Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

SPEC CPU® 2017 Integer Rate Result

Tyrone Camarero TDI100C3R-212
(2.40 GHz, Intel Xeon Gold 6336Y)

SPECrates 2017_int_base = 338
SPECrates 2017_int_peak = 347

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

Test Date: Mar-2023
Hardware Availability: Apr-2021

Software Availability: May-2022

Copies

500.perlbench_r 96
502.gcc_r 96
505.mcf_r 96
520.omnetpp_r 96
523.xalancbmk_r 96
525.x264_r 96
531.deepsjeng_r 96
541.leela_r 96
548.exchange2_r 96
557.xz_r 96

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548.exchange2_r
557.xz_r

Hardware

CPU Name: Intel Xeon Gold 6336Y
Max MHz: 3600
Nominal: 2400
Enabled: 48 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: 36 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 512 GB NVMe SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 8.5 (Ootpa)
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: No
Firmware: Version PEGC0042 released Jan-2023
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: BIOS and OS set to prefer performance at the cost of additional power usage.
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
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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 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This result is left in the SPEC results database for historical reference.

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"
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CPU2017 License: 006042  
Test Sponsor: Netweb Pte Ltd  
Tested by: Tyrone Systems  
Test Date: Mar-2023  
Hardware Availability: Apr-2021  
Software Availability: May-2022

General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM  
memory using Red Hat Enterprise Linux 8.4  
Transparent Huge Pages enabled by default  
Filesystem page cache synced and cleared with:  
sync; echo 1 > /proc/sys/vm/drop_caches  
runcpu command invoked through numactl i.e.:  
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 = Custom  
Power Performance Tuning = BIOS Controls EPB  
ENERGY_PERF_BIAS_CFG mode = Extreme Performance  
SNC (Sub NUMA) = Enable  
KTI Prefetch = Enable  
LLC Dead Line Alloc = Disable  
Hyper-Threading = Enabled

SysInfo program /home/cpu2017/bin/sysinfo  
Rev: r6732 of 2022-11-07 fd9c89b7ed5c36ae2c92cc097bec197  
runtime on Tyronespec Mon Mar 6 13:52:05 2023

SUT (System Under Test) info as seen by some common utilities.

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5. sysinfo process ancestry  
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7. lsmpu  
8. numacl --hardware  
9. /proc/meminfo  
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11. Systemd service manager version: systemctl 239 (239-51.el8)  
12. Failed units, from systemctl list-units --state=failed  
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14. Linux kernel boot-time arguments, from /proc/cmdline  
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19. /sys/kernel/mm/transparent_hugepage/khugepaged  
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23. /sys/devices/virtual/dmi/id
24. dmidecode
25. BIOS

２２. Disk information ２３. /sys/devices/virtual/dmi/id ２４. dmidecode ２５. BIOS

１．uname -a
Linux Tyronenspec 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

２．w
13:52:05 up 4 min, 1 user, load average: 3.04, 1.81, 0.77
USER   TTY     FROM              LOGIN@   IDLE   JCPU   PCPU  WHAT
root   tty1    -               13:49    2.00s  1.24s  0.01s  -bash

３．Username
From environment variable $USER: root

４．ulimit -a
core file size (blocks, -c) 0
data seg size (kbytes, -d) unlimited
ruid, suid, sgid, nsgid bits (bits, -e) 0
file size (blocks, -f) unlimited
pending signals (-i) 4126654
max locked memory (kbytes, -l) 64
max memory size (kbytes, -m) unlimited
open files (-n) 1024
pipe size (512 bytes, -p) 8
POSIX message queues (bytes, -q) 819200
real-time priority (-r) 0
stack size (kbytes, -s) unlimited
cpu time (seconds, -t) unlimited
max user processes (-u) 4126654
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited

５．sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 18
login -- root
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=96 -c
ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=48 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune_base,peak -o all intrate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=96 --configfile
ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=48 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune_base,peak --output_format all --nopower
--runmode rate --tune base,peak --size referate intrate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

６．/proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 6336Y CPU @ 2.40GHz
vendor_id : GenuineIntel

(Continued on next page)
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**Platform Notes (Continued)**

cpu family : 6
model : 106
stepping : 6
microcode : 0xd0002e0
bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores : 24
siblings : 48
2 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-23
physical id 1: core ids 0-23
physical id 0: apicids 0-47
physical id 1: apicids 64-111
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

---

7. lscpu

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
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 6336Y CPU @ 2.40GHz
BIOS Model name: Intel(R) Xeon(R) Gold 6336Y CPU @ 2.40GHz
Stepping: 6
CPU MHz: 1544.119
CPU max MHz: 3600.0000
CPU min MHz: 800.0000
BogoMIPS: 4800.00
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 mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single intel_pipn ssbd ibrs ibpb stibp ibrs_enhanced tpr_shadow vnumi flexpriority ept pef_ad fsgsbase tsc_adjust

(Continued on next page)
Platform Notes (Continued)

8. `numactl --hardware`
   NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 2 nodes (0-1)
   node 0 cpus: 0-23,48-71
   node 0 size: 515676 MB
   node 0 free: 514760 MB
   node 1 cpus: 24-47,72-95
   node 1 size: 516045 MB
   node 1 free: 513834 MB
   node distances:
   node   0   1
   0:  10  20
   1:  20  10

9. `/proc/meminfo`
   MemTotal: 1056483628 kB

10. `who -r`
    run-level 3 Mar 6 13:50

11. Systemd service manager version: systemd 239 (239-51.el8)
    Default Target Status
    multi-user degraded

12. Failed units, from systemctl list-units --state=failed
    UNIT LOAD ACTIVE SUB DESCRIPTION
    * systemd-udev-settle.service loaded failed failed udev Wait for Complete Device Initialization

13. Services, from systemctl list-unit-files
    STATE UNIT FILES
    enabled  ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon
             atd auditd autotv8 avahi-daemon bluetooth chrony crond cups display-manager firewalld gdm
             getty@ import-state insights-client-boot iqrbalance iscsi iscsi-onboot kdump ksm ksmtuned
             libstoragegmgt libvirtd loadmodules lvmp2-monitor mdlog mdmonitor microcode multipathd
             nis-domainname nvidia-hibernate nvidia-resume nvidia-suspend nvmef-boot-connections
             ostree-remount qemu-guest-agent rhsmcertd rpbind rsyslog rtkit-daemon selinux-autorelabel-mark
             seps5 smartd sshd ssd ds syslog timedatex tuned usisks vdo vguard vmtoolsd
    disabled  arp-ethers blk-availability bblty canberra-system-bootup canberra-system-shutdown
              canberra-system-shutdown-reboot chrony-wait console-getty cpupower cups-browsed debug-shell
              dnsmasq ebtables gssproxy httpd httpd@ initial-setup initial-setup-reconfiguration iprump
              ipv6 lnufvad iprdump lobbies lxc-client libnfs-10 libnfs-11 1vm2-monitor mdmonitor microcode multipathd
              nis-domainname nvidia-hibernate nvidia-resume nvidia-suspend nvmef-boot-connections
              ostree-remount qemu-guest-agent rhsmcertd rpbind rsyslog rtkit-daemon selinux-autorelabel-mark
              seps5 smartd sshd ssd ds syslog timedatex tuned usisks vdo vguard vmtoolsd
    generated  SystemTap compile-server gcc-toolset-9-systemtap scripts startup
    indirect  spice-vdagentd ssd-autofs ssd-kcm ssd-nns ssd-pac ssd-pam ssd-ssh ssd-sudo virtlockd
    masked    systemd-timedated (Continued on next page)
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Platform Notes (Continued)

14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=(hd1,gpt2)/vmlinuz-4.18.0-348.el8.x86_64
root=/dev/mapper/rhel-root
ro
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
rhgb
quiet

15. cpupower frequency-info
   analyzing CPU 0:
   current policy: frequency should be within 800 MHz and 3.60 GHz.
   The governor "performance" may decide which speed to use
   within this range.
   boost state support:
   Supported: yes
   Active: yes

16. tuned-adm active
   Current active profile: throughput-performance

17. sysctl
   kernel.numa_balancing  1
   kernel.randomize_va_space  2
   vm.compartment_proactiveness  0
   vm.dirty_background_bytes  0
   vm.dirty_background_ratio  10
   vm.dirty_bytes  0
   vm.dirty_expire_centisecs  3000
   vm.dirty_ratio  40
   vm.dirty_writeback_centisecs  500
   vm.dirtytime_expire_seconds  43200
   vm.extfrag_threshold  500
   vm.min_unmapped_ratio  1
   vm.nr_hugepages  0
   vm.nr_hugepages_mempolicy  0
   vm.nr_overcommit_hugepages  0
   vm.swappiness  10
   vm.watermark_boost_factor  15000
   vm.watermark_scale_factor  10
   vm.zone_reclaim_mode  0

18. /sys/kernel/mm/transparent_hugepage
    defrag always defer defer+madvis[e] never
    enabled [always] madvisor never
    hpage_pmd_size  2097152
    shmem_enabled always within_size advise [never] deny force

19. /sys/kernel/mm/transparent_hugepage/khugepaged
    alloc_sleep_millisecs  60000
    defrag  1
    max_ptes_none  511
(Continued on next page)
Platform Notes (Continued)

```
max_ptes_swap              64
pages_to_scan            4096
scan_sleep_millisecs    10000
```

20. OS release
From /etc/*-release /etc/*-version
os-release     Red Hat Enterprise Linux 8.5 (Ootpa)
redhat-release Red Hat Enterprise Linux release 8.5 (Ootpa)
system-release Red Hat Enterprise Linux release 8.5 (Ootpa)

   itlb_multihit        Not affected
   l1tf                 Not affected
   mds                  Not affected
   meltdown             Not affected
   spec_store_bypass   Mitigation: Speculative Store Bypass disabled via prctl and seccomp
   spectre_v1           Mitigation: usercopy/swapgs barriers and __user pointer sanitization
   spectre_v2           Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
   srbds                Not affected
   tsx_async_abort      Not affected

For more information, see the Linux documentation on hardware vulnerabilities, for example

22. Disk information
SPEC is set to: /home/cpu2017
```
Filesystem            Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   402G  210G  192G  53% /home
```

23. /sys/devices/virtual/dmi/id
Vendor:         TyroneSystems
Product:        TDI100C3R-212
Product Family: Family
Serial:         2X20382301

24. dmidecode
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 SMIOS" standard.
Memory:
   16x Samsung M393A8G40AB2-CWE 64 GB 2 rank 3200

25. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: PEGC0042
BIOS Date: 01/16/2023
BIOS Revision: 5.22
## Compiler Version Notes

<table>
<thead>
<tr>
<th></th>
<th>502.gcc_r(peak)</th>
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<tbody>
<tr>
<td>C</td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2022.1.0 Build 20220316 Copyright (C) 1985-2022 Intel Corporation. All rights reserved.</td>
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<tr>
<td></td>
<td>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.</td>
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<td>Fortran</td>
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</tr>
</tbody>
</table>

## Base Compiler Invocation

**C benchmarks:**
- icx

**C++ benchmarks:**
- icpx

**Fortran benchmarks:**
- ifx
### Base Portability Flags

```plaintext
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
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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: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-strict-overflow
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc32-5.0.1/lib
-ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: basepeak = yes

C++ benchmarks:

(Continued on next page)
### Peak Optimization Flags (Continued)

520.omnetpp_r: basepeak = yes
523.xalancbmk_r: basepeak = yes
530.deepsjeng_r: basepeak = yes
541.leela_r: basepeak = yes

For Fortran benchmarks:
548.exchange2_r: 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-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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