugePages_Total:        0
     Hugepagesize:        2048 kB

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

  From /etc/*release* /etc/*version*
     os-release:
       NAME="Red Hat Enterprise Linux"
```

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Platform Notes (Continued)

```
        VERSION="8.5 (Ootpa)"
        ID="rhel"
        ID_LIKE="fedora"
        VERSION_ID="8.5"
        PLATFORM_ID="platform:el8"
        PRETTY_NAME="Red Hat Enterprise Linux 8.5 (Ootpa)"
        ANSI_COLOR="0;31"
    redhat-release: Red Hat Enterprise Linux release 8.5 (Ootpa)
    system-release: Red Hat Enterprise Linux release 8.5 (Ootpa)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:8::baseos

uname -a:
    Linux icelake2 4.18.0-348.el8.x86_64 #1 SMP Mon Oct 4 12:17:22 EDT 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/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 29 15:28

SPEC is set to: /home/cpu2017
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs    402G   39G  363G  10% /home

From /sys/devices/virtual/dmi/id
    Vendor:          Tyrone Systems
    Product:         Tyrone Camarero SDI100A3U-212
    Product Family:  SMC X12

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 M393A8G40AB2-CWE 64 GB 2 rank 3200, configured at 2933

BIOS:
    BIOS Vendor:     American Megatrends International, LLC.
    BIOS Version:    1.2a
    BIOS Date:       05/12/2022
    BIOS Revision:   5.22

(End of data from sysinfo program)
```

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Compiler Version Notes

```
==============================================================================
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
        | 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
        | 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Base Portability Flags

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-DSPEC_LP64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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Base Optimization Flags

C benchmarks:
```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-fno-strict-overflow -L/usr/local/jemalloc64-5.0.1/lib
```

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Peak Optimization Flags (Continued)

600.perlbench_s (continued):
```
-ljemalloc
```

602.gcc_s: `-m64 -std=c11 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX512 -O3`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

605.mcf_s: `basepeak = yes`

625.x264_s: `-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP`
`-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s: `basepeak = yes`

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.html
http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-ICX-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-ICX-revA.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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