



SPEC CPU®2017 Floating Point Rate Result

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Tyrone Systems

(Test Sponsor: Netweb Technologies India Ltd)

Tyrone Camarero SDI200A3N-212
(2.0 GHz, Intel Xeon Platinum 8580)

SPECrate®2017_fp_base = 1090

SPECrate®2017_fp_peak = 1130

CPU2017 License: 006802

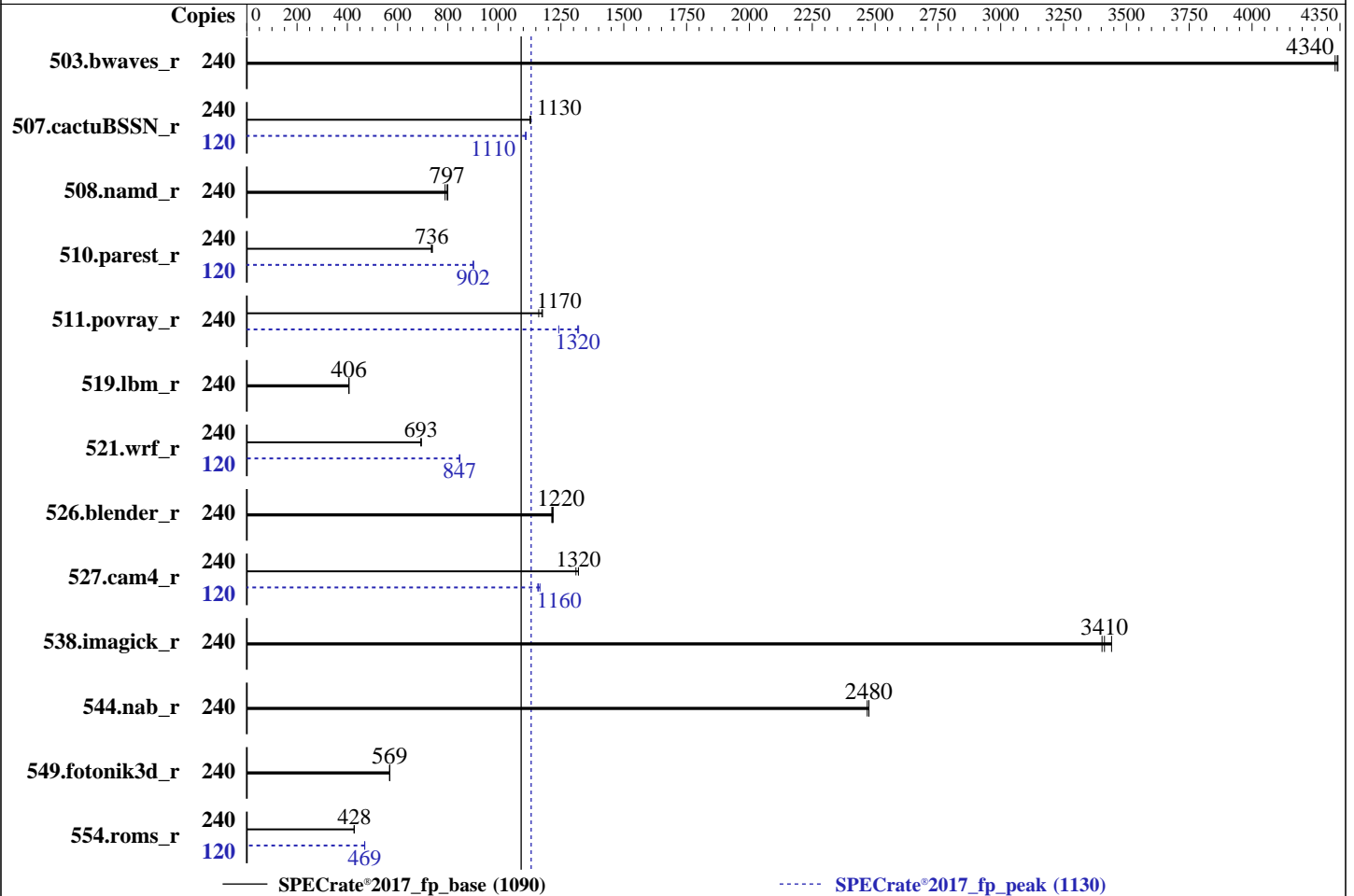
Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023



Hardware

CPU Name: Intel Xeon Platinum 8580
 Max MHz: 4000
 Nominal: 2000
 Enabled: 120 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: 300 MB I+D on chip per chip
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
 Storage: 1 x 960 GB NVMe
 Other: CPU Cooling: Air

Software

OS: Red Hat Enterprise Linux 9.3 (Plow)
 5.14.0-362.13.1.el9_3.x86_64
 Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
 Parallel: No
 Firmware: Version 2.1a released Mar-2024
 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 | 240 | 556 | 4330 | 555 | 4340 | 554 | 4340 | 240 | 556 | 4330 | 555 | 4340 | 554 | 4340 |
| 507.cactuBSSN_r | 240 | 269 | 1130 | 270 | 1130 | 269 | 1130 | 120 | 137 | 1110 | 137 | 1110 | 137 | 1110 |
| 508.namd_r | 240 | 286 | 797 | 289 | 789 | 285 | 800 | 240 | 286 | 797 | 289 | 789 | 285 | 800 |
| 510.parest_r | 240 | 850 | 739 | 855 | 734 | 853 | 736 | 120 | 349 | 900 | 348 | 902 | 348 | 902 |
| 511.povray_r | 240 | 477 | 1170 | 482 | 1160 | 476 | 1180 | 240 | 452 | 1240 | 426 | 1320 | 424 | 1320 |
| 519.lbm_r | 240 | 623 | 406 | 623 | 406 | 623 | 406 | 240 | 623 | 406 | 623 | 406 | 623 | 406 |
| 521.wrf_r | 240 | 776 | 693 | 774 | 694 | 775 | 693 | 120 | 318 | 846 | 318 | 847 | 317 | 848 |
| 526.blender_r | 240 | 301 | 1220 | 300 | 1220 | 301 | 1210 | 240 | 301 | 1220 | 300 | 1220 | 301 | 1210 |
| 527.cam4_r | 240 | 318 | 1320 | 321 | 1310 | 318 | 1320 | 120 | 181 | 1160 | 180 | 1170 | 181 | 1160 |
| 538.imagick_r | 240 | 175 | 3400 | 173 | 3440 | 175 | 3410 | 240 | 175 | 3400 | 173 | 3440 | 175 | 3410 |
| 544.nab_r | 240 | 163 | 2480 | 164 | 2470 | 163 | 2480 | 240 | 163 | 2480 | 164 | 2470 | 163 | 2480 |
| 549.fotonik3d_r | 240 | 1644 | 569 | 1645 | 569 | 1646 | 568 | 240 | 1644 | 569 | 1645 | 569 | 1646 | 568 |
| 554.roms_r | 240 | 892 | 428 | 892 | 428 | 894 | 427 | 120 | 407 | 469 | 407 | 469 | 406 | 469 |

SPECrate®2017_fp_base = **1090**

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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"
We are using specific Kernel Version

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"
MALLOCONF = "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

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General Notes (Continued)

system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

jemalloc, a general purpose malloc implementation

built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

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 Wed Aug 28 01:09:17 2024

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

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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
01:09:18 up 8:14, 1 user, load average: 141.64, 214.09, 228.04

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Platform Notes (Continued)

| USER | TTY | LOGIN@ | IDLE | JCPU | PCPU | WHAT |
|------|------|--------|-------|-------|-------|---------------|
| xeon | tty1 | Tue09 | 6:29m | 1.13s | 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) 4126544
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) 4126544
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=240 -c
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=120 --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=240 --configfile
ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=120 --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 8580
vendor_id      : GenuineIntel
cpu family     : 6
model          : 207
stepping       : 2
microcode      : 0x21000200
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores      : 60
siblings       : 120
2 physical ids (chips)
240 processors (hardware threads)
physical id 0: core ids 0-59

```

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Platform Notes (Continued)

physical id 1: core ids 0-59
physical id 0: apicids 0-119
physical id 1: apicids 128-247

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):                240
On-line CPU(s) list:  0-239
Vendor ID:             GenuineIntel
BIOS Vendor ID:       Intel(R) Corporation
Model name:            INTEL(R) XEON(R) PLATINUM 8580
BIOS Model name:      INTEL(R) XEON(R) PLATINUM 8580
CPU family:            6
Model:                 207
Thread(s) per core:   2
Core(s) per socket:   60
Socket(s):             2
Stepping:              2
BogoMIPS:              4000.00
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                      clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
                      rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl
                      xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq
                      dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
                      pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
                      avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2
                      cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
                      ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase
                      tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq
                      rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
                      avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
                      cqm_mbm_total cqm_mbm_local split_lock_detect avx_vnni avx512_bf16
                      wbnoinvd dtherm ida arat pln pts vnmi avx512vbmi umip pku ospke waitpkg
                      avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                      avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                      enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16
                      avx512_fp16 amx_tile amx_int8 flush_lld arch_capabilities

Virtualization:        VT-x
L1d cache:             5.6 MiB (120 instances)
L1i cache:             3.8 MiB (120 instances)
L2 cache:              240 MiB (120 instances)
L3 cache:              600 MiB (2 instances)
NUMA node(s):          4
NUMA node0 CPU(s):    0-29,120-149
NUMA node1 CPU(s):    30-59,150-179
NUMA node2 CPU(s):    60-89,180-209
NUMA node3 CPU(s):    90-119,210-239
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:      Not affected
Vulnerability L1tf:               Not affected
Vulnerability Mds:                Not affected
Vulnerability Meltdown:           Not affected

```

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Platform Notes (Continued)

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

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE | LEVEL | SETS | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|--------|----------|----------------|
| L1d | 48K | 5.6M | 12 | Data | 1 | 64 | 1 | 64 |
| L1i | 32K | 3.8M | 8 | Instruction | 1 | 64 | 1 | 64 |
| L2 | 2M | 240M | 16 | Unified | 2 | 2048 | 1 | 64 |
| L3 | 300M | 600M | 20 | Unified | 3 | 245760 | 1 | 64 |

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```

available: 4 nodes (0-3)
node 0 cpus: 0-29,120-149
node 0 size: 257671 MB
node 0 free: 229663 MB
node 1 cpus: 30-59,150-179
node 1 size: 258033 MB
node 1 free: 234337 MB
node 2 cpus: 60-89,180-209
node 2 size: 257979 MB
node 2 free: 234174 MB
node 3 cpus: 90-119,210-239
node 3 size: 258017 MB
node 3 free: 234038 MB
node distances:
node  0  1  2  3
0:  10  12  21  21
1:  12  10  21  21
2:  21  21  10  12
3:  21  21  12  10

```

9. /proc/meminfo

MemTotal: 1056462772 kB

10. who -r

run-level 3 Aug 27 09:57

11. Systemd service manager version: systemd 252 (252-18.e19)

| Default Target | Status |
|----------------|---------|
| multi-user | running |

12. Services, from systemctl list-unit-files

| STATE | UNIT FILES |
|---------|--|
| enabled | ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker firewalld gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd |

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Platform Notes (Continued)

```

nis-domainname nvme-fc-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 vmttoolsd
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 iscsiuiio kpatch
kvm_stat ledmon libvirt-guests libvirt lldpad man-db-restart-cache-update named
named-chroot netavark-dhcp-proxy nfs-blkmap nfs-server nftables nmb numad nvme-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-sysexct target targetclid tog-pegasus trace-cmd
virtinterfaced virtnetworkd virtnodevd virtnwfilterd virtproxyd virtsecret d virtstoraged
vsftpd wpa_supplicant
indirect pcsd spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
systemd-sysupdate systemd-sysupdate-reboot virtlockd virtlogd vsftpd@

```

```

-----
13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=(hd1,gpt2)/vmlinuz-5.14.0-362.13.1.el9_3.x86_64
root=/dev/mapper/rhel-root
ro
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
rhgb
quiet

```

```

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

```

```

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

```

```

-----
16. sysctl
kernel.numa_balancing          1
kernel.randomize_va_space      2
vm.compaction_proactiveness     20
vm.dirty_background_bytes       0
vm.dirty_background_ratio      10
vm.dirty_bytes                  0
vm.dirty_expire_centisecs      3000
vm.dirty_ratio                  40
vm.dirty_writeback_centisecs   500
vm.dirtytime_expire_seconds    43200
vm.extfrag_threshold           500
vm.min_unmapped_ratio          1
vm.nr_hugepages                 0

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Platform Notes (Continued)

```

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+advise [madvise] never
enabled        [always] madvise never
hpage_pmd_size 2097152
shmem_enabled  always within_size advise [never] deny force

```

```

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

```

```

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

```

```

-----
20. Disk information
SPEC is set to: /home/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs  856G  713G  143G  84% /home

```

```

-----
21. /sys/devices/virtual/dmi/id
Vendor:          Tyrone Systems
Product:         Tyrone Camarero SDI200A3N-212
Product Family: Family
Serial:          A495115X4412722

```

```

-----
22. dmidecode
Additional information from dmidecode 3.5 follows.  WARNING: Use caution when you interpret this section.
The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
"DMTF SMBIOS" standard.
Memory:
  16x Samsung M321R8GA0BB0-CQKZJ 64 GB 2 rank 4800

```

```

-----
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor:      American Megatrends International, LLC.
BIOS Version:    2.1a
BIOS Date:       03/20/2024

```

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Platform Notes (Continued)

BIOS Revision: 5.32

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
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-----

=====
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
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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-----

=====
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
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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 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
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-----

```



SPEC CPU®2017 Floating Point Rate Result

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Tyrone Systems

(Test Sponsor: Netweb Technologies India Ltd)

Tyrone Camarero SDI200A3N-212
(2.0 GHz, Intel Xeon Platinum 8580)

SPECrate®2017_fp_base = 1090

SPECrate®2017_fp_peak = 1130

CPU2017 License: 006802

Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023

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

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
```

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Software Availability: Dec-2023

Base Optimization Flags (Continued)

C++ benchmarks:

```
-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:

```
-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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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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Test Sponsor: Netweb Technologies India Ltd

Tested by: Tyrone Systems

Test Date: Aug-2024

Hardware Availability: Jan-2023

Software Availability: Dec-2023

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xsaphirerapids -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.profddata(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 -xsaphirerapids -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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