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)

$SPECrate^{®}2017\_fp\_base = 373$

$SPECrate^{®}2017\_fp\_peak = 413$

CPU2017 License: 006042　　　　　　　　　　　　　**Test Date:** Oct-2023
Test Sponsor: Netweb Pte Ltd　　　　　　　　　　　**Hardware Availability:** Jan-2023
Tested by: Tyrone Systems　　　　　　　　　　　　**Software Availability:** May-2022

Copies

Benchmark	Copies	base	peak
503.bwaves_r	128	1370	
507.cactuBSSN_r	128	351	
	64		372
508.namd_r	128	370	
510.parest_r	128	136	
	64		278
511.povray_r	128	601	
	128		582
519.lbm_r	128	141	
521.wrf_r	128	187	
	64		219
526.blender_r	128	541	
527.cam4_r	128	485	
	64		532
538.imagick_r	128	1470	
544.nab_r	128	965	
	128		1150
549.fotonik3d_r	128	186	
554.roms_r	128	101	
	64		119

—— SPECrate®2017_fp_base (373)　　　　----- SPECrate®2017_fp_peak (413)

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: None

Software

OS: Red Hat Enterprise Linux release 8.5 (Ootpa)
　　　Kernel 4.18.0-348.el8.x86_64
Compiler: C/C++: Version 2022.1.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
　　　Fortran: Version 2022.1.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 1.2 released Mar-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 the cost of additional power usage.

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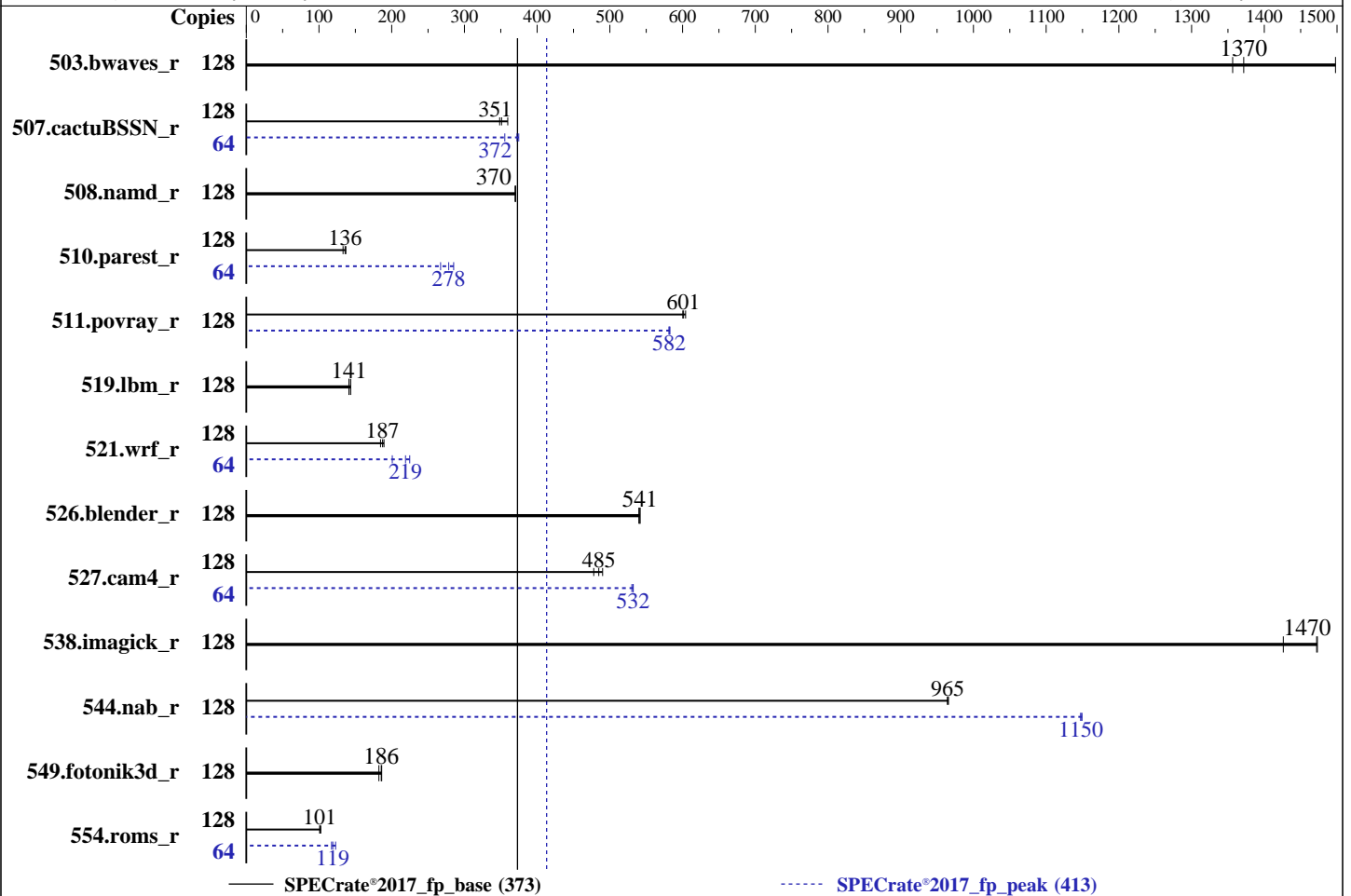SPECrate®2017_fp_peak = 413

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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	857	1500	**936**	**1370**	946	1360	128	857	1500	**936**	**1370**	946	1360
507.cactuBSSN_r	128	465	348	**462**	**351**	451	360	64	**218**	**372**	216	375	228	356
508.namd_r	128	329	370	328	370	**328**	**370**	128	329	370	328	370	**328**	**370**
510.parest_r	128	2516	133	2445	137	**2464**	**136**	64	**601**	**278**	587	285	627	267
511.povray_r	128	498	600	**497**	**601**	495	604	128	513	583	514	581	**514**	**582**
519.lbm_r	128	**954**	**141**	939	144	956	141	128	**954**	**141**	939	144	956	141
521.wrf_r	128	1514	189	**1530**	**187**	1553	185	64	638	225	**655**	**219**	714	201
526.blender_r	128	**360**	**541**	360	541	361	540	128	**360**	**541**	360	541	361	540
527.cam4_r	128	457	490	**462**	**485**	468	478	64	**210**	**532**	210	532	211	530
538.imagick_r	128	**216**	**1470**	216	1470	223	1430	128	**216**	**1470**	216	1470	223	1430
544.nab_r	128	223	964	223	966	**223**	**965**	128	**188**	**1150**	188	1150	187	1150
549.fotonik3d_r	128	**2688**	**186**	2679	186	2735	182	128	**2688**	**186**	2679	186	2735	182
554.roms_r	128	1984	103	2012	101	**2010**	**101**	64	828	123	867	117	**855**	**119**
SPECrate®2017_fp_base =		**373**										
SPECrate®2017_fp_peak =		**413**										

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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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:
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 Tyronespec Thu Oct 19 15:10:36 2023

 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 239 (239-51.el8)
 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. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
 21. Disk information
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. BIOS
 -----------------------------------------------------------


 -----------------------------------------------------------
 1. uname -a
   Linux Tyronespec 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
    15:10:36 up  9:08,  1 user,  load average: 78.26, 115.16, 120.62
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                06:32    8:34m  1.36s  0.02s -bash
```

(Continued on next page)

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Platform Notes (Continued)

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


    ----------------------------------------------------------
    4. ulimit -a
      core file size          (blocks, -c) 0
      data seg size           (kbytes, -d) unlimited
      scheduling priority             (-e) 0
      file size               (blocks, -f) unlimited
      pending signals                 (-i) 4126816
      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) 4126816
      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=128 -c
       ic2022.1-lin-core-avx512-rate-20220316.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
       ic2022.1-lin-core-avx512-rate-20220316.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       : 0x2b0001b0
        bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
        cpu cores       : 32
        siblings        : 64
        2 physical ids (chips)
        128 processors (hardware threads)
        physical id 0: core ids 0-31
        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.
```

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Platform Notes (Continued)

```
          -----------------------------------------------------------
          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):              128
            On-line CPU(s) list: 0-127
            Thread(s) per core:  2
            Core(s) per socket:  32
            Socket(s):           2
            NUMA node(s):        2
            Vendor ID:           GenuineIntel
            BIOS Vendor ID:      Intel(R) Corporation
            CPU family:          6
            Model:               143
            Model name:          Intel(R) Xeon(R) Gold 6430
            BIOS Model name:     Intel(R) Xeon(R) Gold 6430
            Stepping:            8
            CPU MHz:             2100.000
            BogoMIPS:            4200.00
            Virtualization:      VT-x
            L1d cache:           48K
            L1i cache:           32K
            L2 cache:            2048K
            L3 cache:            61440K
            NUMA node0 CPU(s):   0-31,64-95
            NUMA node1 CPU(s):   32-63,96-127
            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 cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
                                 flexpriority ept vpid ept_ad fsgsbase tsc_adjust sgx bmi1 hle 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 sgx_lc fsrm md_clear serialize tsxldtrk pconfig arch_lbr
                                 avx512_fp16 flush_l1d arch_capabilities

          -----------------------------------------------------------
          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: 515683 MB
            node 0 free: 486866 MB
            node 1 cpus: 32-63,96-127
            node 1 size: 516079 MB
            node 1 free: 490282 MB
            node distances:
            node   0   1
              0:  10  21
              1:  21  10
```

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Platform Notes (Continued)

```
        ----------------------------------------------------------
        9. /proc/meminfo
           MemTotal:      1056525272 kB


        ----------------------------------------------------------
        10. who -r
          run-level 3 Oct 19 06:02


        ----------------------------------------------------------
        11. Systemd service manager version: systemd 239 (239-51.el8)
          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 autovt@ avahi-daemon bluetooth chronyd crond cups display-manager firewalld gdm
                      getty@ import-state insights-client-boot irqbalance iscsi iscsi-onboot kdump ksm ksmtuned
                      libstoragemgmt libvirtd loadmodules lvm2-monitor mcelog mdmonitor microcode multipathd
                      nis-domainname nvidia-hibernate nvidia-resume nvidia-suspend nvmefc-boot-connections
                      ostree-remount qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon selinux-autorelabel-mark
                      sep5 smartd sshd sssd syslog timedatex tuned udisks2 vdo vgauthd vmtoolsd
           disabled   arp-ethers blk-availability brltty 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 iprdump
                      iprinit iprupdate iscsid iscsiuio kpatch kvm_stat ledmon man-db-restart-cache-update
                      ndctl-monitor netcf-transaction nfs-blkmap nfs-convert nfs-server nftables numad nvidia-powerd
                      nvmf-autoconnect oddjobd podman podman-auto-update podman-restart psacct radvd ras-mc-ctl
                      rasdaemon rdisc rhcd rhsm rhsm-facts saslauthd serial-getty@ snmpd snmptrapd speech-dispatcherd
                      sshd-keygen@ switcheroo-control systemd-nspawn@ systemd-resolved tcsd tog-pegasus upower
                      virtinterfaced virtnetworkd virtnodedevd virtnwfilterd virtproxyd virtqemud virtsecretd
                      virtstoraged wpa_supplicant
           generated  SystemTap compile-server gcc-toolset-10-stap-server gcc-toolset-10-systemtap
                      gcc-toolset-11-stap-server gcc-toolset-11-systemtap gcc-toolset-9-stap-server
                      gcc-toolset-9-systemtap scripts startup
           indirect   spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo virtlockd
                      virtlogd
           masked     systemd-timedated
        ----------------------------------------------------------
        13. Linux kernel boot-time arguments, from /proc/cmdline
           BOOT_IMAGE=(hd0,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


        ----------------------------------------------------------
        14. cpupower frequency-info
           analyzing CPU 0:
             Unable to determine current policy
             boost state support:
               Supported: yes
               Active: yes
```

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Platform Notes (Continued)

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


-------------------------------------------------------------
16. sysctl
  kernel.numa_balancing          1
  kernel.randomize_va_space      2
  vm.compaction_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


-------------------------------------------------------------
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_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


-------------------------------------------------------------
19. 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)


-------------------------------------------------------------
20. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
  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
```

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Platform Notes (Continued)

```
For more information, see the Linux documentation on hardware vulnerabilities, for example
    https://www.kernel.org/doc/html/latest/admin-guide/hw-vuln/index.html


--------------------------------------------------------------
21. Disk information
SPEC is set to: /home/cpu2017
  Filesystem              Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   402G  375G   27G  94% /home


--------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:         Tyrone Systems
    Product:        Tyrone Camarero SDI200C2G-48
    Product Family: Family
    Serial:         4X20412023D


--------------------------------------------------------------
23. 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 SMBIOS" standard.
  Memory:
    16x Samsung M321R8GA0BB0-CQKZH 64 GB 2 rank 4800, configured at 4400



--------------------------------------------------------------
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:     American Megatrends International, LLC.
  BIOS Version:    1.2
  BIOS Date:       03/22/2023
  BIOS Revision:   5.29
```

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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
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.
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(2.10 GHz,Intel Xeon Gold 6430)

$SPECrate^®2017\_fp\_base = 373$

$SPECrate^®2017\_fp\_peak = 413$

CPU2017 License: 006042		**Test Date:**	Oct-2023
Test Sponsor:	Netweb Pte Ltd	**Hardware Availability:**	Jan-2023
Tested by:	Tyrone Systems	**Software Availability:**	May-2022

Compiler Version Notes (Continued)

```
==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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------------------------------------------------------------------------------


==============================================================================
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 2022.1.0 Build 20220316
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------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

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`

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

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CPU2017 License: 006042 **Test Date:** Oct-2023
Test Sponsor: Netweb Pte Ltd **Hardware Availability:** Jan-2023
Tested by: Tyrone Systems **Software Availability:** May-2022

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 -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -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 -xCORE-AVX512 -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 C and C++:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

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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 = 373

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CPU2017 License: 006042   **Test Date:**   Oct-2023
Test Sponsor: Netweb Pte Ltd   **Hardware Availability:** Jan-2023
Tested by: Tyrone Systems   **Software Availability:** May-2022

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -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
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

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
```

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: `-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`

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Tested by:	Tyrone Systems	**Software Availability:**	May-2022

Peak Optimization Flags (Continued)

544.nab_r (continued):
```
-qopt-mem-layout-trans=4 -qopt-zmm-usage=high -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math`
```
-flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -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 -xCORE-AVX512 -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 -xCORE-AVX512 -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 C and C++:

511.povray_r: `-w -m64 -std=c11 -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 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
```

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SPEC CPU®2017 Floating Point Rate Result

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CPU2017 License: 006042		**Test Date:**	Oct-2023
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Tested by:	Tyrone Systems	**Software Availability:**	May-2022

Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
```
-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-ic2022-official-linux64_revA.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-ic2022-official-linux64_revA.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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