SPEC CPU®2017 Integer Speed Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SQI200A2R-224
(2.40 GHz,Intel Xeon Gold 6448H)

$SPECspeed®2017\_int\_base = 12.1$

$SPECspeed®2017\_int\_peak = 12.4$

CPU2017 License: 006042
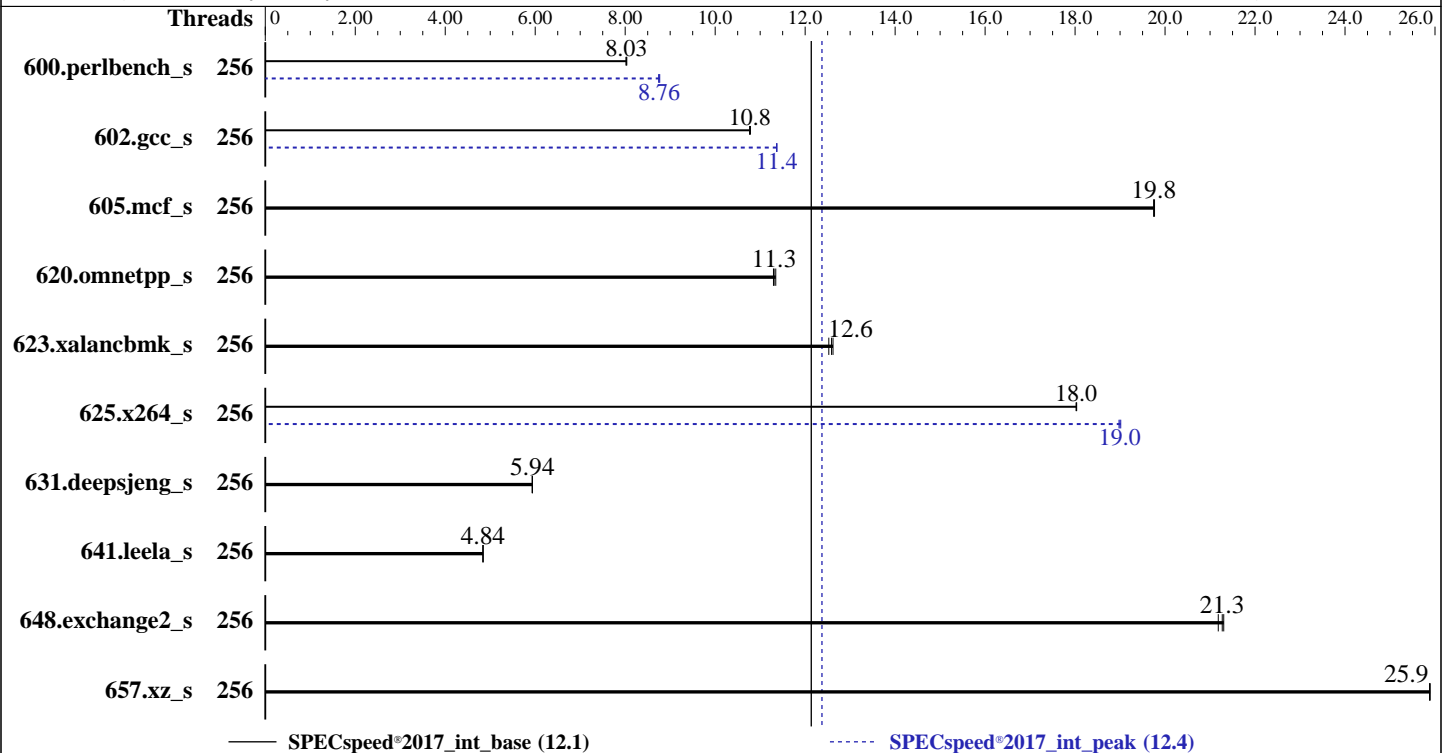
Test Sponsor: Netweb Pte Ltd

Tested by: Tyrone Systems

Test Date: Mar-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023

Threads		Result
600.perlbench_s	256	8.03 / 8.76
602.gcc_s	256	10.8 / 11.4
605.mcf_s	256	19.8
620.omnetpp_s	256	11.3
623.xalancbmk_s	256	12.6
625.x264_s	256	18.0 / 19.0
631.deepsjeng_s	256	5.94
641.leela_s	256	4.84
648.exchange2_s	256	21.3
657.xz_s	256	25.9

Scale: 0 2.00 4.00 6.00 8.00 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0 26.0

—— SPECspeed®2017_int_base (12.1) ------ SPECspeed®2017_int_peak (12.4)

Hardware

CPU Name: Intel Xeon Gold 6448H
  Max MHz: 4100
  Nominal: 2400
Enabled: 128 cores, 4 chips, 2 threads/core
Orderable: 1,2 4 chips
Cache L1: 32 KB I + 48 KB D on chip per core
  L2: 2 MB I+D on chip per core
  L3: 60 MB I+D on chip per chip
  Other: None
Memory: 512 GB (16 x 32 GB 1Rx4 PC5-4800AA-R)
Storage: 1 x 960 GB NVMe
Other: CPU Cooling: Air

Software

OS: Red Hat Enterprise Linux 9.3 (Plow)
5.14.0-362.13.1.el9_3.x86_64
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: Version 1.5a released Dec-2023
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

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	256	221	8.02	221	8.04	**221**	**8.03**	256	**203**	**8.76**	203	8.74	202	8.77
602.gcc_s	256	**370**	**10.8**	369	10.8	370	10.8	256	350	11.4	**350**	**11.4**	350	11.4
605.mcf_s	256	**239**	**19.8**	239	19.8	239	19.7	256	**239**	**19.8**	239	19.8	239	19.7
620.omnetpp_s	256	**144**	**11.3**	144	11.3	144	11.3	256	**144**	**11.3**	144	11.3	144	11.3
623.xalancbmk_s	256	112	12.6	113	12.5	**113**	**12.6**	256	112	12.6	113	12.5	**113**	**12.6**
625.x264_s	256	**97.9**	**18.0**	97.9	18.0	97.8	18.0	256	93.0	19.0	**92.9**	**19.0**	92.8	19.0
631.deepsjeng_s	256	241	5.94	242	5.93	**241**	**5.94**	256	241	5.94	242	5.93	**241**	**5.94**
641.leela_s	256	**353**	**4.84**	353	4.84	352	4.84	256	**353**	**4.84**	353	4.84	352	4.84
648.exchange2_s	256	139	21.2	**138**	**21.3**	138	21.3	256	139	21.2	**138**	**21.3**	138	21.3
657.xz_s	256	239	25.9	**239**	**25.9**	239	25.9	256	239	25.9	**239**	**25.9**	239	25.9
SPECspeed®2017_int_base =		**12.1**												
SPECspeed®2017_int_peak =		**12.4**												

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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/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 Red Hat Enterprise Linux 8.4
 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>
 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
```

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

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CPU2017 License: 006042		**Test Date:**	Mar-2024
Test Sponsor:	Netweb Pte Ltd	**Hardware Availability:**	Jan-2023
Tested by:	Tyrone Systems	**Software Availability:**	Dec-2023

General Notes (Continued)

```
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
KTI Prefetch = Enable
LLC Dead Line Alloc = Disable

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Thu Mar 28 10:22:20 2024

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

 -----------------------------------------------------------
 Table of contents
 -----------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 252 (252-18.el9)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode
 23. BIOS
 -----------------------------------------------------------

 -----------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-362.13.1.el9_3.x86_64 #1 SMP PREEMPT_DYNAMIC Fri Nov 24 01:57:57 EST
   2023 x86_64 x86_64 x86_64 GNU/Linux

 -----------------------------------------------------------
 2. w
   10:22:20 up 23:28,  2 users,  load average: 0.01, 0.02, 3.38
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       Wed10    4.00s  0.96s  0.00s -bash
   root     tty2       Wed10    23:26m 0.01s  0.01s -bash
```

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Platform Notes (Continued)

```
--------------------------------------------------------
3. Username
  From environment variable $USER:  root


--------------------------------------------------------
4. ulimit -a
  real-time non-blocking time  (microseconds, -R) unlimited
  core file size              (blocks, -c) 0
  data seg size               (kbytes, -d) unlimited
  scheduling priority         (-e) 0
  file size                   (blocks, -f) unlimited
  pending signals             (-i) 2062114
  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) 2062114
  virtual memory              (kbytes, -v) unlimited
  file locks                  (-x) unlimited


--------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
 login -- root
 -bash
 -bash
 runcpu --nobuild --action validate --define default-platform-flags -c
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base,peak -o all --define
   intspeedaffinity --define smt-on --define drop_caches intspeed
 runcpu --nobuild --action validate --define default-platform-flags --configfile
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base,peak --output_format all
   --define intspeedaffinity --define smt-on --define drop_caches --nopower --runmode speed --tune base:peak
   --size refspeed intspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.005/templogs/preenv.intspeed.005.0.log --lognum 005.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017


--------------------------------------------------------
6. /proc/cpuinfo
    model name     : Intel(R) Xeon(R) Gold 6448H
    vendor_id      : GenuineIntel
    cpu family     : 6
    model          : 143
    stepping       : 8
    microcode      : 0x2b0004d0
    bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
    cpu cores      : 32
    siblings       : 64
    4 physical ids (chips)
    256 processors (hardware threads)
    physical id 0: core ids 0-31
    physical id 1: core ids 0-31
    physical id 2: core ids 0-31
    physical id 3: core ids 0-31
    physical id 0: apicids 0-63
    physical id 1: apicids 128-191
```

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Platform Notes (Continued)

```
     physical id 2: apicids 256-319
     physical id 3: apicids 384-447
  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 2.37.4:
    Architecture:                    x86_64
    CPU op-mode(s):                  32-bit, 64-bit
    Address sizes:                   46 bits physical, 57 bits virtual
    Byte Order:                      Little Endian
    CPU(s):                          256
    On-line CPU(s) list:             0-255
    Vendor ID:                       GenuineIntel
    BIOS Vendor ID:                  Intel(R) Corporation
    Model name:                      Intel(R) Xeon(R) Gold 6448H
    BIOS Model name:                 Intel(R) Xeon(R) Gold 6448H
    CPU family:                      6
    Model:                           143
    Thread(s) per core:              2
    Core(s) per socket:              32
    Socket(s):                       4
    Stepping:                        8
    CPU max MHz:                     4100.0000
    CPU min MHz:                     800.0000
    BogoMIPS:                        4800.00
    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 tsc_known_freq 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 cat_l2
                                     cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
                                     ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase
                                     tsc_adjust bmi1 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 avx_vnni avx512_bf16
                                     wbnoinvd dtherm ida arat pln pts hfi vnmi avx512vbmi umip pku ospke
                                     waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                                     avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                                     enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16
                                     avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities
    Virtualization:                  VT-x
    L1d cache:                       6 MiB (128 instances)
    L1i cache:                       4 MiB (128 instances)
    L2 cache:                        256 MiB (128 instances)
    L3 cache:                        240 MiB (4 instances)
    NUMA node(s):                    4
    NUMA node0 CPU(s):               0-31,128-159
    NUMA node1 CPU(s):               32-63,160-191
    NUMA node2 CPU(s):               64-95,192-223
    NUMA node3 CPU(s):               96-127,224-255
    Vulnerability Gather data sampling: Not affected
    Vulnerability Itlb multihit:     Not affected
    Vulnerability L1tf:              Not affected
    Vulnerability Mds:               Not affected
```

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Platform Notes (Continued)

```
  Vulnerability Meltdown:           Not affected
  Vulnerability Mmio stale data:    Not affected
  Vulnerability Retbleed:           Not affected
  Vulnerability Spec rstack overflow: Not affected
  Vulnerability Spec store bypass:  Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:         Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:         Mitigation; Enhanced / Automatic IBRS, IBPB conditional, RSB filling,
                                    PBRSB-eIBRS SW sequence
  Vulnerability Srbds:              Not affected
  Vulnerability Tsx async abort:    Not affected

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL  SETS PHY-LINE COHERENCY-SIZE
      L1d      48K       6M  12 Data            1    64      1           64
      L1i      32K       4M   8 Instruction     1    64      1           64
      L2        2M     256M  16 Unified         2  2048      1           64
      L3       60M     240M  15 Unified         3 65536      1           64

  --------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 4 nodes (0-3)
    node 0 cpus: 0-31,128-159
    node 0 size: 128638 MB
    node 0 free: 91593 MB
    node 1 cpus: 32-63,160-191
    node 1 size: 129008 MB
    node 1 free: 94781 MB
    node 2 cpus: 64-95,192-223
    node 2 size: 128954 MB
    node 2 free: 95680 MB
    node 3 cpus: 96-127,224-255
    node 3 size: 128992 MB
    node 3 free: 95333 MB
    node distances:
    node   0   1   2   3
      0:  10  21  21  21
      1:  21  10  21  21
      2:  21  21  10  21
      3:  21  21  21  10

  --------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       527968780 kB

  --------------------------------------------------------------
  10. who -r
    run-level 3 Mar 27 10:54

  --------------------------------------------------------------
  11. Systemd service manager version: systemd 252 (252-18.el9)
    Default Target  Status
    multi-user      running

  --------------------------------------------------------------
  12. Services, from systemctl list-unit-files
    STATE           UNIT FILES
    enabled         ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                    accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker firewalld
                    gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt
```

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Platform Notes (Continued)

```
                      lm_sensors low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd
                      nis-domainname nvmefc-boot-connections ostree-remount pmcd pmie pmlogger
                      power-profiles-daemon qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon
                      selinux-autorelabel-mark smartd sshd sssd switcheroo-control sysstat systemd-boot-update
                      systemd-network-generator tuned udisks2 upower vgauthd virtqemud vmtoolsd
  enabled-runtime     systemd-remount-fs
  disabled            arp-ethers autofs blk-availability brltty canberra-system-bootup canberra-system-shutdown
                      canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
                      dbus-daemon debug-shell dnf-system-upgrade dnsmasq dovecot fancontrol fcoe grafana-server
                      gssproxy httpd httpd@ ibacm iprdump iprinit iprupdate ipsec iscsid iscsiuio kpatch
                      kvm_stat ledmon libvirt-guests libvirtd lldpad man-db-restart-cache-update named
                      named-chroot netavark-dhcp-proxy nfs-blkmap nfs-server nftables nmb numad nvmf-autoconnect
                      ostree-readonly-sysroot-migration pesign pmfind pmie_farm pmlogger_farm pmproxy podman
                      podman-auto-update podman-clean-transient podman-kube@ podman-restart postfix powertop
                      psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts rpmdb-rebuild rrdcached saslauthd
                      selinux-check-proper-disable serial-getty@ smb snmpd snmptrapd spamassassin
                      speech-dispatcherd srp_daemon srp_daemon_port@ sshd-keygen@ systemd-boot-check-no-failures
                      systemd-nspawn@ systemd-pstore systemd-sysext target targetclid tog-pegasus trace-cmd
                      virtinterfaced virtnetworkd virtnodedevd virtnwfilterd virtproxyd virtsecretd virtstoraged
                      vsftpd wpa_supplicant
  indirect            pcscd spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
                      systemd-sysupdate systemd-sysupdate-reboot virtlockd virtlogd vsftpd@

  ----------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-362.13.1.el9_3.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

  ----------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 4.10 GHz and 4.10 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: yes

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

  ----------------------------------------------------------------
16. sysctl
  kernel.numa_balancing            1
  kernel.randomize_va_space        2
  vm.compaction_proactiveness      20
  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
```

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Platform Notes (Continued)

```
  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


  -----------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force


  -----------------------------------------------------------
18. /sys/kernel/mm/transparent_hugepage/khugepaged
  alloc_sleep_millisecs  60000
  defrag                     1
  max_ptes_none            511
  max_ptes_shared          256
  max_ptes_swap             64
  pages_to_scan           4096
  scan_sleep_millisecs   10000


  -----------------------------------------------------------
19. OS release
  From /etc/*-release /etc/*-version
  os-release      Red Hat Enterprise Linux 9.3 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.3 (Plow)
  system-release Red Hat Enterprise Linux release 9.3 (Plow)


  -----------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017
  Filesystem             Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   856G  409G  447G  48% /home


  -----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Tyrone Systems
    Product:        Tyrone Camarero SQI200A2R-224
    Product Family: Family
    Serial:         2X202152403


  -----------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.5 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 M321R4GA0BB0-CQKET 32 GB 1 rank 4800



  -----------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
```

(Continued on next page)

Tyrone Systems

(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SQI200A2R-224
(2.40 GHz,Intel Xeon Gold 6448H)

SPECspeed®2017_int_base = 12.1

SPECspeed®2017_int_peak = 12.4

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Tyrone Systems

Test Date: Mar-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023

Platform Notes (Continued)

```
    BIOS Vendor:       American Megatrends International, LLC.
    BIOS Version:      1.5a
    BIOS Date:         12/18/2023
    BIOS Revision:     5.32
```

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 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 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`

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SQI200A2R-224
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CPU2017 License: 006042
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Tested by: Tyrone Systems

Test Date: Mar-2024
Hardware Availability: Jan-2023
Software Availability: Dec-2023

Base Portability Flags (Continued)

```
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
```

Base Optimization Flags

C benchmarks:

```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -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:

```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -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
```

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

SPEC CPU®2017 Integer Speed Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SQI200A2R-224
(2.40 GHz,Intel Xeon Gold 6448H)

SPECspeed®2017_int_base = 12.1

SPECspeed®2017_int_peak = 12.4

CPU2017 License:	006042	**Test Date:**	Mar-2024
Test Sponsor:	Netweb Pte Ltd	**Hardware Availability:**	Jan-2023
Tested by:	Tyrone Systems	**Software Availability:**	Dec-2023

Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-fiopenmp -DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
602.gcc_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math
-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: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -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-ic2023p2-official-linux64.html
http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-SPR-revC.html

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SPEC CPU®2017 Integer Speed Result

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml
http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-SPR-revC.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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