SPEC CPU®2017 Floating Point Speed Result

ASUSTeK Computer Inc.

ASUS RS720-E11-RS12U
(2.10 GHz, Intel Xeon Platinum 8570)

$SPECspeed®2017\_fp\_base = 423$

$SPECspeed®2017\_fp\_peak = 423$
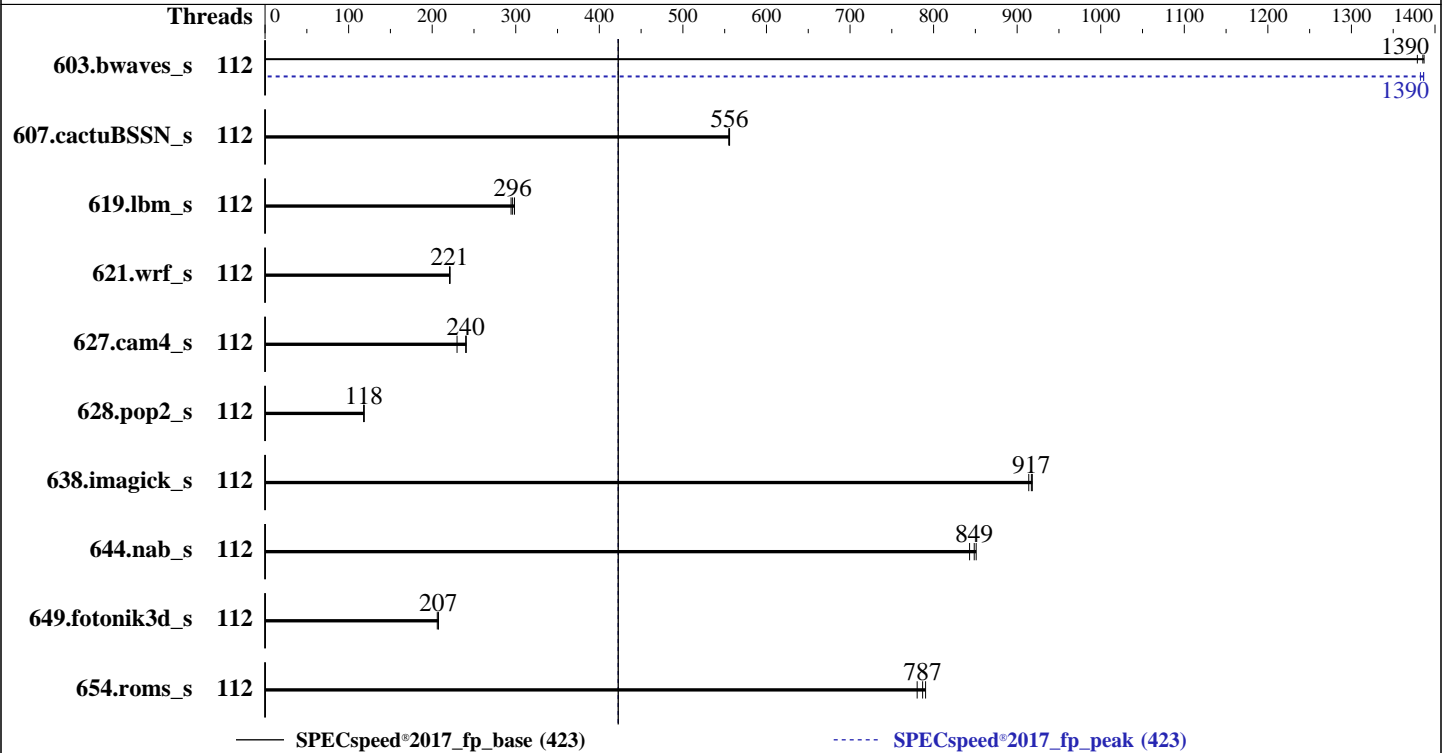
CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Jun-2024
Hardware Availability: Dec-2023
Software Availability: Mar-2024

Threads

Benchmark	Threads	Result
603.bwaves_s	112	1390 / 1390
607.cactuBSSN_s	112	556
619.lbm_s	112	296
621.wrf_s	112	221
627.cam4_s	112	240
628.pop2_s	112	118
638.imagick_s	112	917
644.nab_s	112	849
649.fotonik3d_s	112	207
654.roms_s	112	787

SPECspeed®2017_fp_base (423)   SPECspeed®2017_fp_peak (423)

Hardware

CPU Name: Intel Xeon Platinum 8570
 Max MHz: 4000
 Nominal: 2100
Enabled: 112 cores, 2 chips
Orderable: 1, 2 chip(s)
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 PC5-5600B-R)
Storage: 1 x 1.6 TB PCIe NVMe SSD
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise High Performance Computing 15 SP5 (x86_64)
 Kernel 5.14.21-150500.53-default
Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: Version 2201 released Dec-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS 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	112	**42.6**	**1390**	42.5	1390	42.8	1380	112	42.6	1390	42.7	1380	**42.6**	**1390**
607.cactuBSSN_s	112	**30.0**	**556**	30.0	555	30.0	556	112	**30.0**	**556**	30.0	555	30.0	556
619.lbm_s	112	17.8	294	17.5	299	**17.7**	**296**	112	17.8	294	17.5	299	**17.7**	**296**
621.wrf_s	112	**59.9**	**221**	59.7	221	59.9	221	112	**59.9**	**221**	59.7	221	59.9	221
627.cam4_s	112	**36.9**	**240**	36.8	241	38.6	230	112	**36.9**	**240**	36.8	241	38.6	230
628.pop2_s	112	100	119	101	118	**100**	**118**	112	100	119	101	118	**100**	**118**
638.imagick_s	112	15.8	914	15.7	918	**15.7**	**917**	112	15.8	914	15.7	918	**15.7**	**917**
644.nab_s	112	20.5	851	20.7	843	**20.6**	**849**	112	20.5	851	20.7	843	**20.6**	**849**
649.fotonik3d_s	112	44.0	207	**44.0**	**207**	44.2	206	112	44.0	207	**44.0**	**207**	44.2	206
654.roms_s	112	20.2	780	19.9	790	**20.0**	**787**	112	20.2	780	19.9	790	**20.0**	**787**
SPECspeed®2017_fp_base =		423												
SPECspeed®2017_fp_peak =		423												

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 = "/ic24u1/lib/intel64:/ic24u1/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 Red Hat 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
Hyper-Threading = Disable
Patrol Scrub = Disabled
Engine Boost = Aggressive
SR-IOV Support = Disabled
BMC Configuration:
Fan mode = Full speed mode

Sysinfo program /ic24u1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Thu Jun 13 13:31:30 2024

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 249 (249.16+suse.171.gdad0071f15)
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. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS
-------------------------------------------------------------


-------------------------------------------------------------
1. uname -a
  Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)
  x86_64 x86_64 x86_64 GNU/Linux


-------------------------------------------------------------
2. w
  13:31:30 up  3:54,  2 users,  load average: 76.14, 95.25, 98.43
  USER     TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1     -               09:37    3:32m  0.80s  0.00s /bin/bash ./speed.sh
  root     tty2     -               09:37    1:46m  0.04s  0.04s -bash


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

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

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Platform Notes (Continued)

```
  4. ulimit -a
    core file size          (blocks, -c) unlimited
    data seg size           (kbytes, -d) unlimited
    scheduling priority             (-e) 0
    file size               (blocks, -f) unlimited
    pending signals                 (-i) 4126865
    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) 4126865
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited

  ------------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   /bin/bash ./speed.sh
   /bin/bash ./speed.sh
   runcpu --nobuild --action validate --define default-platform-flags -c
     ic2024.1-lin-sapphirerapids-speed-20240308.cfg --define cores=112 --tune base,peak -o all --define
     drop_caches fpspeed
   runcpu --nobuild --action validate --define default-platform-flags --configfile
     ic2024.1-lin-sapphirerapids-speed-20240308.cfg --define cores=112 --tune base,peak --output_format all
     --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed fpspeed --nopreenv
     --note-preenv --logfile $SPEC/tmp/CPU2017.071/templogs/preenv.fpspeed.071.0.log --lognum 071.0
     --from_runcpu 2
   specperl $SPEC/bin/sysinfo
  $SPEC = /ic24u1

  ------------------------------------------------------------
  6. /proc/cpuinfo
    model name         : INTEL(R) XEON(R) PLATINUM 8570
    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          : 56
    siblings           : 56
    2 physical ids (chips)
    112 processors (hardware threads)
    physical id 0: core ids 0-55
    physical id 1: core ids 0-55
    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
    ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110
    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
    80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230,23
    2,234,236,238
    Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
    virtualized systems.  Use the above data carefully.
```

(Continued on next page)

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Platform Notes (Continued)

```
    -----------------------------------------------------------
    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):                  112
      On-line CPU(s) list:     0-111
      Vendor ID:               GenuineIntel
      Model name:              INTEL(R) XEON(R) PLATINUM 8570
      CPU family:              6
      Model:                   207
      Thread(s) per core:      1
      Core(s) per socket:      56
      Socket(s):               2
      Stepping:                2
      CPU max MHz:             4000.0000
      CPU min MHz:             800.0000
      BogoMIPS:                4200.00
      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 cdp_l2 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 rtm 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 avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hwp
                               hwp_act_window hwp_epp hwp_pkg_req 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 avx512_fp16
                               amx_tile flush_l1d arch_capabilities
      Virtualization:          VT-x
      L1d cache:               5.3 MiB (112 instances)
      L1i cache:               3.5 MiB (112 instances)
      L2 cache:                224 MiB (112 instances)
      L3 cache:                600 MiB (2 instances)
      NUMA node(s):            2
      NUMA node0 CPU(s):       0-55
      NUMA node1 CPU(s):       56-111
      Vulnerability Itlb multihit:   Not affected
      Vulnerability L1tf:            Not affected
      Vulnerability Mds:             Not affected
      Vulnerability Meltdown:        Not affected
      Vulnerability Mmio stale data: Not affected
      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; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-eIBRS SW
                                     sequence
      Vulnerability Srbds:           Not affected
      Vulnerability Tsx async abort: Not affected
```

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Platform Notes (Continued)

```
From lscpu --cache:
    NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL   SETS PHY-LINE COHERENCY-SIZE
    L1d      48K     5.3M   12 Data           1     64    1            64
    L1i      32K     3.5M    8 Instruction    1     64    1            64
    L2        2M     224M   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: 2 nodes (0-1)
  node 0 cpus: 0-55
  node 0 size: 515685 MB
  node 0 free: 514395 MB
  node 1 cpus: 56-111
  node 1 size: 516060 MB
  node 1 free: 513687 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


----------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056508500 kB


----------------------------------------------------------------
10. who -r
   run-level 3 Jun 13 09:37


----------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
   Default Target  Status
   multi-user      running


----------------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE            UNIT FILES
   enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ haveged
                    irqbalance issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections
                    postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4
                    wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
   enabled-runtime  systemd-remount-fs
   disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                    chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                    firewalld gpm grub2-once haveged-switch-root hwloc-dump-hwdata ipmi ipmievd
                    issue-add-ssh-keys kexec-load lunmask man-db-create multipathd ndctl-monitor nfs
                    nfs-blkmap nvmf-autoconnect rpcbind rpmconfigcheck rsyncd serial-getty@
                    smartd_generate_opts snmpd snmptrapd svnserve systemd-boot-check-no-failures
                    systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
                    udisks2 vncserver@
   indirect         wickedd


----------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
   root=UUID=1821a225-9785-4821-9a33-99bd3ded8cae
   splash=silent
   mitigations=auto
```

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Platform Notes (Continued)

```
    quiet
    security=apparmor

    ------------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 800 MHz and 4.00 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
     boost state support:
       Supported: yes
       Active: yes

    ------------------------------------------------------------
15. tuned-adm active
   It seems that tuned daemon is not running, preset profile is not activated.
   Preset profile: latency-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                   20
   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                    60
   vm.watermark_boost_factor        15000
   vm.watermark_scale_factor        10
   vm.zone_reclaim_mode             0

    ------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
   defrag          always defer defer+madvise [madvise] never
   enabled         [always] madvise never
   hpage_pmd_size  2097152
   shmem_enabled   always within_size advise [never] deny force

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

    ------------------------------------------------------------
19. OS release
   From /etc/*-release /etc/*-version
```

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Platform Notes (Continued)

```
   os-release SUSE Linux Enterprise High Performance Computing 15 SP5


   ----------------------------------------------------------
   20. Disk information
   SPEC is set to: /ic24u1
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/nvme0n1p8 xfs   1.3T  109G  1.2T   9% /

   ----------------------------------------------------------
   21. /sys/devices/virtual/dmi/id
       Vendor:         ASUSTeK COMPUTER INC.
       Product:        RS720-E11-RS12U
       Product Family: Server
       Serial:         R1S0MD000002


   ----------------------------------------------------------
   22. dmidecode
     Additional information from dmidecode 3.4 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 M321R8GA0PB0-CWMXJ 64 GB 2 rank 5600



   ----------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:      American Megatrends Inc.
     BIOS Version:     2201
     BIOS Date:        12/22/2023
     BIOS Revision:    22.1
```

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 2024.1.0 Build 20240308
Copyright (C) 1985-2024 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 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 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 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------
```

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Compiler Version Notes (Continued)

```
==============================================================================
Fortran, C    | 621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 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:
`-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math`
`-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp`

(Continued on next page)

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

ASUSTeK Computer Inc.

ASUS RS720-E11-RS12U
(2.10 GHz, Intel Xeon Platinum 8570)

SPECspeed®2017_fp_base = 423

SPECspeed®2017_fp_peak = 423

CPU2017 License: 9016		**Test Date:**	Jun-2024
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Dec-2023
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Mar-2024

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-DSPEC_OPENMP -Wno-implicit-int -mprefer-vector-width=512
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xsapphirerapids -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:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, 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 -fiopenmp -DSPEC_OPENMP -Wno-implicit-int
-mprefer-vector-width=512 -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
```

SPEC CPU®2017 Floating Point Speed Result
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ASUSTeK Computer Inc.

ASUS RS720-E11-RS12U
(2.10 GHz, Intel Xeon Platinum 8570)

SPECspeed®2017_fp_base = 423

SPECspeed®2017_fp_peak = 423

CPU2017 License: 9016		**Test Date:**	Jun-2024
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Dec-2023
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Mar-2024

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: `-w -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xsapphirerapids`
`-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`

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-z13-V1.3.html
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-z13-V1.3.xml
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml

SPEC CPU®2017 Floating Point Speed Result

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ASUS RS720-E11-RS12U
(2.10 GHz, Intel Xeon Platinum 8570)

$SPECspeed®2017\_fp\_base = 423$

$SPECspeed®2017\_fp\_peak = 423$

CPU2017 License: 9016		**Test Date:**	Jun-2024
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Dec-2023
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Mar-2024

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 2024-06-13 01:31:30-0400.
Report generated on 2024-07-03 09:25:23 by CPU2017 PDF formatter v6716.
Originally published on 2024-07-02.