



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405

SPECrate®2017_fp_peak = 422

CPU2017 License: 9016

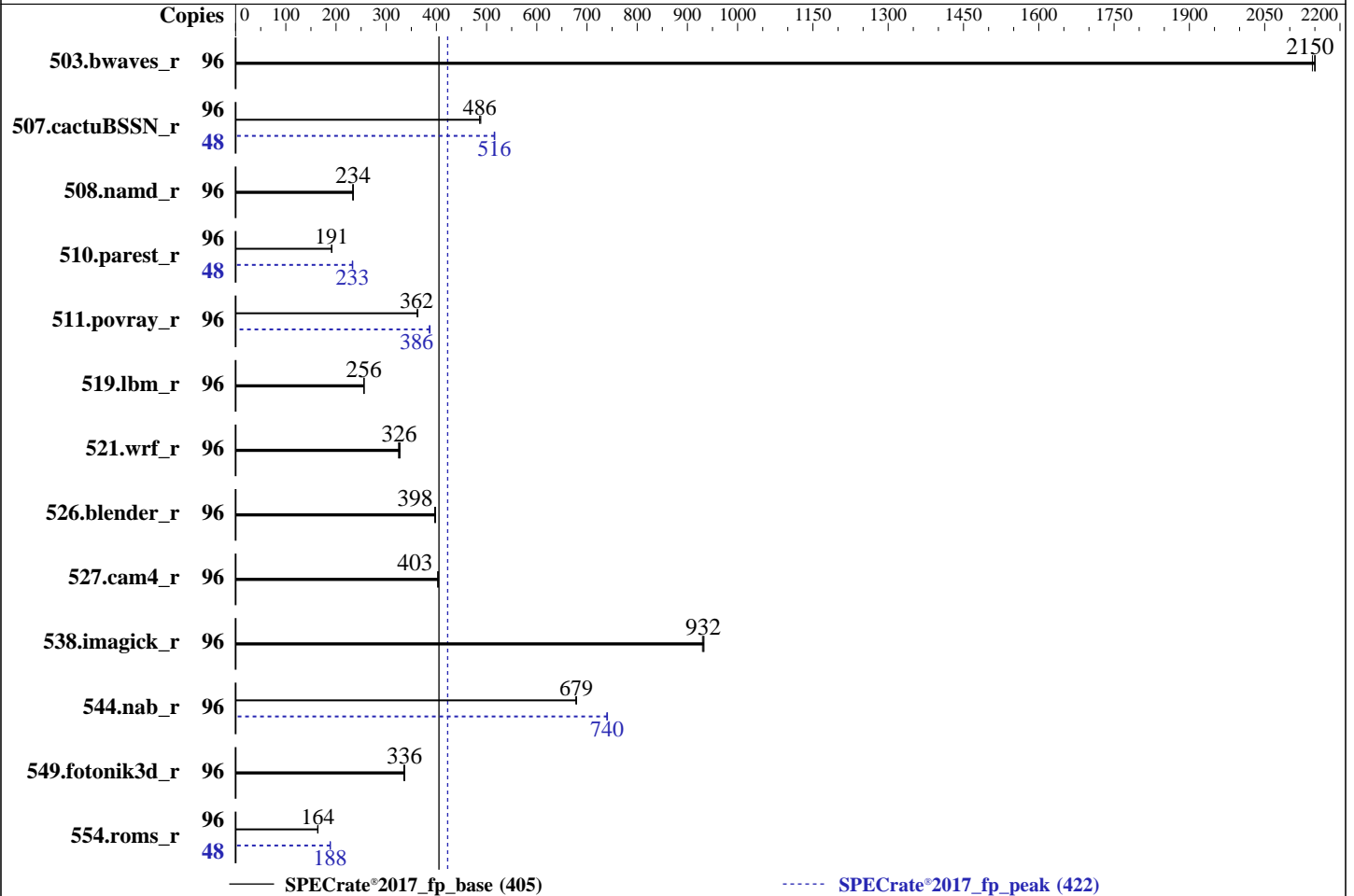
Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023

Hardware Availability: Apr-2022

Software Availability: May-2022



Hardware

CPU Name: Intel Xeon Gold 5318Y
 Max MHz: 3400
 Nominal: 2100
 Enabled: 48 cores, 2 chips, 2 threads/core
 Orderable: 1, 2 chip(s)
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1.25 MB I+D on chip per core
 L3: 36 MB I+D on chip per chip
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R, running at 2933)
 Storage: 1 x 1 TB SATA SSD
 Other: None

Software

OS: Red Hat Enterprise Linux release 8.4 (Ootpa) 4.18.0-305.25.1.el8_4.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 0802 released Apr-2022
 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.



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	96	448	2150	449	2150	448	2150	96	448	2150	449	2150	448	2150
507.cactuBSSN_r	96	249	488	250	486	250	486	48	118	516	118	515	118	516
508.namd_r	96	390	234	391	233	389	235	96	390	234	391	233	389	235
510.parest_r	96	1312	191	1313	191	1310	192	48	540	232	538	233	540	233
511.povray_r	96	617	363	620	362	619	362	96	580	386	579	387	581	386
519.lbm_r	96	396	256	395	256	396	256	96	396	256	395	256	396	256
521.wrf_r	96	660	326	657	327	663	325	96	660	326	657	327	663	325
526.blender_r	96	367	398	368	398	369	396	96	367	398	368	398	369	396
527.cam4_r	96	416	403	416	403	417	403	96	416	403	416	403	417	403
538.imagick_r	96	256	933	256	932	257	930	96	256	933	256	932	257	930
544.nab_r	96	238	679	238	678	238	679	96	218	740	218	741	218	740
549.fotonik3d_r	96	1112	336	1116	335	1111	337	96	1112	336	1116	335	1111	337
554.roms_r	96	930	164	934	163	931	164	48	405	188	405	188	404	189

SPECrate®2017_fp_base = **405**

SPECrate®2017_fp_peak = **422**

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"
OS set to performance mode via cpupower frequency-set -g performance

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/ic22u1/lib/intel64:/home/ic22u1/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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

General Notes (Continued)

```
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>
```

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the 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.
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.
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 Configuration:
VT-d = Disabled
Patrol Scrub = Disabled
SNC = Enable SNC2 (2-clusters)
Engine Boost = Aggressive
SR-IOV Support = Disabled
BMC Configuration:
Fan mode = Full speed mode

```
Sysinfo program /home/ic22ul/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Wed Jan 18 05:03:55 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 (239-45.el8_4.3)`

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

- 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 localhost.localdomain 4.18.0-305.25.1.el8_4.x86_64 #1 SMP Mon Oct 18 14:34:11 EDT 2021 x86_64 x86_64
x86_64 GNU/Linux
```

```
-----
2. w
05:03:55 up 19:45, 2 users, load average: 0.00, 0.00, 2.16
USER      TTY      FROM          LOGIN@      IDLE        JCPU        PCPU WHAT
root      tty1     -              Tue09       11.00s     1.26s      0.00s /bin/bash ./rate.sh
root      tty2     -              Tue09       19:38m     0.04s      0.04s -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) 4126669
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) 4126669
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

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
/bin/bash ./rate.sh
/bin/bash ./rate.sh
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=96 -c
ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=48 --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=96 --configfile
ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=48 --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/CPU2017.303/temlogs/preenv.fprate.303.0.log --lognum 303.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/ic22ul

```

```

-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Gold 5318Y CPU @ 2.10GHz
vendor_id      : GenuineIntel
cpu family     : 6
model          : 106
stepping       : 6
microcode      : 0xd000331
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores      : 24
siblings       : 48
2 physical ids (chips)
96 processors (hardware threads)
physical id 0: core ids 0-23
physical id 1: core ids 0-23
physical id 0: apicids 0-47
physical id 1: apicids 64-111

```

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

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

```

Byte Order:           Little Endian
CPU(s):               96
On-line CPU(s) list: 0-95
Thread(s) per core:  2
Core(s) per socket:  24
Socket(s):            2
NUMA node(s):         4
Vendor ID:            GenuineIntel
BIOS Vendor ID:       Intel
CPU family:            6
Model:                106
Model name:           Intel(R) Xeon(R) Gold 5318Y CPU @ 2.10GHz
BIOS Model name:      Intel(R) Xeon(R) Gold 5318Y CPU @ 2.10GHz
Stepping:             6
CPU MHz:              2016.316
CPU max MHz:          3400.0000
CPU min MHz:          800.0000
BogoMIPS:             4200.00
Virtualization:       VT-x
L1d cache:            48K
L1i cache:            32K
L2 cache:             1280K
L3 cache:             36864K
NUMA node0 CPU(s):   0-11,48-59
NUMA node1 CPU(s):   12-23,60-71
NUMA node2 CPU(s):   24-35,72-83
NUMA node3 CPU(s):   36-47,84-95

```

```

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 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 invpcid_single intel_ppin ssbd mba ibrs ibpb
                    stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust
                    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
                    wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi
                    umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                    avx512_vpopcntdq la57 rdpid fsrm md_clear pconfig flush_lld arch_capabilities

```

8. numactl --hardware

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

```

available: 4 nodes (0-3)
node 0 cpus: 0-11,48-59
node 0 size: 257619 MB

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

```
node 0 free: 256579 MB
node 1 cpus: 12-23,60-71
node 1 size: 258005 MB
node 1 free: 256866 MB
node 2 cpus: 24-35,72-83
node 2 size: 258042 MB
node 2 free: 257139 MB
node 3 cpus: 36-47,84-95
node 3 size: 258040 MB
node 3 free: 257325 MB
node distances:
node  0  1  2  3
  0:  10 11 20 20
  1:  11 10 20 20
  2:  20 20 10 11
  3:  20 20 11 10
```

9. /proc/meminfo
MemTotal: 1056468300 kB

10. who -r
run-level 3 Jan 17 09:18

11. Systemd service manager version: systemd 239 (239-45.el8_4.3)
Default Target Status
multi-user running

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	NetworkManager NetworkManager-dispatcher NetworkManager-wait-online atd auditd autovt@ chronyd crond firewalld getty@ import-state insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors loadmodules lvm2-monitor mcelog mdmonitor microcode multipathd nvme-fc-boot-connections pmcd pmie pmlogger rhsmcertd rsyslog selinux-autorelabel-mark smartd sshd sssd syslog sysstat timedatex tuned udisks2 vdo
disabled	arp-ethers blk-availability chrony-wait console-getty cpupower debug-shell ebttables fancontrol grafana-server iprdump iprinit iprupdate ipsec iscsid iscsiui kpatch kvm_stat ledmon nftables nis-domainname nvme-autoconnect oddjobd pmfind pmie_check pmlogger_check pmlogger_daily_report pmlogger_daily_report-poll pmpoxy podman-auto-update postfix powertop psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts rrdcached saslauthd serial-getty@ sshd-keygen@ systemd-resolved tcsd
indirect	sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
masked	systemd-timedated

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

```

-----
13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=(hd0,gpt2)/vmlinuz-4.18.0-305.25.1.el8_4.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:
    current policy: frequency should be within 800 MHz and 3.40 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.

    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    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

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

```

-----
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 8.4 (Ootpa)
   redhat-release         Red Hat Enterprise Linux release 8.4 (Ootpa)
   system-release         Red Hat Enterprise Linux release 8.4 (Ootpa)

```

```

-----
20. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
   itlb_multihit         Not affected
   lltf                  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

```

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/ic22u1
  Filesystem      Type      Size  Used Avail Use% Mounted on
 /dev/mapper/rhel-home xfs      878G  120G  759G  14% /home

```

```

-----
22. /sys/devices/virtual/dmi/id
   Vendor:          ASUSTeK COMPUTER INC.
   Product:         RS720-E10-RS12

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Platform Notes (Continued)

Product Family: Server
Serial: 012345678901

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 M393A8G40AB2-CWE 64 GB 2 rank 3200, configured at 2933

24. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: American Megatrends Inc.
BIOS Version: 0802
BIOS Date: 04/29/2022
BIOS Revision: 8.2

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.

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Compiler Version Notes (Continued)

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, 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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Base Compiler Invocation (Continued)

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 -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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023

Hardware Availability: Apr-2022

Software Availability: May-2022

Base Optimization Flags (Continued)

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
```

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



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

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
-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:

521.wrf_r: basepeak = yes

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.
ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.10 GHz, Intel Xeon Gold 5318Y)

SPECrate®2017_fp_base = 405
SPECrate®2017_fp_peak = 422

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jan-2023
Hardware Availability: Apr-2022
Software Availability: May-2022

Peak Optimization Flags (Continued)

```
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
-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/ASUSTekPlatform-Settings-z12-V1.2.html>
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2022-10-12.html

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z12-V1.2.xml>
http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2022-10-12.xml

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2023-01-18 05:03:55-0500.
Report generated on 2023-03-15 10:17:17 by CPU2017 PDF formatter v6442.
Originally published on 2023-03-14.