SPEC CPU®2017 Integer Rate Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
DIT400TR-55R/55RL
(2.80 GHz,Intel Xeon Gold 6242)

SPECrater®2017_int_base = 201
SPECrater®2017_int_peak = 209

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

Test Date: Feb-2020
Hardware Availability: Sep-2019
Software Availability: Aug-2019

Copies

<table>
<thead>
<tr>
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</tr>
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</tr>
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</tr>
<tr>
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<td>64</td>
</tr>
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<td>64</td>
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<td>64</td>
</tr>
<tr>
<td>xz_r</td>
<td>64</td>
</tr>
</tbody>
</table>

CPU Name: Intel Xeon Gold 6242
Max MHz: 3900
Nominal: 2800
Enabled: 32 cores, 2 chips, 2 threads/core
Orderable: 1, 2 (chip)s
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 22 MB I+D on chip per chip
Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)
Storage: 1 x 480 GB SSD
Other: None

OS: CentOS Linux release 7.7.1908 (Core)
Compiler: C/C++: Version 19.0.4.243 of Intel C/C++
Compiler Build 20190416 for Linux;
Fortran: Version 19.0.4.243 of Intel Fortran
Compiler Build 20190416 for Linux
Parallel: No
Firmware: Version V8.101 released Aug-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: Jemalloc memory allocator V5.0.1
Power Management: Default
## Results Table

<table>
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<tr>
<th>Benchmark</th>
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**SPECrate®2017_int_base = 201**

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

### Compiler Notes

SPEC has learned that this result, which used an evaluation compiler, was submitted contrary to the compiler license terms.

Intel has granted a one-time waiver for this result.

### 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/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
```
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Copyright 2017-2020 Standard Performance Evaluation Corporation

Test Date: Feb-2020
Test Sponsor: Netweb Pte Ltd
Tested by: Netweb

General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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.:
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed81e6e46a485a0011
running on NODE3 Fri Feb 14 15:06:41 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 6242 CPU @ 2.80GHz
  2 "physical id"s (chips)
  64 "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 : 16
siblings : 32
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lsCPU:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63

(Continued on next page)
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Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6242 CPU @ 2.80GHz
Stepping: 7
CPU MHz: 1200.048
CPU max MHz: 3900.0000
CPU min MHz: 1200.0000
BogoMIPS: 5600.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15,32-47
NUMA nodel CPU(s): 16-31,48-63

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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc aperfmperf eagerfpu nopl pmlsb mpx vmx setblks vmxest tm2 ssse3 sdbg fmarith xtpr pdcm pse36 dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch ebx cat_l3 cdp l3 intel_pni intel_pt ssbd mba ibrs ibpb ibrs_enabled tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512if vadd512 dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaveprec xgetbv1 cqm_l1a cqm_l1b cqm_l1d cqm_pdf cqm_mbb cqm_mbb_total cqm_mbb_local dtherm ida arat pni

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 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
Node 0 Size: 195229 MB
Node 0 Free: 190139 MB
Node 1 CPUs: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
Node 1 Size: 196608 MB
Node 1 Free: 191950 MB

(Continued on next page)
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<td>Software Availability: Aug-2019</td>
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</table>

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**Platform Notes (Continued)**

node distances:

- node 0 1
- 0: 10 21
- 1: 21 10

From /proc/meminfo

- MemTotal: 394860784 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

- centos-release: CentOS Linux release 7.7.1908 (Core)
- centos-release-upstream: Derived from Red Hat Enterprise Linux 7.7 (Source)
- os-release:
  - NAME="CentOS Linux"
  - VERSION="7 (Core)"
  - ID="centos"
  - ID_LIKE="rhel fedora"
  - VERSION_ID="7"
  - PRETTY_NAME="CentOS Linux 7 (Core)"
  - ANSI_COLOR="0;31"
  - CPE_NAME="cpe:/o:centos:centos:7"
- redhat-release: CentOS Linux release 7.7.1908 (Core)
- system-release: CentOS Linux release 7.7.1908 (Core)
- system-release-cpe: cpe:/o:centos:centos:7

uname -a:

```bash
Linux NODE3 3.10.0-1062.el7.x86_64 #1 SMP Wed Aug 7 18:08:02 UTC 2019 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- 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: Load fences, __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Full retpoline, IBPB

run-level 3 Feb 13 18:22

SPEC is set to: /home/cpu2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/mapper/centos-home</td>
<td>xfs</td>
<td>392G</td>
<td>138G</td>
<td>255G</td>
<td>36%</td>
<td>/home</td>
</tr>
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**Test Sponsor:** Netweb Pte Ltd  
**Tested by:** Netweb

**Platform Notes (Continued)**

From /sys/devices/virtual/dmi/id
- BIOS: American Megatrends Inc. V8.101 08/02/2019  
- Vendor: Tyrone Systems  
- Product: DIT400TR-55R  
- Serial: empty

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 Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)

**Compiler Version Notes**

```
<table>
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### Compiler Version Notes (Continued)

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icc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC. |

| C++ | 523.xalancbmk_r(peak) |
|-----------------------------------------------|
| Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.4.243 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.  
icpc: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC. |

| C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)  
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**Compiler Version Notes (Continued)**

Fortran | 548.exchange2_r(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.243 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
ifort: NOTE: The evaluation period for this product ends on 2-nov-2019 UTC.

---

**Base Compiler Invocation**

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

---

**Base Portability Flags**

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
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

---

**Base Optimization Flags**

C benchmarks:
-W1, -z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc

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#### Base Optimization Flags (Continued)

C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `-qopt-mem-layout-trans=4`  
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`  
- `-lqkmalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`  
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64`  
- `-lqkmalloc`

#### Peak Compiler Invocation

**C benchmarks (except as noted below):**

```bash
icc -m64 -std=c11
```


**C++ benchmarks (except as noted below):**

```bash
icpc -m64
```

523.xalancbmk_r: `icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/ia32_lin`

**Fortran benchmarks:**

```bash
ifort -m64
```

#### 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: `--D_FILE_OFFSET_BITS=64 --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`
SPEC CPU®2017 Integer Rate Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)
DIT400TR-55R/55RL
(2.80 GHz, Intel Xeon Gold 6242)

 SPECrate®2017_int_base = 201
 SPECrate®2017_int_peak = 209

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

Test Date: Feb-2020
Hardware Availability: Sep-2019
Software Availability: Aug-2019

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc

502.gcc_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=4
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc

523.xalancbmk_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=4
-L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.243/linux/compiler/lib/intel64
-lqkmalloc
**SPEC CPU®2017 Integer Rate Result**

**Tyrone Systems**  
(Test Sponsor: Netweb Pte Ltd)  
DIT400TR-55R/55RL  
(2.80 GHz, Intel Xeon Gold 6242)

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The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/TyroneIT-Platform-Settings-V1-CLX-revA.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/TyroneIT-Platform-Settings-V1-CLX-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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