## SPEC CPU®2017 Integer Rate Result

**Tyrone Systems**  
(Test Sponsor: Netweb Pte Ltd)  
Tyrone Camarero SDI100A2G-210  
(2.80 GHz, Intel Xeon Gold 6342)  

<table>
<thead>
<tr>
<th>Test Sponsor: Netweb Pte Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by: Tyrone Systems</td>
</tr>
<tr>
<td><strong>CPU2017 License:</strong> 006042</td>
</tr>
<tr>
<td>Test Date: Aug-2021</td>
</tr>
<tr>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Software Availability: Jun-2021</td>
</tr>
</tbody>
</table>

### SPECrate®2017_int_base = 355  
### SPECrate®2017_int_peak = 368

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<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon Gold 6342</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz: 3500</td>
</tr>
<tr>
<td>Nominal: 2800</td>
</tr>
<tr>
<td>Enabled: 48 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable: 1.2 Chips</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3: 36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other: None</td>
</tr>
<tr>
<td>Memory: 256 GB (16 x 16 GB 1Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage: 1 x 250 GB SATA SSD</td>
</tr>
<tr>
<td>Other: None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS: CentOS Linux release 8.4.2105</th>
</tr>
</thead>
<tbody>
<tr>
<td>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</td>
</tr>
<tr>
<td>Parallel: No</td>
</tr>
<tr>
<td>Firmware: Version 1.1a released Jun-2021</td>
</tr>
<tr>
<td>File System: xfs</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage.</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>Copies</th>
<th>CPU Name: Intel Xeon Gold 6342</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Max MHz: 3500</td>
</tr>
<tr>
<td>40</td>
<td>Nominal: 2800</td>
</tr>
<tr>
<td>80</td>
<td>Enabled: 48 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>120</td>
<td>Orderable: 1.2 Chips</td>
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<tr>
<td>160</td>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>200</td>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>240</td>
<td>L3: 36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>280</td>
<td>Other: None</td>
</tr>
<tr>
<td>320</td>
<td>Memory: 256 GB (16 x 16 GB 1Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>360</td>
<td>Storage: 1 x 250 GB SATA SSD</td>
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<tr>
<td>400</td>
<td>Other: None</td>
</tr>
<tr>
<td>440</td>
<td>SPECrate®2017_int_base (355)</td>
</tr>
<tr>
<td>480</td>
<td>SPECrate®2017_int_peak (368)</td>
</tr>
</tbody>
</table>

### SPECrate®2017_int_base = 355

<table>
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<tr>
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<tbody>
<tr>
<td>500.perlbench_r</td>
<td>96</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>96</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>96</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>96</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>96</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>96</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>96</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>96</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
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### SPECrate®2017_int_peak = 368

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<tr>
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</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>96</td>
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<tr>
<td>531.deepsjeng_r</td>
<td>96</td>
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<td>96</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
</tr>
</tbody>
</table>

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**Note:** This document represents the SPEC CPU 2017 Integer Rate test results for Tyrone Systems' system configuration as of August 2021. The results include the SPECrate®2017_int_base and SPECrate®2017_int_peak scores, along with detailed specifications of the hardware and software configurations used during the test.
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
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<td>500.perlbench_r</td>
<td>96</td>
<td>586</td>
<td>261</td>
<td>589</td>
<td>259</td>
<td>595</td>
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<tr>
<td>502.gcc_r</td>
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<td>515</td>
<td>264</td>
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<td>262</td>
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<td>505.mcf_r</td>
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<td>276</td>
<td>561</td>
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<td>96</td>
<td>686</td>
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<td>682</td>
<td>185</td>
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<td>185</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
<td>227</td>
<td>447</td>
<td>226</td>
<td>448</td>
<td>227</td>
<td>447</td>
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<tr>
<td>525.x264_r</td>
<td>96</td>
<td>219</td>
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<td>218</td>
<td>772</td>
<td>219</td>
<td>768</td>
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<td>531.deepsjeng_r</td>
<td>96</td>
<td>379</td>
<td>290</td>
<td>378</td>
<td>291</td>
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<td>541.leela_r</td>
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<td>547</td>
<td>291</td>
<td>547</td>
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<td>549</td>
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<tr>
<td>548.exchange2_r</td>
<td>96</td>
<td>322</td>
<td>781</td>
<td>321</td>
<td>784</td>
<td>321</td>
<td>784</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
<td>525</td>
<td>198</td>
<td>525</td>
<td>197</td>
<td>525</td>
<td>197</td>
</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"

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH =
    "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

### 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.:
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
Tyrone Camarero SDI100A2G-210
(2.80 GHz, Intel Xeon Gold 6342)

SPECrate®2017_int_base = 355
SPECrate®2017_int_peak = 368

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)

numactl --interleave=all runcpu <etc>

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 982a61ec0915b55891ef0e16acafc64d
running on localhost.localdomain Fri Aug 13 07:45:58 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 6342 CPU @ 2.80GHz
  2 "physical id"s (chips)
  96 "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 : 24
siblings : 48
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
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

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): 96
On-line CPU(s) list: 0-95
Thread(s) per core: 2

(Continued on next page)
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**CPU2017 License:** 006042  
**Test Sponsor:** Netweb Pte Ltd  
**Tested by:** Tyrone Systems

**Platform Notes (Continued)**

- **Core(s) per socket:** 24  
- **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 6342 CPU @ 2.80GHz  
- **Stepping:** 6  
- **CPU MHz:** 3288.022  
- **CPU max MHz:** 3500.0000  
- **CPU min MHz:** 800.0000  
- **BogoMIPS:** 5600.00  
- **Virtualization:** VT-x  
- **L1d cache:** 48K  
- **L1i cache:** 32K  
- **L2 cache:** 1280K  
- **L3 cache:** 36864K  
- **NUMA node0 CPU(s):** 0-23,48-71  
- **NUMA node1 CPU(s):** 24-47,72-95  
- **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 pdpie lgdt ldtr se Linux pqe intel_pml4 aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrp pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault ebpx cat_l3 invpcid_single intel_pni ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vmni flexpriority ept vpid ept_ad fsgbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cmq rd_t_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cmq_llc cmq_occup_llc cmq_mbb_total cmq_mbb_local split_lock_detect wbnoinvd dtherm ida arat pln pts avx512vbmi umpk pku ospk avx512_vbmi2 gfn va vpcimulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrmd clear pconfig flush_l1d arch_capabilities

From `numactl --hardware`

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Platform Notes (Continued)

node 1 size: 128974 MB
node 1 free: 128003 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 263759384 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

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):
CVE-2018-3620 (L1 Terminal Fault):
Microarchitectural Data Sampling:
CVE-2017-5754 (Meltdown):
CVE-2018-3639 (Speculative Store Bypass):
Not affected
Not affected
Not affected
Not affected
Mitigation: Speculative Store Bypass disabled via prctl and seccomp

(Continued on next page)
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Platform Notes (Continued)

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 Dec 31 19:13
SPEC is set to: /home/cpu2017

Filesystem          Type  Size  Used Avail Use% Mounted on
/dev/mapper/cl-home xfs   163G  108G   56G  67% /home

From /sys/devices/virtual/dmi/id
Vendor:         Tyrone Systems
Product:        SDI100A2G-210
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      | 500.perlbench_r(peak) 557.xz_r(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.

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Compiler Version Notes (Continued)

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<th></th>
<th>502.gcc_r(peak)</th>
</tr>
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| Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
| Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

<table>
<thead>
<tr>
<th></th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)</th>
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<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
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Base Compiler Invocation

C benchmarks:
  icx

C++ benchmarks:
  icpx

Fortran benchmarks:
  ifort
<table>
<thead>
<tr>
<th>Base Portability Flags</th>
</tr>
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<tbody>
<tr>
<td>500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>502.gcc_r: -DSPEC_LP64</td>
</tr>
<tr>
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<td>557.xz_r: -DSPEC_LP64</td>
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<table>
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<tr>
<th>Base Optimization Flags</th>
</tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math</td>
</tr>
<tr>
<td>-fllto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries</td>
</tr>
<tr>
<td>-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin</td>
</tr>
<tr>
<td>-lqkmalloc</td>
</tr>
</tbody>
</table>

| C++ benchmarks:          |
| -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -fllto |
| -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries |
| -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin |
| -lqkmalloc |

| Fortran benchmarks:      |
| -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div |
| -qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte |
| -auto -mbranches-within-32B-boundaries |
| -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin |
| -lqkmalloc |

<table>
<thead>
<tr>
<th>Peak Compiler Invocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C benchmarks (except as noted below):</td>
</tr>
<tr>
<td>icx</td>
</tr>
<tr>
<td>500.perlbench_r: icc</td>
</tr>
</tbody>
</table>

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

557.xz_r: icc

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -03 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -fto
-Ofast(pass 1) -03 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: basepeak = yes

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI100A2G-210
(2.80 GHz, Intel Xeon Gold 6342)

SPECrate®2017_int_base = 355
SPECrate®2017_int_peak = 368

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

Peak Optimization Flags (Continued)

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-O3 -ffast-math -qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
520.omnetpp_r: basepeak = yes
523.xalancbmk_r: basepeak = yes
531.deepsjeng_r: basepeak = yes
541.leela_r: basepeak = yes

Fortran benchmarks:
548.exchange2_r: basepeak = yes

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

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml
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 2021-08-13 07:45:58-0400.
Report generated on 2021-09-21 16:17:14 by CPU2017 PDF formatter v6442.
Originally published on 2021-09-21.