SPEC CPU®2017 Floating Point Rate Result
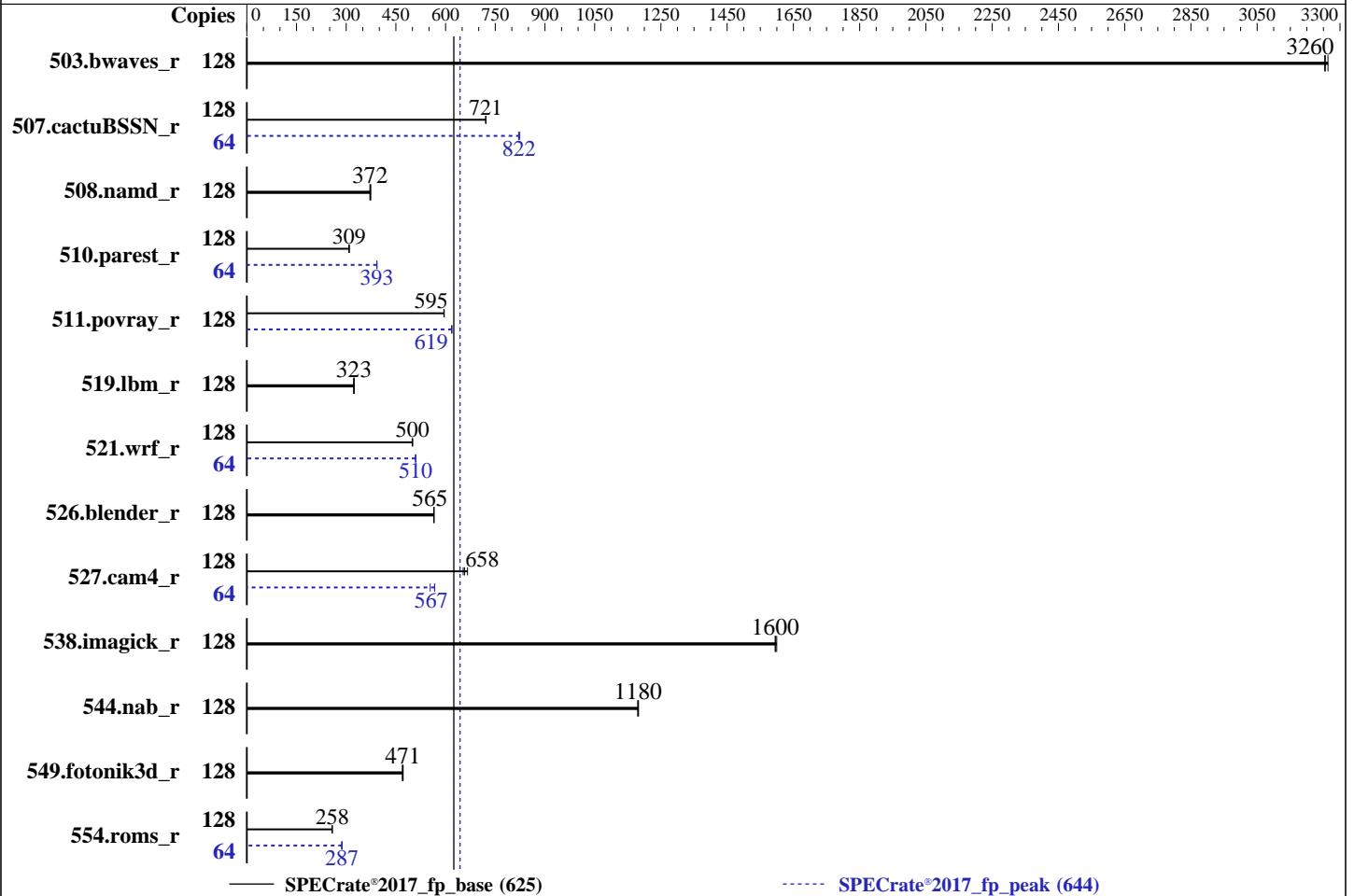
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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI200A3N-212
(2.10 GHz,Intel Xeon Gold 6430)

SPECrate®2017_fp_base = 625

SPECrate®2017_fp_peak = 644

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023

Benchmark	Copies	Result
503.bwaves_r	128	3260
507.cactuBSSN_r	128	721
	64	822
508.namd_r	128	372
510.parest_r	128	309
	64	393
511.povray_r	128	595
	128	619
519.lbm_r	128	323
521.wrf_r	128	500
	64	510
526.blender_r	128	565
527.cam4_r	128	658
	64	567
538.imagick_r	128	1600
544.nab_r	128	1180
549.fotonik3d_r	128	471
554.roms_r	128	258
	64	287

Copies axis: 0 150 300 450 600 750 900 1050 1250 1450 1650 1850 2050 2250 2450 2650 2850 3050 3300

—— SPECrate®2017_fp_base (625)

- - - - SPECrate®2017_fp_peak (644)

Hardware

CPU Name: Intel Xeon Gold 6430
Max MHz: 3400
Nominal: 2100
Enabled: 64 cores, 2 chips, 2 threads/core
Orderable: 1,2 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: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R, running at 4400)
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: No
Firmware: Version 2.1 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 and OS set to prefer performance at cost of additional power.

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Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	**394**	**3260**	393	3260	394	3250	128	**394**	**3260**	393	3260	394	3250
507.cactuBSSN_r	128	**225**	**721**	224	722	225	721	64	98.3	824	**98.6**	**822**	98.8	820
508.namd_r	128	**327**	**372**	325	374	327	372	128	**327**	**372**	325	374	327	372
510.parest_r	128	1083	309	**1084**	**309**	1085	309	64	426	393	427	392	**426**	**393**
511.povray_r	128	**502**	**595**	502	595	502	596	128	**483**	**619**	483	619	484	618
519.lbm_r	128	**417**	**323**	416	324	418	323	128	**417**	**323**	416	324	418	323
521.wrf_r	128	**573**	**500**	573	500	574	499	64	281	510	**281**	**510**	281	509
526.blender_r	128	345	565	345	565	**345**	**565**	128	345	565	345	565	**345**	**565**
527.cam4_r	128	**340**	**658**	336	666	343	653	64	**198**	**567**	197	567	202	553
538.imagick_r	128	200	1600	**200**	**1600**	199	1600	128	200	1600	**200**	**1600**	199	1600
544.nab_r	128	182	1180	183	1180	**182**	**1180**	128	182	1180	183	1180	**182**	**1180**
549.fotonik3d_r	128	**1058**	**471**	1057	472	1063	469	128	**1058**	**471**	1057	472	1063	469
554.roms_r	128	788	258	791	257	**789**	**258**	64	354	287	355	286	**354**	**287**
SPECrate®2017_fp_base =		**625**												
SPECrate®2017_fp_peak =		**644**												

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/je5.0.1-64"
MALLOC_CONF = "retain:true"
```

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.
```

(Continued on next page)

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Software Availability: Dec-2023

General Notes (Continued)

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
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 Sun Aug 18 01:07:12 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. Failed units, from systemctl list-units --state=failed
 13. Services, from systemctl list-unit-files
 14. Linux kernel boot-time arguments, from /proc/cmdline
 15. cpupower frequency-info
 16. tuned-adm active
 17. sysctl
 18. /sys/kernel/mm/transparent_hugepage
 19. /sys/kernel/mm/transparent_hugepage/khugepaged
 20. OS release
 21. Disk information
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. 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
    01:07:12 up  6:59,  1 user,  load average: 75.31, 114.58, 122.62
```

(Continued on next page)

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Test Sponsor:　　Netweb Pte Ltd　　　　　　　　　　　　　　　　**Hardware Availability:** Jan-2023
Tested by:　　　　Tyrone Systems　　　　　　　　　　　　　　　　**Software Availability:**　Dec-2023

Platform Notes (Continued)

```
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   xeon     tty1       18:09    6:56m  1.05s  0.03s login -- xeon


   ------------------------------------------------------------
   3. Username
     From environment variable $USER:  xeon


   ------------------------------------------------------------
   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) 4126562
     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) 4126562
     virtual memory              (kbytes, -v) unlimited
     file locks                          (-x) unlimited


   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
    login -- xeon
    -bash
    su
    bash
    bash
    runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
      ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=64 --define physicalfirst
      --define invoke_with_interleave --define drop_caches --tune base,peak -o all fprate
    runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --configfile
      ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=64 --define physicalfirst
      --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower
      --runmode rate --tune base:peak --size refrate fprate --nopreenv --note-preenv --logfile
      $SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /home/cpu2017


   ------------------------------------------------------------
   6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) Gold 6430
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 8
     microcode       : 0x2b000571
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
     cpu cores       : 32
     siblings        : 64
     2 physical ids (chips)
     128 processors (hardware threads)
     physical id 0: core ids 0-31
```

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Platform Notes (Continued)

```
     physical id 1: core ids 0-31
     physical id 0: apicids 0-63
     physical id 1: apicids 128-191
   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):                          128
     On-line CPU(s) list:             0-127
     Vendor ID:                       GenuineIntel
     BIOS Vendor ID:                  Intel(R) Corporation
     Model name:                      Intel(R) Xeon(R) Gold 6430
     BIOS Model name:                 Intel(R) Xeon(R) Gold 6430
     CPU family:                      6
     Model:                           143
     Thread(s) per core:              2
     Core(s) per socket:              32
     Socket(s):                       2
     Stepping:                        8
     CPU max MHz:                     3400.0000
     CPU min MHz:                     800.0000
     BogoMIPS:                        4200.00
     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 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 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
                                      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
     L1d cache:                       3 MiB (64 instances)
     L1i cache:                       2 MiB (64 instances)
     L2 cache:                        128 MiB (64 instances)
     L3 cache:                        120 MiB (2 instances)
     NUMA node(s):                    2
     NUMA node0 CPU(s):               0-31,64-95
     NUMA node1 CPU(s):               32-63,96-127
     Vulnerability Gather data sampling: Not affected
     Vulnerability Itlb multihit:     Not affected
     Vulnerability L1tf:              Not affected
     Vulnerability Mds:               Not affected
     Vulnerability Meltdown:          Not affected
     Vulnerability Mmio stale data:   Not affected
```

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Platform Notes (Continued)

```
  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       3M   12 Data            1    64        1             64
      L1i       32K       2M    8 Instruction     1    64        1             64
      L2         2M     128M   16 Unified         2  2048        1             64
      L3        60M     120M   15 Unified         3 65536        1             64


  -------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 2 nodes (0-1)
    node 0 cpus: 0-31,64-95
    node 0 size: 515632 MB
    node 0 free: 485307 MB
    node 1 cpus: 32-63,96-127
    node 1 size: 516074 MB
    node 1 free: 489791 MB
    node distances:
    node   0   1
      0:  10  21
      1:  21  10


  -------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:      1056467332 kB


  -------------------------------------------------------------
  10. who -r
    run-level 3 Aug 17 18:08


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


  -------------------------------------------------------------
  12. Failed units, from systemctl list-units --state=failed
      UNIT                 LOAD   ACTIVE SUB    DESCRIPTION
    * dnf-makecache.service loaded failed failed dnf makecache


  -------------------------------------------------------------
  13. 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
                    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
```

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Platform Notes (Continued)

```
    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@

  ----------------------------------------------------------------
  14. 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

  ----------------------------------------------------------------
  15. cpupower frequency-info
     analyzing CPU 0:
       current policy: frequency should be within 3.40 GHz and 3.40 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.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
    vm.extfrag_threshold             500
    vm.min_unmapped_ratio            1
    vm.nr_hugepages                  0
    vm.nr_hugepages_mempolicy        0
    vm.nr_overcommit_hugepages       0
```

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Platform Notes (Continued)

```
   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+madvise [madvise] never
   enabled         [always] madvise 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
   max_ptes_shared           256
   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 9.3 (Plow)
   redhat-release Red Hat Enterprise Linux release 9.3 (Plow)
   system-release Red Hat Enterprise Linux release 9.3 (Plow)


   ------------------------------------------------------------
21. Disk information
SPEC is set to: /home/cpu2017
   Filesystem            Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs   856G  674G  182G  79% /home


   ------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
   Vendor:         Tyrone Systems
   Product:        Tyrone Camarero SDI200A3N-212
   Product Family: Family
   Serial:         2X26452301


   ------------------------------------------------------------
23. 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 M321R8GA0BB0-CQKZJ 64 GB 2 rank 4800, configured at 4400



   ------------------------------------------------------------
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:    Tyrone Systems
   BIOS Version:   2.1
   BIOS Date:      12/07/2023
   BIOS Revision:  5.32
```

SPEC CPU®2017 Floating Point Rate Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI200A3N-212
(2.10 GHz,Intel Xeon Gold 6430)

SPECrate®2017_fp_base = 625

SPECrate®2017_fp_peak = 644

CPU2017 License: 006042   **Test Date:** Aug-2024

Test Sponsor: Netweb Pte Ltd   **Hardware Availability:** Jan-2023

Tested by: Tyrone Systems   **Software Availability:** Dec-2023

Compiler Version Notes

```
==============================================================================
C               | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(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++             | 508.namd_r(base, peak) 510.parest_r(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++, C          | 511.povray_r(base, peak) 526.blender_r(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.
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++, C, Fortran | 507.cactuBSSN_r(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.
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.
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.
------------------------------------------------------------------------------


==============================================================================
Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(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.
------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(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.
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.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:

`icx`

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

Base Compiler Invocation (Continued)

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Benchmarks using both Fortran and C:
`ifx icx`

Benchmarks using both C and C++:
`icpx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifx`

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
526.blender_r: `-DSPEC_LP64 -DSPEC_LINUX -funsigned-char`
527.cam4_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
538.imagick_r: `-DSPEC_LP64`
544.nab_r: `-DSPEC_LP64`
549.fotonik3d_r: `-DSPEC_LP64`
554.roms_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
`-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math`
`-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4`
`-Wno-implicit-int -mprefer-vector-width=512 -ljemalloc`
`-L/usr/local/jemalloc64-5.0.1/lib`

C++ benchmarks:
`-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`

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

Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

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

Benchmarks using both Fortran and C:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both C and C++:
```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using Fortran, C, and C++:
```
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

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

Fortran benchmarks:
```
ifx
```

Benchmarks using both Fortran and C:
```
ifx icx
```

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SPEC CPU®2017 Floating Point Rate Result

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Tyrone Camarero SDI200A3N-212
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SPECrate®2017_fp_base = 625

SPECrate®2017_fp_peak = 644

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

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

Peak Compiler Invocation (Continued)

Benchmarks using both C and C++:
```
icpx icx
```

Benchmarks using Fortran, C, and C++:
```
icpx icx ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

519.lbm_r: `basepeak = yes`

538.imagick_r: `basepeak = yes`

544.nab_r: `basepeak = yes`

C++ benchmarks:

508.namd_r: `basepeak = yes`

510.parest_r: `-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -mprefer-vector-width=512 -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib`

Fortran benchmarks:

503.bwaves_r: `basepeak = yes`

549.fotonik3d_r: `basepeak = yes`

554.roms_r: `-w -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib`

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

Tyrone Systems
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Tyrone Camarero SDI200A3N-212
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SPECrate®2017_fp_base = 625

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

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -mprefer-vector-width=512 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both C and C++:

```
511.povray_r: -w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -Wno-implicit-int
-mprefer-vector-width=512 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

```
526.blender_r: basepeak = yes
```

Benchmarks using Fortran, C, and C++:
```
-w -m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

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

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

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