SPEC CPU®2017 Floating Point Rate Result

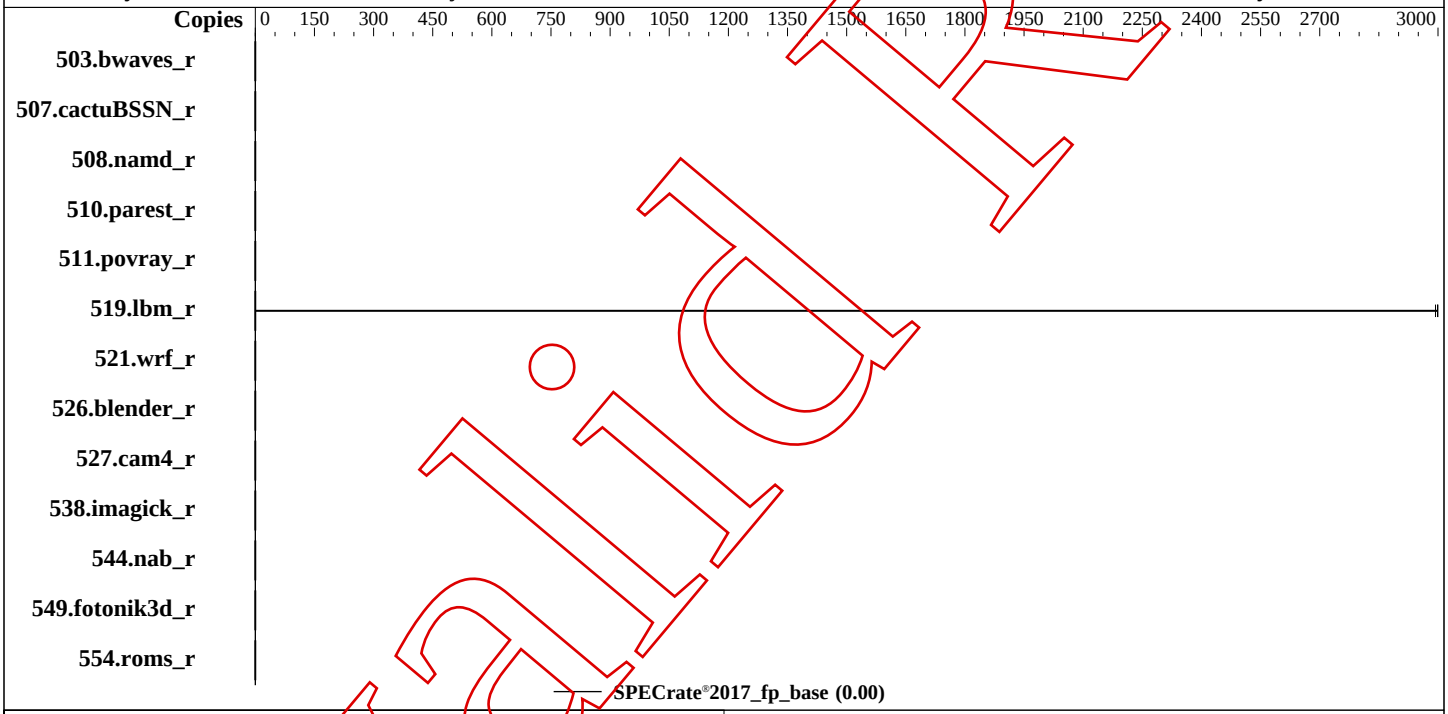
ClangTXS
(Test Sponsor: CRL)

SPECrate®2017_fp_base = 0.00

SPECrate®2017_fp_peak = Not Run

CPU2017 License: nnn (Your SPEC license number)
Test Sponsor: CRL
Tested by: Texas State University

Test Date: Dec-2023
Hardware Availability:
Software Availability:



Hardware

CPU Name:	Intel Xeon E5-2609 v3
Max MHz:	1900
Nominal:	1200
Enabled:	12 cores, 2 chips
Orderable:	
Cache L1:	384 KiB I + 384 KiB D on chip per core
L2:	3 MiB on chip per 9 cores
L3:	30 MiB on chip per chip
Other:	"None"
Memory:	62.803 GB fixme: If using DDR4, the format is: 'N GB (N x N GB nRxn PC4-nnnnX-X)'
Storage:	854 GB add more disk info here
Other:	

Software

OS:	Linux Ubuntu 20.04.6 LTS (Focal Fossa)
Compiler:	Clang: Version 16.0.4 of LLVM, the LLVM Developers Group
Parallel:	No
Firmware:	Dell Inc. 2.4.2 released Jan-2017
File System:	ext4
System State:	Run level 5 (add definition here)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	
Power Management:	

Errors

There is no set of valid runs with the same number of copies for base
'reportable' flag not set during run
521.wrf_r (base) did not have enough runs!
507.cactuBSSN_r (base) did not have enough runs!
538.imagick_r (base) did not have enough runs!
544.nab_r (base) did not have enough runs!
503.bwaves_r (base) did not have enough runs!

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Errors (Continued)

527.cam4_r (base) did not have enough runs!
549.fotonik3d_r (base) did not have enough runs!
526.blender_r (base) did not have enough runs!
511.povray_r (base) did not have enough runs!
510.parest_r (base) did not have enough runs!
554.roms_r (base) did not have enough runs!
508.namd_r (base) did not have enough runs!
519.lbm_r (base) had invalid runs!
Run of 519.lbm_r (base) was not valid; status is RE
Unknown flags were used! See
https://www.spec.org/cpu2017/Docs/runcpu.html#flagsurl
for information about how to get rid of this error.

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r														
507.cactuBSSN_r														
508.namd_r														
510.parest_r														
511.povray_r														
519.lbm_r	12	4.22	0.00	4.22	0.00	4.22	0.00							
521.wrf_r														
526.blender_r														
527.cam4_r														
538.imagick_r														
544.nab_r														
549.fotonik3d_r														
554.roms_r														

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/usr/lib/:/lib64"
```

Platform Notes

```
Sysinfo program /usr/local/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on ada.cs.txstate.edu Sat Dec  2 19:24:04 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 warning
 9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 245 (245.4-4ubuntu3.22)
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. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode warning
23. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux ada.cs.txstate.edu 5.4.0-166-generic #183-Ubuntu SMP Mon Oct 2 11:28:33 UTC 2023 x86_64 x86_64 x86_64
  GNU/Linux

------------------------------------------------------------
2. w
   19:24:04 up 12 days,  1:29,  1 user,  load average: 0.01, 0.00, 0.00
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  hgv16    pts/1    147.26.231.153   17:31    2.00s  2.87s  0.00s sh -c w 2>/dev/null

------------------------------------------------------------
3. Username
  From environment variable $USER:  hgv16

------------------------------------------------------------
4. ulimit -a
  time(seconds)        unlimited
  file(blocks)         unlimited
  data(kbytes)         unlimited
  stack(kbytes)        8192
  coredump(blocks)     0
  memory(kbytes)       unlimited
  locked memory(kbytes) 65536
  process              256676
```

(Continued on next page)

Platform Notes (Continued)

```
   nofiles              1024
   vmemory(kbytes)      unlimited
   locks                unlimited
   rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: hgv16 [priv]
 sshd: hgv16@pts/1
 -bash
 runcpu --config=LLVM_Loopunroll_clang_basic.cfg --iterations=3 519.lbm_r
 runcpu --configfile LLVM_Loopunroll_clang_basic.cfg --iterations 3 --noreportable --nopower --runmode rate
   --tune base --size refrate 519.lbm_r --nopreenv --note-preenv --logfile
   /home/hgv16/cpu2017/tmp/CPU2017.010/templogs/preenv.fprate.010.0.log --lognum 010.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /usr/local/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) CPU E5-2609 v3 @ 1.90GHz
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 63
    stepping        : 2
    microcode       : 0x49
    bugs            : cpu_meltdown spectre_v1 spectre_v2 spec_store_bypass l1tf mds swapgs itlb_multihit
                      mmio_stale_data
    cpu cores       : 6
    siblings        : 6
    2 physical ids (chips)
    12 processors (hardware threads)
    physical id 0: core ids 0-5
    physical id 1: core ids 0-5
    physical id 0: apicids 0,2,4,6,8,10
    physical id 1: apicids 16,18,20,22,24,26
  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 2.34:
  Architecture:                    x86_64
  CPU op-mode(s):                  32-bit, 64-bit
  Byte Order:                      Little Endian
  Address sizes:                   46 bits physical, 48 bits virtual
  CPU(s):                          12
  On-line CPU(s) list:             0-11
  Thread(s) per core:              1
  Core(s) per socket:              6
  Socket(s):                       2
  NUMA node(s):                    2
  Vendor ID:                       GenuineIntel
  CPU family:                      6
  Model:                           63
  Model name:                      Intel(R) Xeon(R) CPU E5-2609 v3 @ 1.90GHz
  Stepping:                        2
  CPU MHz:                         1198.961
```

(Continued on next page)

Platform Notes (Continued)

```
  CPU max MHz:                          1900.0000
  CPU min MHz:                          1200.0000
  BogoMIPS:                             3795.66
  Virtualization:                       VT-x
  L1d cache:                            384 KiB
  L1i cache:                            384 KiB
  L2 cache:                             3 MiB
  L3 cache:                             30 MiB
  NUMA node0 CPU(s):                    0,2,4,6,8,10
  NUMA node1 CPU(s):                    1,3,5,7,9,11
  Vulnerability Gather data sampling: Not affected
  Vulnerability Itlb multihit:          KVM: Mitigation: Split huge pages
  Vulnerability L1tf:                   Mitigation; PTE Inversion; VMX conditional cache flushes, SMT disabled
  Vulnerability Mds:                    Mitigation; Clear CPU buffers; SMT disabled
  Vulnerability Meltdown:               Mitigation; PTI
  Vulnerability Mmio stale data:        Mitigation; Clear CPU buffers; SMT disabled
  Vulnerability Retbleed:               Not affected
  Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:             Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP disabled, RSB
                                        filling, PBRSB-eIBRS Not affected
  Vulnerability Srbds:                  Not affected
  Vulnerability Tsx async abort:        Not affected
  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 arch_perfmon pebs bts rep_good nopl xtopology
                                        nonstop_tsc cpuid aperfmperf 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
                                        cpuid_fault epb invpcid_single pti ssbd ibrs ibpb stibp tpr_shadow vnmi
                                        flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2
                                        erms invpcid cqm xsaveopt cqm_llc cqm_occup_llc dtherm arat pln pts
                                        md_clear flush_l1d

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL
     L1d       32K     384K    8 Data            1
     L1i       32K     384K    8 Instruction     1
     L2       256K       3M    8 Unified         2
     L3        15M      30M   20 Unified         3

------------------------------------------------------------
8. numactl warning

Unable to get information from 'numactl --hardware'.  Please consider installing numactl.

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       65853608 kB

------------------------------------------------------------
10. who -r
  run-level 5 2023-11-20 17:55

------------------------------------------------------------
11. Systemd service manager version: systemd 245 (245.4-4ubuntu3.22)
  Default Target  Status
  graphical       degraded

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

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Platform Notes (Continued)

```
12. Failed units, from systemctl list-units --state=failed
    UNIT                 LOAD   ACTIVE SUB    DESCRIPTION
  * sssd-nss.socket      loaded failed failed SSSD NSS Service responder socket
  * sssd-pam-priv.socket loaded failed failed SSSD PAM Service responder private socket
  * sssd-pam.socket      loaded failed failed SSSD PAM Service responder socket

------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                   accounts-daemon anacron apparmor atd autovt@ avahi-daemon binfmt-support blk-availability
                   bluetooth console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager grub-common
                   grub-initrd-fallback irqbalance iscsi keyboard-setup lvm2-monitor lxcfs lxd-agent
                   lxd-agent-9p multipath-tools multipathd network-manager networkd-dispatcher networking
                   nvidia-hibernate nvidia-resume nvidia-suspend ondemand open-iscsi open-vm-tools pollinate
                   portmap pppd-dns resolvconf rpcbind rsync rsyslog secureboot-db setvtrgb snapd ssh sshd
                   sssd syslog systemd-pstore systemd-resolved systemd-timesyncd ua-reboot-cmds
                   ubuntu-advantage udisks2 ufw unattended-upgrades ureadahead vgauth vmtoolsd wpa_supplicant
  enabled-runtime  netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs
  disabled         acpid console-getty debug-shell ifupdown-wait-online iscsid rpc-statd rpc-statd-notify
                   rtkit-daemon serial-getty@ systemd-boot-check-no-failures systemd-network-generator
                   systemd-networkd systemd-networkd-wait-online systemd-time-wait-sync upower
                   wpa_supplicant-nl80211@ wpa_supplicant-wired@ wpa_supplicant@
  generated        apport bootmisc checkfs checkroot checkroot-bootclean display-manager halt hostname
                   killprocs libnss-ldap lightdm mountall mountall-bootclean mountdevsubfs mountkernfs
                   mountnfs mountnfs-bootclean mtab reboot sendsigs single systemd-cryptsetup@cryptswap1
                   umountfs umountnfs umountroot urandom
  indirect         saned@ sssd-autofs sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo uuidd
  masked           alsa-utils cryptdisks cryptdisks-early hwclock lvm2 multipath-tools-boot nfs-common
                   pulseaudio-enable-autospawn rc rcS saned screen-cleanup sudo x11-common

------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-5.4.0-166-generic
  root=UUID=6d908453-d8bd-4cd9-9ec3-ff723940aeb9
  ro

------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 1.20 GHz and 1.90 GHz.
                    The governor "powersave" may decide which speed to use
                    within this range.
    boost state support:
      Supported: no
      Active: no

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

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Platform Notes (Continued)

```
  vm.nr_hugepages                    0
  vm.nr_hugepages_mempolicy          0
  vm.nr_overcommit_hugepages         0
  vm.swappiness                     60
  vm.watermark_boost_factor          0
  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 Ubuntu 20.04.6 LTS

------------------------------------------------------------
20. Disk information
SPEC is set to: /usr/local/cpu2017
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda1      ext4  854G  646G  165G  80% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Dell Inc.
    Product:        PowerEdge T630

------------------------------------------------------------
22. dmidecode warning
  Cannot run dmidecode; consider saying (as root)
   chmod +s /usr/sbin/dmidecode


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Dell Inc.
   BIOS Version:      2.4.2
   BIOS Date:         01/09/2017
```

Compiler Version Notes

```
==============================================================================================================
C | 519.lbm_r(base)
--------------------------------------------------------------------------------------------------------------
clang version 10.0.0-4ubuntu1
```


(Continued on next page)

Compiler Version Notes (Continued)

```
Target: x86_64-pc-linux-gnu
Thread model: posix
InstalledDir: /usr/bin
------------------------------------------------------------------------------------------------------------
```

Base Unknown Flags

519.lbm_r: "`-m64`" (in `CC`) "`-m64`" (in `LD`)
"`-fno-strict-aliasing`" (in `EXTRA_CFLAGS`)

Base Runtime Environment

C benchmarks:

519.lbm_r: `No flags used`

Base Compiler Invocation

C benchmarks:

519.lbm_r: `clang`

Base Portability Flags

519.lbm_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:

519.lbm_r: `-std=c99 -g -O2 -march=native`

Base Other Flags

C benchmarks:

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Base Other Flags (Continued)

519.lbm_r: `No flags used`

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

Tested with SPEC CPU®2017 v1.1.9 on 2023-12-02 19:24:03-0600.
Report generated on 2023-12-02 19:24:27 by CPU2017 PDF formatter v6716.