SPEC CPU®2017 Floating Point Rate Result

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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI200A3N-212
(2.40 GHz,Intel Xeon Platinum 8468V)

$SPECrate®2017\_fp\_base = 828$

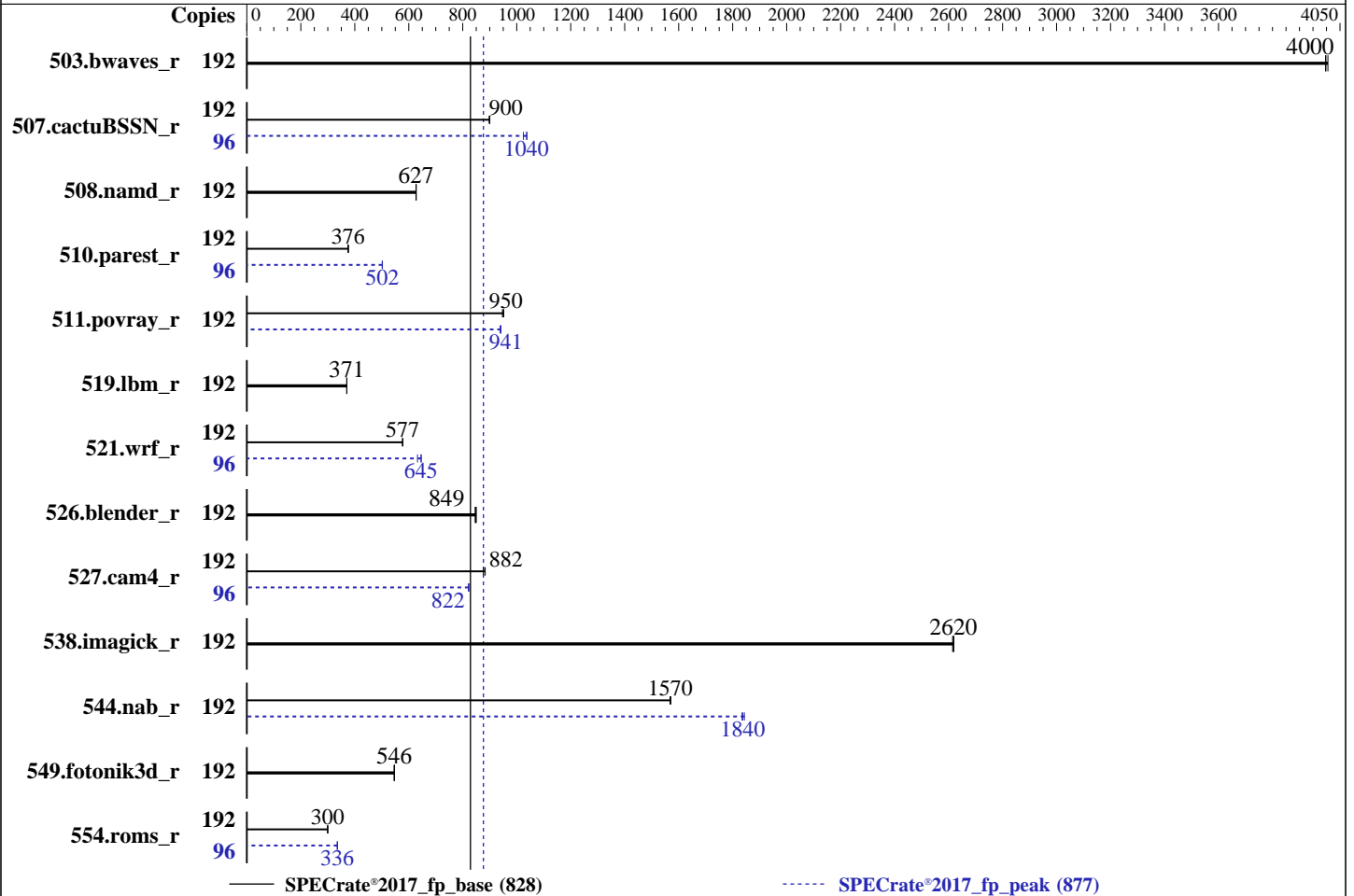$SPECrate®2017\_fp\_peak = 877$

CPU2017 License: 006042

Test Sponsor: Netweb Pte Ltd

Tested by: Tyrone Systems

Test Date: Nov-2023

Hardware Availability: Jan-2023

Software Availability: May-2022

Benchmark	Copies	base	peak
503.bwaves_r	192	4000	
507.cactuBSSN_r	192	900	
	96		1040
508.namd_r	192	627	
510.parest_r	192	376	
	96		502
511.povray_r	192	950	
	192		941
519.lbm_r	192	371	
521.wrf_r	192	577	
	96		645
526.blender_r	192	849	
527.cam4_r	192	882	
	96		822
538.imagick_r	192	2620	
544.nab_r	192	1570	
	192		1840
549.fotonik3d_r	192	546	
554.roms_r	192	300	
	96		336

SPECrate®2017_fp_base (828) SPECrate®2017_fp_peak (877)

Hardware

CPU Name: Intel Xeon Platinum 8468V

Max MHz: 3800

Nominal: 2400

Enabled: 96 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: 97.5 MB I+D on chip per chip

Other: None

Memory: 1 TB (16 x 64 GB 2Rx4 PC4-4800AA-R)

Storage: 1 x 512 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 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;

Parallel: No

Firmware: Version 1.4 released Aug-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.

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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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	192	**482**	**4000**	482	4000	481	4010	192	**482**	**4000**	482	4000	481	4010
507.cactuBSSN_r	192	271	898	**270**	**900**	270	900	96	**117**	**1040**	119	1020	117	1040
508.namd_r	192	**291**	**627**	291	628	291	627	192	**291**	**627**	291	628	291	627
510.parest_r	192	**1337**	**376**	1336	376	1338	376	96	**500**	**502**	500	502	501	502
511.povray_r	192	471	952	**472**	**950**	473	947	192	**476**	**941**	476	942	478	939
519.lbm_r	192	547	370	546	371	**546**	**371**	192	547	370	546	371	**546**	**371**
521.wrf_r	192	746	577	**745**	**577**	744	578	96	**333**	**645**	340	632	333	646
526.blender_r	192	346	846	344	850	**345**	**849**	192	346	846	344	850	**345**	**849**
527.cam4_r	192	380	883	383	876	**381**	**882**	96	204	822	**204**	**822**	204	821
538.imagick_r	192	**182**	**2620**	183	2610	182	2620	192	**182**	**2620**	183	2610	182	2620
544.nab_r	192	206	1570	206	1570	**206**	**1570**	192	176	1830	175	1840	**176**	**1840**
549.fotonik3d_r	192	1369	547	**1369**	**546**	1370	546	192	1369	547	**1369**	**546**	1370	546
554.roms_r	192	**1019**	**300**	1018	300	1019	299	96	455	335	**455**	**336**	454	336
SPECrate®2017_fp_base =		**828**												
SPECrate®2017_fp_peak =		**877**												

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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Test Date: Nov-2023

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Software Availability: May-2022

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
Hyper-Threading = Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on Tyronespec Wed Nov  8 20:15:49 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
    20:15:49 up  7:12,  1 user,  load average: 127.04, 175.84, 185.50
```

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Platform Notes (Continued)

```
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                13:05    7:08m  1.25s  0.01s -bash


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


   ------------------------------------------------------------
   4. ulimit -a
     core file size          (blocks, -c) 0
     data seg size           (kbytes, -d) unlimited
     scheduling priority             (-e) 0
     file size               (blocks, -f) unlimited
     pending signals                 (-i) 4126757
     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) 4126757
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited


   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 17
    login -- root
    -bash
    -bash
    runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
      ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=96 --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=192 --configfile
      ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=96 --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) Platinum 8468V
       vendor_id       : GenuineIntel
       cpu family      : 6
       model           : 143
       stepping        : 8
       microcode       : 0x2b0004b1
       bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
       cpu cores       : 48
       siblings        : 96
       2 physical ids (chips)
       192 processors (hardware threads)
       physical id 0: core ids 0-47
       physical id 1: core ids 0-47
       physical id 0: apicids 0-95
       physical id 1: apicids 128-223
```

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Platform Notes (Continued)

```
   Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
   virtualized systems.  Use the above data carefully.


   -----------------------------------------------------------
   7. lscpu

   From lscpu from util-linux 2.32.1:
     Architecture:        x86_64
     CPU op-mode(s):      32-bit, 64-bit
     Byte Order:          Little Endian
     CPU(s):              192
     On-line CPU(s) list: 0-191
     Thread(s) per core:  2
     Core(s) per socket:  48
     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) Platinum 8468V
     BIOS Model name:     Intel(R) Xeon(R) Platinum 8468V
     Stepping:            8
     CPU MHz:             2400.000
     BogoMIPS:            4800.00
     Virtualization:      VT-x
     L1d cache:           48K
     L1i cache:           32K
     L2 cache:            2048K
     L3 cache:            99840K
     NUMA node0 CPU(s):   0-47,96-143
     NUMA node1 CPU(s):   48-95,144-191
     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: 0-47,96-143
     node 0 size: 515677 MB
     node 0 free: 475609 MB
     node 1 cpus: 48-95,144-191
     node 1 size: 516070 MB
     node 1 free: 478679 MB
     node distances:
     node   0   1
```

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Platform Notes (Continued)

```
     0:  10  21
     1:  21  10


    -----------------------------------------------------------
9. /proc/meminfo
   MemTotal:      1056510040 kB


    -----------------------------------------------------------
10. who -r
   run-level 3 Nov 8 13:03


    -----------------------------------------------------------
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
```

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Platform Notes (Continued)

```
      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    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
```

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Platform Notes (Continued)

```
   srbds                  Not affected
   tsx_async_abort        Not affected
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  384G   18G  96% /home

  ------------------------------------------------------------
 22. /sys/devices/virtual/dmi/id
     Vendor:         Tyrone Systems
     Product:        Tyrone Camarero SDI200A3N-212
     Product Family: Family
     Serial:         A497867X3106771

  ------------------------------------------------------------
 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-CQKZJ 64 GB 2 rank 4800


  ------------------------------------------------------------
 24. BIOS
 (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:      American Megatrends International, LLC.
   BIOS Version:     1.4
   BIOS Date:        08/10/2023
   BIOS Revision:    5.31
```

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
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```

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SPEC CPU®2017 Floating Point Rate Result

Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI200A3N-212
(2.40 GHz,Intel Xeon Platinum 8468V)

SPECrate®2017_fp_base = 828

SPECrate®2017_fp_peak = 877

CPU2017 License: 006042		**Test Date:**	Nov-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
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.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 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 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.
--------------------------------------------------------------------------------
```

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
```

SPEC CPU®2017 Floating Point Rate Result

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(Test Sponsor: Netweb Pte Ltd)

SPECrate®2017_fp_base = 828

Tyrone Camarero SDI200A3N-212
(2.40 GHz,Intel Xeon Platinum 8468V)

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

Test Date: Nov-2023
Hardware Availability: Jan-2023
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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Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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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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CPU2017 License: 006042		**Test Date:**	Nov-2023
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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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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SDI200A3N-212
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CPU2017 License: 006042
Test Sponsor: Netweb Pte Ltd
Tested by: Tyrone Systems

Test Date: Nov-2023
Hardware Availability: Jan-2023
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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