SPEC CPU®2017 Floating Point Speed Result

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ASUSTeK Computer Inc.

ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.30 GHz, Intel Xeon Platinum 8380)

$SPECspeed®2017\_fp\_base = 277$
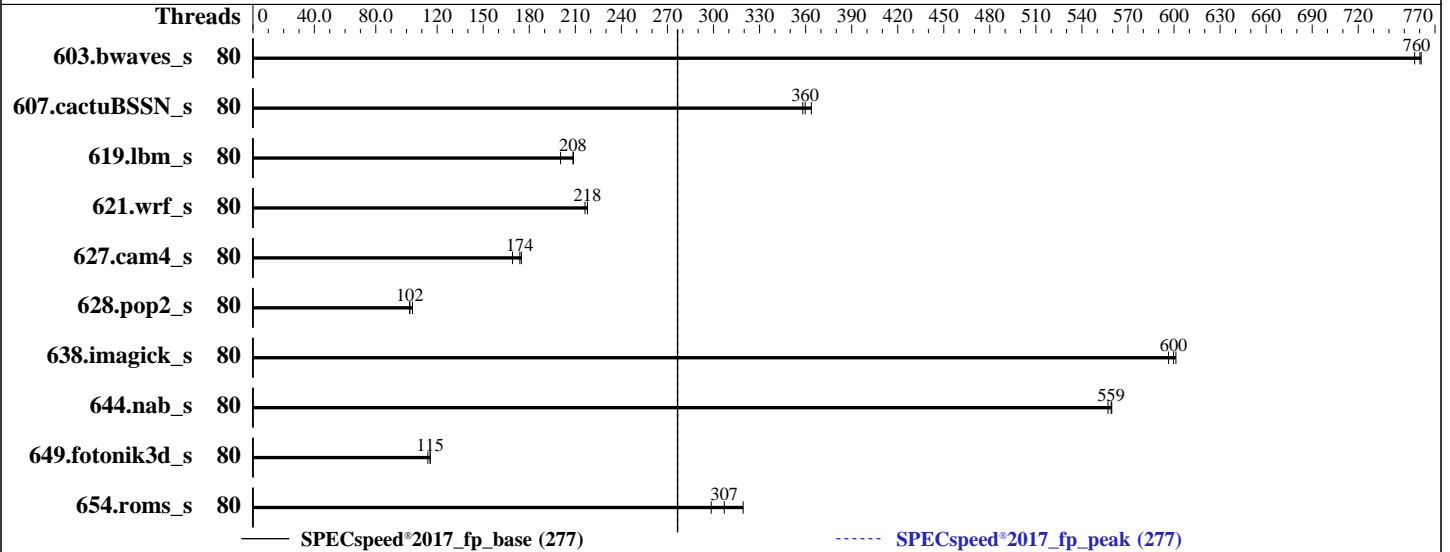
$SPECspeed®2017\_fp\_peak = 277$

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

Test Date: Apr-2023
Hardware Availability: Jul-2021
Software Availability: Dec-2022

Threads | 0   40.0   80.0   120   150   180   210   240   270   300   330   360   390   420   450   480   510   540   570   600   630   660   690   720   770

- 603.bwaves_s **80** — 760
- 607.cactuBSSN_s **80** — 360
- 619.lbm_s **80** — 208
- 621.wrf_s **80** — 218
- 627.cam4_s **80** — 174
- 628.pop2_s **80** — 102
- 638.imagick_s **80** — 600
- 644.nab_s **80** — 559
- 649.fotonik3d_s **80** — 115
- 654.roms_s **80** — 307

——— **SPECspeed®2017_fp_base (277)** ------ **SPECspeed®2017_fp_peak (277)**

Hardware

CPU Name: Intel Xeon Platinum 8380
 Max MHz: 3400
 Nominal: 2300
Enabled: 80 cores, 2 chips
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: 60 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 240 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 8.3 (Ootpa)
 4.18.0-240.22.1.el8_3.x86_64
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++
 Compiler for Linux;
 Fortran: Version 2023.0 of Intel Fortran Compiler
 for Linux;
Parallel: Yes
Firmware: Version 0504 released May-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance
 at the cost of additional power usage.

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Results Table

Benchmark	Base						Peak					
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	80	78.0	757	**77.6**	**760**	77.5	761	80	78.0	757	**77.6**	**760**	77.5	761
607.cactuBSSN_s	80	**46.3**	**360**	46.5	358	45.8	364	80	**46.3**	**360**	46.5	358	45.8	364
619.lbm_s	80	26.1	200	**25.1**	**208**	25.1	209	80	26.1	200	**25.1**	**208**	25.1	209
621.wrf_s	80	60.7	218	**60.7**	**218**	61.1	216	80	60.7	218	**60.7**	**218**	61.1	216
627.cam4_s	80	**51.0**	**174**	50.7	175	52.4	169	80	**51.0**	**174**	50.7	175	52.4	169
628.pop2_s	80	114	104	116	102	**116**	**102**	80	114	104	116	102	**116**	**102**
638.imagick_s	80	**24.1**	**600**	24.0	601	24.2	596	80	**24.1**	**600**	24.0	601	24.2	596
644.nab_s	80	31.2	559	31.4	557	**31.3**	**559**	80	31.2	559	31.4	557	**31.3**	**559**
649.fotonik3d_s	80	**79.0**	**115**	80.0	114	78.9	115	80	**79.0**	**115**	80.0	114	78.9	115
654.roms_s	80	52.7	299	**51.3**	**307**	49.3	319	80	52.7	299	**51.3**	**307**	49.3	319
SPECspeed®2017_fp_base =		**277**										
SPECspeed®2017_fp_peak =		**277**										

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

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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu119/lib/intel64:/home/cpu119/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Redhat Enterprise Linux 8.0
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
```
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
```

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Platform Notes

```
BIOS Configuration:
VT-d = Disabled
Patrol Scrub = Disabled
Hyper-Threading = Disable
Engine Boost = Aggressive
SR-IOV Support = Disabled
BMC Configuration:
Fan mode = Full speed mode

 Sysinfo program /home/cpu119/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Thu Apr 20 02:02:11 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 (239-41.el8_3.2)
 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. tuned-adm active
 17. sysctl
 18. /sys/kernel/mm/transparent_hugepage
 19. /sys/kernel/mm/transparent_hugepage/khugepaged
 20. OS release
 21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
 22. Disk information
 23. /sys/devices/virtual/dmi/id
 24. dmidecode
 25. BIOS
 ------------------------------------------------------------


 ------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 4.18.0-240.22.1.el8_3.x86_64 #1 SMP Thu Mar 25 14:36:04 EDT 2021 x86_64 x86_64
   x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
   02:02:11 up 14:39,  2 users,  load average: 5.01, 4.78, 2.86
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                Wed11    8:36m  1.05s  0.00s /bin/bash ./speed.sh
   root     tty2     -                Wed11    8:09m  0.08s  0.08s -bash


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

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Platform Notes (Continued)

```
          ----------------------------------------------------------
          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) 4126038
            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) 4126038
            virtual memory          (kbytes, -v) unlimited
            file locks                      (-x) unlimited


          ----------------------------------------------------------
          5. sysinfo process ancestry
           /usr/lib/systemd/systemd --switched-root --system --deserialize 18
           login -- root
           -bash
           /bin/bash ./speed.sh
           /bin/bash ./speed.sh
           runcpu --nobuild --action validate --define default-platform-flags -c
             ic2023.0-lin-core-avx512-speed-20221201.cfg --define cores=80 --tune base,peak -o all --define drop_caches
             fpspeed
           runcpu --nobuild --action validate --define default-platform-flags --configfile
             ic2023.0-lin-core-avx512-speed-20221201.cfg --define cores=80 --tune base,peak --output_format all
             --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed fpspeed --nopreenv
             --note-preenv --logfile $SPEC/tmp/CPU2017.006/templogs/preenv.fpspeed.006.0.log --lognum 006.0
             --from_runcpu 2
           specperl $SPEC/bin/sysinfo
          $SPEC = /home/cpu119


          ----------------------------------------------------------
          6. /proc/cpuinfo
              model name         : Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
              vendor_id          : GenuineIntel
              cpu family         : 6
              model              : 106
              stepping           : 6
              microcode          : 0xd000280
              bugs               : spectre_v1 spectre_v2 spec_store_bypass swapgs
              cpu cores          : 40
              siblings           : 40
              2 physical ids (chips)
              80 processors (hardware threads)
              physical id 0: core ids 0-39
              physical id 1: core ids 0-39
              physical id 0: apicids
              0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
              ,74,76,78
              physical id 1: apicids
              128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,1
              80,182,184,186,188,190,192,194,196,198,200,202,204,206
            Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
```

(Continued on next page)

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Platform Notes (Continued)

```
    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):              80
  On-line CPU(s) list: 0-79
  Thread(s) per core:  1
  Core(s) per socket:  40
  Socket(s):           2
  NUMA node(s):        2
  Vendor ID:           GenuineIntel
  CPU family:          6
  Model:               106
  Model name:          Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
  Stepping:            6
  CPU MHz:             800.084
  CPU max MHz:         3400.0000
  CPU min MHz:         800.0000
  BogoMIPS:            4600.00
  Virtualization:      VT-x
  L1d cache:           48K
  L1i cache:           32K
  L2 cache:            1280K
  L3 cache:            61440K
  NUMA node0 CPU(s):   0-39
  NUMA node1 CPU(s):   40-79
  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 md_clear pconfig 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: 0-39
  node 0 size: 482150 MB
  node 0 free: 508541 MB
  node 1 cpus: 40-79
  node 1 size: 483330 MB
  node 1 free: 512835 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10
```

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Platform Notes (Continued)

```
   ----------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       1056472780 kB


   ----------------------------------------------------------
   10. who -r
     run-level 3 Apr 19 11:23


   ----------------------------------------------------------
   11. Systemd service manager version: systemd 239 (239-41.el8_3.2)
     Default Target  Status
     multi-user      degraded


   ----------------------------------------------------------
   12. Failed units, from systemctl list-units --state=failed
       UNIT            LOAD   ACTIVE SUB    DESCRIPTION
     * kdump.service loaded failed failed Crash recovery kernel arming


   ----------------------------------------------------------
   13. Services, from systemctl list-unit-files
     STATE     UNIT FILES
     enabled   NetworkManager NetworkManager-dispatcher NetworkManager-wait-online abrt-journal-core abrt-oops
               abrt-vmcore abrt-xorg abrtd atd auditd autovt@ chronyd crond firewalld getty@ import-state
               irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors loadmodules lvm2-monitor mcelog
               mdmonitor microcode multipathd pmcd pmie pmlogger rhsmcertd rngd rsyslog selinux-autorelabel-mark
               smartd sshd sssd syslog sysstat timedatex tuned udisks2 vdo vgauthd vmtoolsd
     disabled  abrt-ccpp abrt-pstoreoops arp-ethers blk-availability chrony-wait console-getty cpupower dbxtool
               debug-shell ebtables fancontrol grafana-server iprdump iprinit iprupdate ipsec iscsid iscsiuio
               kpatch ledmon nftables nis-domainname oddjobd pmfind pmie_check pmlogger_check
               pmlogger_daily_report pmlogger_daily_report-poll pmmgr pmproxy podman-auto-update postfix
               powertop psacct qemu-guest-agent ras-mc-ctl rasdaemon rdisc rdma rhnsd rhsm rhsm-facts
               rngd-wake-threshold rrdcached saslauthd serial-getty@ snmpd snmptrapd sshd-keygen@
               systemd-resolved tcsd tog-pegasus trace-cmd
     indirect  sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
     masked    systemd-timedated


   ----------------------------------------------------------
   14. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd0,gpt2)/vmlinuz-4.18.0-240.22.1.el8_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


   ----------------------------------------------------------
   15. 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


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

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Platform Notes (Continued)

```
      ----------------------------------------------------------
      17. 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                    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_scale_factor         10
        vm.zone_reclaim_mode               0


      ----------------------------------------------------------
      18. /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


      ----------------------------------------------------------
      19. /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


      ----------------------------------------------------------
      20. OS release
        From /etc/*-release /etc/*-version
        os-release     Red Hat Enterprise Linux 8.3 (Ootpa)
        redhat-release Red Hat Enterprise Linux release 8.3 (Ootpa)
        system-release Red Hat Enterprise Linux release 8.3 (Ootpa)


      ----------------------------------------------------------
      21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
        itlb_multihit       Not affected
        l1tf                Not affected
        mds                 Not affected
        meltdown            Not affected
        spec_store_bypass   Mitigation: Speculative Store Bypass disabled via prctl and seccomp
        spectre_v1          Mitigation: usercopy/swapgs barriers and __user pointer sanitization
        spectre_v2          Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
        srbds               Not affected
        tsx_async_abort     Not affected
      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


      ----------------------------------------------------------
      22. Disk information
```

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Platform Notes (Continued)

```
SPEC is set to: /home/cpu119
  Filesystem              Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   148G   12G  137G   8% /home


  ----------------------------------------------------------------
23. /sys/devices/virtual/dmi/id
    Vendor:         ASUSTeK COMPUTER INC.
    Product:        RS720-E10-RS12
    Product Family: Server
    Serial:         012345678901


  ----------------------------------------------------------------
24. 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 NO DIMM NO DIMM
    16x Samsung M393A8G40AB2-CWE 64 GB 2 rank 3200



  ----------------------------------------------------------------
25. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:      American Megatrends Inc.
  BIOS Version:     0504
  BIOS Date:        05/26/2021
  BIOS Revision:    5.4
```

Compiler Version Notes

```
==============================================================================
C             | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran       | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran, C    | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS720-E10-RS12(Z12PP-D32) Server System
(2.30 GHz, Intel Xeon Platinum 8380)

SPECspeed®2017_fp_base = 277

SPECspeed®2017_fp_peak = 277

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Apr-2023

Hardware Availability: Jul-2021

Software Availability: Dec-2022

Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

Fortran benchmarks:
`ifx`

Benchmarks using both Fortran and C:
`ifx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifx`

Base Portability Flags

603.bwaves_s: `-DSPEC_LP64`
607.cactuBSSN_s: `-DSPEC_LP64`
619.lbm_s: `-DSPEC_LP64`
621.wrf_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
627.cam4_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
628.pop2_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
`-assume byterecl`
638.imagick_s: `-DSPEC_LP64`
644.nab_s: `-DSPEC_LP64`
649.fotonik3d_s: `-DSPEC_LP64`
654.roms_s: `-DSPEC_LP64`

Base Optimization Flags

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

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SPEC CPU®2017 Floating Point Speed Result

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Base Optimization Flags (Continued)

Fortran benchmarks:
```
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using both Fortran and C:
```
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, C, and C++:
```
-m64 -std=c++14 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP -Wno-implicit-int
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

Fortran benchmarks:
```
ifx
```

Benchmarks using both Fortran and C:
```
ifx icx
```

Benchmarks using Fortran, C, and C++:
```
icpx icx ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

SPEC CPU®2017 Floating Point Speed Result
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(2.30 GHz, Intel Xeon Platinum 8380)

SPECspeed®2017_fp_base = 277

SPECspeed®2017_fp_peak = 277

Peak Optimization Flags

C benchmarks:

619.lbm_s: `basepeak = yes`

638.imagick_s: `basepeak = yes`

644.nab_s: `basepeak = yes`

Fortran benchmarks:

603.bwaves_s: `basepeak = yes`

649.fotonik3d_s: `basepeak = yes`

654.roms_s: `basepeak = yes`

Benchmarks using both Fortran and C:

621.wrf_s: `basepeak = yes`

627.cam4_s: `basepeak = yes`

628.pop2_s: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: `basepeak = yes`

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-ic2023-official-linux64.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-ic2023-official-linux64.xml`

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

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