SPEC CPU®2017 Floating Point Speed Result

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Lenovo Global Technology

$SPECspeed®2017\_fp\_base = 279$

ThinkSystem SD530 V3
(2.20 GHz, Intel Xeon Silver 4516Y+)

$SPECspeed®2017\_fp\_peak = Not Run$

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

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

Threads		Value
603.bwaves_s	48	946
607.cactuBSSN_s	48	391
619.lbm_s	48	221
621.wrf_s	48	176
627.cam4_s	48	159
628.pop2_s	48	90.1
638.imagick_s	48	563
644.nab_s	48	429
649.fotonik3d_s	48	159
654.roms_s	48	355

SPECspeed®2017_fp_base (279)

Hardware

CPU Name: Intel Xeon Silver 4516Y+
  Max MHz: 3700
  Nominal: 2200
Enabled: 48 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: 45 MB I+D on chip per chip
  Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R, running at 4400)
Storage: 1 x 480 GB M.2 SATA SSD
Other: Cooling: Air

Software

OS: Red Hat Enterprise Linux 9.3 (Plow)
  Kernel 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: Lenovo BIOS Version FNE113F 2.20 released Jan-2024
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

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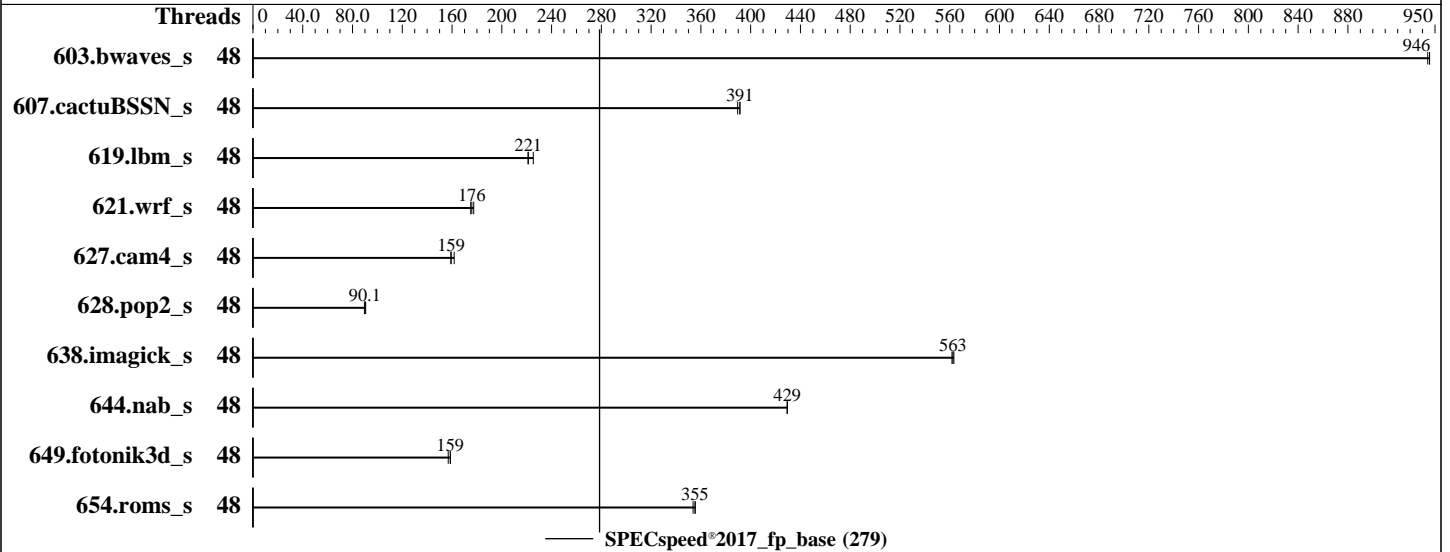
SPECspeed®2017_fp_peak = Not Run

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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	48	**62.4**	**946**	62.5	944	62.4	946							
607.cactuBSSN_s	48	42.8	390	42.6	391	**42.6**	**391**							
619.lbm_s	48	23.7	221	**23.7**	**221**	23.2	225							
621.wrf_s	48	74.5	177	75.6	175	**75.2**	**176**							
627.cam4_s	48	54.8	162	55.7	159	**55.6**	**159**							
628.pop2_s	48	131	90.6	133	89.6	**132**	**90.1**							
638.imagick_s	48	**25.6**	**563**	25.6	563	25.7	562							
644.nab_s	48	40.7	430	40.7	429	**40.7**	**429**							
649.fotonik3d_s	48	**57.5**	**159**	58.1	157	57.4	159							
654.roms_s	48	**44.3**	**355**	44.5	354	44.3	355							
SPECspeed®2017_fp_base =		**279**												
SPECspeed®2017_fp_peak =		**Not Run**												

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 = "/home/cpu2017-1.1.9-ic2023.2.3/lib/intel64:/home/cpu2017-1.1.9-ic2023.2.3/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:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
C-States set to Legacy
Hyper-Threading set to Disabled
Adjacent Cache Prefetch set to Disabled
AMP Prefetch set to Enable

 Sysinfo program /home/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Sun Mar  3 03:07:28 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 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. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. 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
    03:07:28 up 0 min,  1 user,  load average: 0.10, 0.03, 0.01
   USER     TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1        03:07    8.00s  0.79s  0.00s -bash


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


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

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Platform Notes (Continued)

```
   scheduling priority              (-e) 0
   file size              (blocks, -f) unlimited
   pending signals                  (-i) 4126987
   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) 4126987
   virtual memory         (kbytes, -v) unlimited
   file locks                       (-x) unlimited


    ----------------------------------------------------------
    5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 31
    login -- root
    -bash
    -bash
    -bash
    runcpu --nobuild --action validate --define default-platform-flags -c
      ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=48 --tune base -o all --define drop_caches
      fpspeed
    runcpu --nobuild --action validate --define default-platform-flags --configfile
      ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=48 --tune base --output_format all --define
      drop_caches --nopower --runmode speed --tune base --size refspeed fpspeed --nopreenv --note-preenv
      --logfile $SPEC/tmp/CPU2017.477/templogs/preenv.fpspeed.477.0.log --lognum 477.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /home/cpu2017-1.1.9-ic2023.2.3


    ----------------------------------------------------------
    6. /proc/cpuinfo
       model name      : INTEL(R) XEON(R) SILVER 4516Y+
       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       : 24
       siblings        : 24
       2 physical ids (chips)
       48 processors (hardware threads)
       physical id 0: core ids 0-23
       physical id 1: core ids 0-23
       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
       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
      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 2.37.4:
      Architecture:                 x86_64
      CPU op-mode(s):               32-bit, 64-bit
      Address sizes:                46 bits physical, 57 bits virtual
```

(Continued on next page)

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Platform Notes (Continued)

```
Byte Order:                        Little Endian
CPU(s):                            48
On-line CPU(s) list:               0-47
Vendor ID:                         GenuineIntel
BIOS Vendor ID:                    Intel(R) Corporation
Model name:                        INTEL(R) XEON(R) SILVER 4516Y+
BIOS Model name:                   INTEL(R) XEON(R) SILVER 4516Y+
CPU family:                        6
Model:                             207
Thread(s) per core:                1
Core(s) per socket:                24
Socket(s):                         2
Stepping:                          2
BogoMIPS:                          4400.00
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 hfi 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:                         2.3 MiB (48 instances)
L1i cache:                         1.5 MiB (48 instances)
L2 cache:                          96 MiB (48 instances)
L3 cache:                          90 MiB (2 instances)
NUMA node(s):                      2
NUMA node0 CPU(s):                 0-23
NUMA node1 CPU(s):                 24-47
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
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     2.3M   12 Data            1    64       1            64
     L1i      32K     1.5M    8 Instruction     1    64       1            64
     L2        2M      96M   16 Unified         2  2048       1            64
     L3       45M      90M   15 Unified         3 49152       1            64
```

(Continued on next page)

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Hardware Availability: Mar-2024
Software Availability: Dec-2023

Platform Notes (Continued)

```
        ----------------------------------------------------------
        8. numactl --hardware
        NOTE: a numactl 'node' might or might not correspond to a physical chip.
          available: 2 nodes (0-1)
          node 0 cpus: 0-23
          node 0 size: 515754 MB
          node 0 free: 514581 MB
          node 1 cpus: 24-47
          node 1 size: 516031 MB
          node 1 free: 515091 MB
          node distances:
          node   0   1
            0:  10  21
            1:  21  10

        ----------------------------------------------------------
        9. /proc/meminfo
           MemTotal:       1056548728 kB

        ----------------------------------------------------------
        10. who -r
          run-level 3 Mar 3 03:07

        ----------------------------------------------------------
        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           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond
                            dbus-broker firewalld getty@ insights-client-boot irqbalance kdump low-memory-monitor
                            mdmonitor microcode nis-domainname rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark
                            sshd sssd systemd-boot-update systemd-network-generator udisks2 upower
          enabled-runtime   systemd-remount-fs
          disabled          canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                            console-getty cpupower debug-shell dnf-system-upgrade kvm_stat man-db-restart-cache-update
                            nftables pesign rdisc rhcd rhsm rhsm-facts rpmdb-rebuild selinux-check-proper-disable
                            serial-getty@ sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
          indirect          sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo systemd-sysupdate
                            systemd-sysupdate-reboot

        ----------------------------------------------------------
        13. Linux kernel boot-time arguments, from /proc/cmdline
          BOOT_IMAGE=(hd0,gpt3)/boot/vmlinuz-5.14.0-362.8.1.el9_3.x86_64
          root=UUID=be3ee7bd-6dba-4efc-8d0a-4f4f123b4865
          ro
          resume=UUID=8de8c2d1-84ee-4c60-9038-a9e1ae2929c4

        ----------------------------------------------------------
        14. cpupower frequency-info
          analyzing CPU 0:
            Unable to determine current policy
            boost state support:
              Supported: yes
              Active: yes

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

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Platform Notes (Continued)

```
15. 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


  ------------------------------------------------------------
16. /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


  ------------------------------------------------------------
17. /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


  ------------------------------------------------------------
18. 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)


  ------------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017-1.1.9-ic2023.2.3
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda4      xfs   372G   25G  347G   7% /home


  ------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:        Lenovo
    Product:       ThinkSystem SD530 V3
    Product Family: ThinkSystem
    Serial:        PASDVMK006


  ------------------------------------------------------------
21. dmidecode
```

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Platform Notes (Continued)

```
   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:
     15x Samsung M321R8GA0PB0-CWMKH 64 GB 2 rank 5600, configured at 4400
     1x Samsung M321R8GA0PB0-CWMXH 64 GB 2 rank 5600, configured at 4400


   ------------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       Lenovo
    BIOS Version:      FNE113F-2.20
    BIOS Date:         01/02/2024
    BIOS Revision:     2.20
    Firmware Revision: 1.10
```

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
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
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------


==============================================================================================
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
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
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------------------
```

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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`
654.roms_s: `-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 -fiopenmp`
`-DSPEC_OPENMP -Wno-implicit-int -L/usr/local/jemalloc64-5.0.1/lib`
`-ljemalloc`

Fortran benchmarks:
`-w -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:
`-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math`

(Continued on next page)

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

Lenovo Global Technology

ThinkSystem SD530 V3
(2.20 GHz, Intel Xeon Silver 4516Y+)

SPECspeed®2017_fp_base =   279

SPECspeed®2017_fp_peak = Not Run

CPU2017 License: 9017		**Test Date:**	Mar-2024
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Mar-2024
Tested by:	Lenovo Global Technology	**Software Availability:**	Dec-2023

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
```
-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++:
```
-w -std=c++14 -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
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.html
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Eaglestream-AA.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml

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

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