SPEC CPU®2017 Floating Point Speed Result

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Quanta Cloud Technology
(Test Sponsor: Quanta Computer Inc.)

D54Q-2U (Intel Xeon Platinum 8592+)

$SPECspeed®2017\_fp\_base =$ **386**

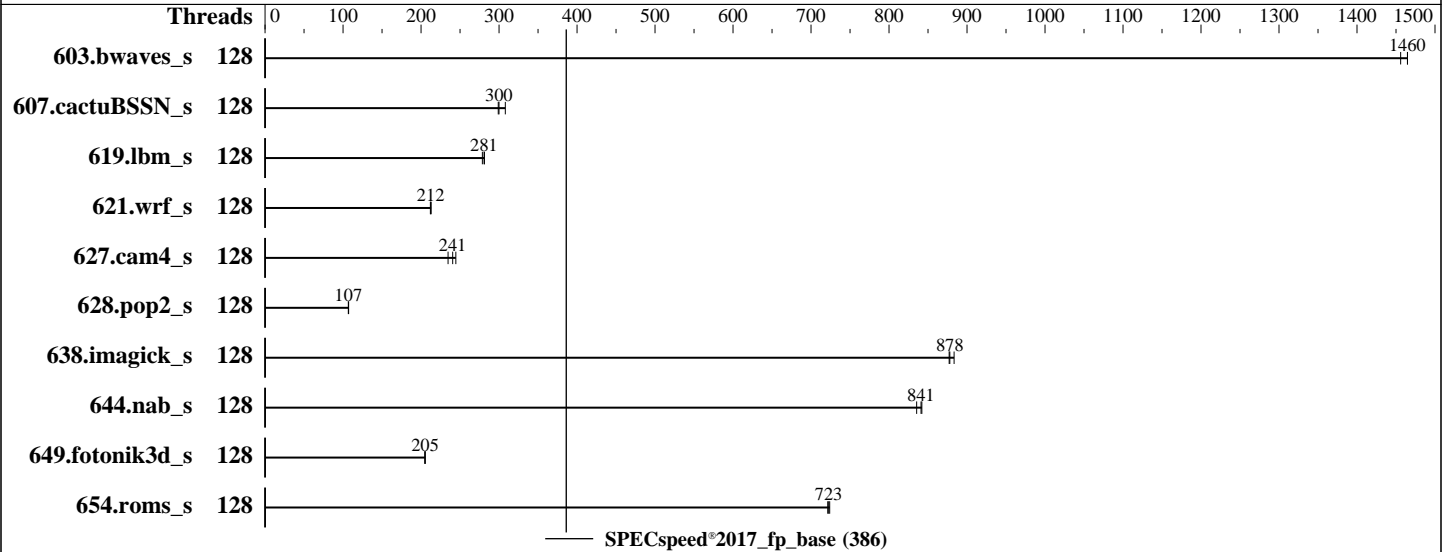$SPECspeed®2017\_fp\_peak =$ Not Run

CPU2017 License: 9050
Test Sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.

Test Date: Dec-2023
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Threads	
603.bwaves_s	128	1460
607.cactuBSSN_s	128	300
619.lbm_s	128	281
621.wrf_s	128	212
627.cam4_s	128	241
628.pop2_s	128	107
638.imagick_s	128	878
644.nab_s	128	841
649.fotonik3d_s	128	205
654.roms_s	128	723

SPECspeed®2017_fp_base (386)

Hardware

CPU Name: Intel Xeon Platinum 8592+
 Max MHz: 3900
 Nominal: 1900
Enabled: 128 cores, 2 chips
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 320 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R)
Storage: 140 GB on tmpfs
Other: None

Software

OS: Red Hat Enterprise Linux 9.3 (Plow)
 5.14.0-362.8.1.el9_3.x86_64
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: Version 3B05.QCT4T1 released Nov-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

Standard Performance Evaluation Corporation (info@spec.org)
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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	128	40.3	1460	40.5	1460	**40.3**	**1460**							
607.cactuBSSN_s	128	**55.6**	**300**	55.8	299	54.1	308							
619.lbm_s	128	**18.7**	**281**	18.8	279	18.6	281							
621.wrf_s	128	62.1	213	62.4	212	**62.3**	**212**							
627.cam4_s	128	36.2	245	37.8	235	**36.8**	**241**							
628.pop2_s	128	**111**	**107**	111	107	111	107							
638.imagick_s	128	16.4	877	16.3	883	**16.4**	**878**							
644.nab_s	128	20.9	835	**20.8**	**841**	20.7	842							
649.fotonik3d_s	128	44.4	205	**44.4**	**205**	44.5	205							
654.roms_s	128	21.8	721	**21.8**	**723**	21.7	724							

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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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/root/cpu2017/lib/intel64:/root/cpu2017/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
Enable LP [Global] set to Single LP
Patrol Scrub set to Disabled
SNC set to Disabled
LLC dead line alloc set to Disable
Hardware P-States set to Disable

 Sysinfo program /root/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Mon Dec  4 20:38:22 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 252 (252-18.el9)
 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.localdomain 5.14.0-362.8.1.el9_3.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Oct 3 11:12:36 EDT 2023
   x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
    20:38:22 up 1 min,  1 user,  load average: 0.31, 0.15, 0.05
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       20:37    1:01   0.78s  0.00s /bin/bash ./test.sh

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


 ------------------------------------------------------------
 4. ulimit -a
   real-time non-blocking time  (microseconds, -R) unlimited
   core file size              (blocks, -c) 0
```

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Platform Notes (Continued)

```
   data seg size              (kbytes, -d) unlimited
   scheduling priority              (-e) 0
   file size                  (blocks, -f) unlimited
   pending signals                  (-i) 4124233
   max locked memory          (kbytes, -l) 8192
   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) 4124233
   virtual memory             (kbytes, -v) unlimited
   file locks                       (-x) unlimited


 ----------------------------------------------------------
 5. sysinfo process ancestry
 /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
 login -- root
 -bash
 /bin/bash ./test.sh
 /bin/bash ./test.sh
 runcpu --nobuild --action validate --define default-platform-flags -c
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base -o all --define
   drop_caches fpspeed
 runcpu --nobuild --action validate --define default-platform-flags --configfile
   ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=128 --tune base --output_format all
   --define drop_caches --nopower --runmode speed --tune base --size refspeed fpspeed --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.002/templogs/preenv.fpspeed.002.0.log --lognum 002.0
   --from_runcpu 2
 specperl $SPEC/bin/sysinfo
 $SPEC = /root/cpu2017


 ----------------------------------------------------------
 6. /proc/cpuinfo
   model name        : INTEL(R) XEON(R) PLATINUM 8592+
   vendor_id         : GenuineIntel
   cpu family        : 6
   model             : 207
   stepping          : 2
   microcode         : 0x21000190
   bugs              : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
   cpu cores         : 64
   siblings          : 64
   2 physical ids (chips)
   128 processors (hardware threads)
   physical id 0: core ids 0-63
   physical id 1: core ids 0-63
   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
   ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126
   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
   2,234,236,238,240,242,244,246,248,250,252,254
 Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
 virtualized systems.  Use the above data carefully.


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

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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:                     52 bits physical, 57 bits virtual
  Byte Order:                        Little Endian
  CPU(s):                            128
  On-line CPU(s) list:               0-127
  Vendor ID:                         GenuineIntel
  BIOS Vendor ID:                    Intel(R) Corporation
  Model name:                        INTEL(R) XEON(R) PLATINUM 8592+
  BIOS Model name:                   INTEL(R) XEON(R) PLATINUM 8592+
  CPU family:                        6
  Model:                             207
  Thread(s) per core:                1
  Core(s) per socket:                64
  Socket(s):                         2
  Stepping:                          2
  Frequency boost:                   enabled
  CPU max MHz:                        1901.0000
  CPU min MHz:                        800.0000
  BogoMIPS:                          3800.00
  Flags:                             fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                                     clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb
                                     rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl
                                     xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq
                                     dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm
                                     pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
                                     avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2
                                     cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
                                     ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase
                                     tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq
                                     rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
                                     avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
                                     cqm_mbm_total cqm_mbm_local split_lock_detect avx_vnni avx512_bf16
                                     wbnoinvd dtherm ida arat pln pts vnmi avx512vbmi umip pku ospke waitpkg
                                     avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                                     avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                                     enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16
                                     avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities
  Virtualization:                    VT-x
  L1d cache:                         6 MiB (128 instances)
  L1i cache:                         4 MiB (128 instances)
  L2 cache:                          256 MiB (128 instances)
  L3 cache:                          640 MiB (2 instances)
  NUMA node(s):                      2
  NUMA node0 CPU(s):                 0-63
  NUMA node1 CPU(s):                 64-127
  Vulnerability Gather data sampling: Not affected
  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
  Vulnerability Spectre v1:          Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:          Mitigation; Enhanced / Automatic IBRS, IBPB conditional, RSB filling,
                                     PBRSB-eIBRS SW sequence
```

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Platform Notes (Continued)

```
  Vulnerability Srbds:               Not affected
  Vulnerability Tsx async abort:     Not affected

From lscpu --cache:
    NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
    L1d       48K      6M   12 Data            1     64       1              64
    L1i       32K      4M    8 Instruction     1     64       1              64
    L2         2M    256M   16 Unified         2   2048       1              64
    L3       320M    640M   20 Unified         3 262144       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: 0-63
  node 0 size: 515097 MB
  node 0 free: 513823 MB
  node 1 cpus: 64-127
  node 1 size: 516020 MB
  node 1 free: 514555 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1055865192 kB


------------------------------------------------------------
10. who -r
  run-level 3 Dec 4 20:37


------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-18.el9)
  Default Target  Status
  multi-user      running


------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE           UNIT FILES
  enabled         ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                  accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker gdm
                  getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt
                  low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
                  nvmefc-boot-connections ostree-remount power-profiles-daemon qemu-guest-agent rhsmcertd
                  rpcbind rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd switcheroo-control
                  systemd-boot-update systemd-network-generator tuned udisks2 upower vgauthd vmtoolsd
  enabled-runtime rc-local systemd-remount-fs
  disabled        arp-ethers blk-availability brltty canberra-system-bootup canberra-system-shutdown
                  canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cups-browsed
                  dbus-daemon debug-shell dnf-system-upgrade dnsmasq firewalld gssproxy hwloc-dump-hwdata
                  iprdump iprinit iprupdate ipsec iscsid iscsiuio kpatch kvm_stat ledmon
                  man-db-restart-cache-update netavark-dhcp-proxy nfs-blkmap nfs-server nftables
                  nvmf-autoconnect ostree-readonly-sysroot-migration pesign podman podman-auto-update
                  podman-clean-transient podman-kube@ podman-restart psacct ras-mc-ctl rasdaemon rdisc rhcd
                  rhsm rhsm-facts rpmdb-rebuild selinux-check-proper-disable serial-getty@
                  speech-dispatcherd sshd-keygen@ systemd-boot-check-no-failures systemd-pstore
                  systemd-sysext wpa_supplicant
  indirect        spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
```

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Platform Notes (Continued)

```
                    systemd-sysupdate systemd-sysupdate-reboot

  ----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd5,gpt2)/vmlinuz-5.14.0-362.8.1.el9_3.x86_64
  root=UUID=927e9c60-83aa-4bd3-a6a1-d5575fd7decf
  ro
  crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
  resume=UUID=73cb0af2-a507-470d-a660-3c72e03cac37
  nomodeset
  rhgb
  quiet
  selinux=0


  ----------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 800 MHz and 1.90 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       20
  vm.dirty_background_bytes         0
  vm.dirty_background_ratio         10
  vm.dirty_bytes                    0
  vm.dirty_expire_centisecs         3000
  vm.dirty_ratio                    40
  vm.dirty_writeback_centisecs      500
  vm.dirtytime_expire_seconds       43200
  vm.extfrag_threshold              500
  vm.min_unmapped_ratio             1
  vm.nr_hugepages                   0
  vm.nr_hugepages_mempolicy         0
  vm.nr_overcommit_hugepages        0
  vm.swappiness                     10
  vm.watermark_boost_factor         15000
  vm.watermark_scale_factor         10
  vm.zone_reclaim_mode              0


  ----------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
  defrag          always defer 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
```

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Platform Notes (Continued)

```
  defrag                   1
  max_ptes_none          511
  max_ptes_shared        256
  max_ptes_swap           64
  pages_to_scan         4096
  scan_sleep_millisecs  10000


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


  ----------------------------------------------------------
20. Disk information
SPEC is set to: /root/cpu2017
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda3      xfs    98G   24G   75G  24% /


  ----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:        Quanta Cloud Technology Inc.
    Product:       QuantaGrid D54Q-2U


  ----------------------------------------------------------
22. dmidecode
  Additional information from dmidecode 3.5 follows.  WARNING: Use caution when you interpret this section.
  The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
  determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
  "DMTF SMBIOS" standard.
  Memory:
    16x Samsung M321R8GA0PB0-CWMXH 64 GB 2 rank 5600



  ----------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       American Megatrends International, LLC.
    BIOS Version:      3B05.QCT4T1
    BIOS Date:         11/06/2023
    BIOS Revision:     5.32
    Firmware Revision: 3.57
```

Compiler Version Notes

```
==============================================================================================
C               | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
C++, C, Fortran | 607.cactuBSSN_s(base)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
```

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Compiler Version Notes (Continued)

```
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------------------


==========================================================================================
Fortran         | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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==========================================================================================
Fortran, C      | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)
------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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------------------------------------------------------------------------------------------
```

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`

(Continued on next page)

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

Quanta Cloud Technology
(Test Sponsor: Quanta Computer Inc.)

D54Q-2U (Intel Xeon Platinum 8592+)

SPECspeed®2017_fp_base = 386

SPECspeed®2017_fp_peak = Not Run

CPU2017 License:	9050	**Test Date:**	Dec-2023
Test Sponsor:	Quanta Computer Inc.	**Hardware Availability:**	Feb-2024
Tested by:	Quanta Computer Inc.	**Software Availability:**	Dec-2023

Base Portability Flags (Continued)

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
-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
```

The flags files that were used to format this result can be browsed at
  http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html
  http://www.spec.org/cpu2017/flags/Quanta-Computer-Inc-Eagle_Stream-Platform-Settings-V1.3.html

You can also download the XML flags sources by saving the following links:
  http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml
  http://www.spec.org/cpu2017/flags/Quanta-Computer-Inc-Eagle_Stream-Platform-Settings-V1.3.xml

SPEC CPU®2017 Floating Point Speed Result

Quanta Cloud Technology
(Test Sponsor: Quanta Computer Inc.)

D54Q-2U (Intel Xeon Platinum 8592+)

SPECspeed®2017_fp_base = 386

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 9050	**Test Date:**	Dec-2023
Test Sponsor: Quanta Computer Inc.	**Hardware Availability:**	Feb-2024
Tested by: Quanta Computer Inc.	**Software Availability:**	Dec-2023

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

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