SPEC CPU®2017 Floating Point Speed Result

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Esconet Technologies Ltd.

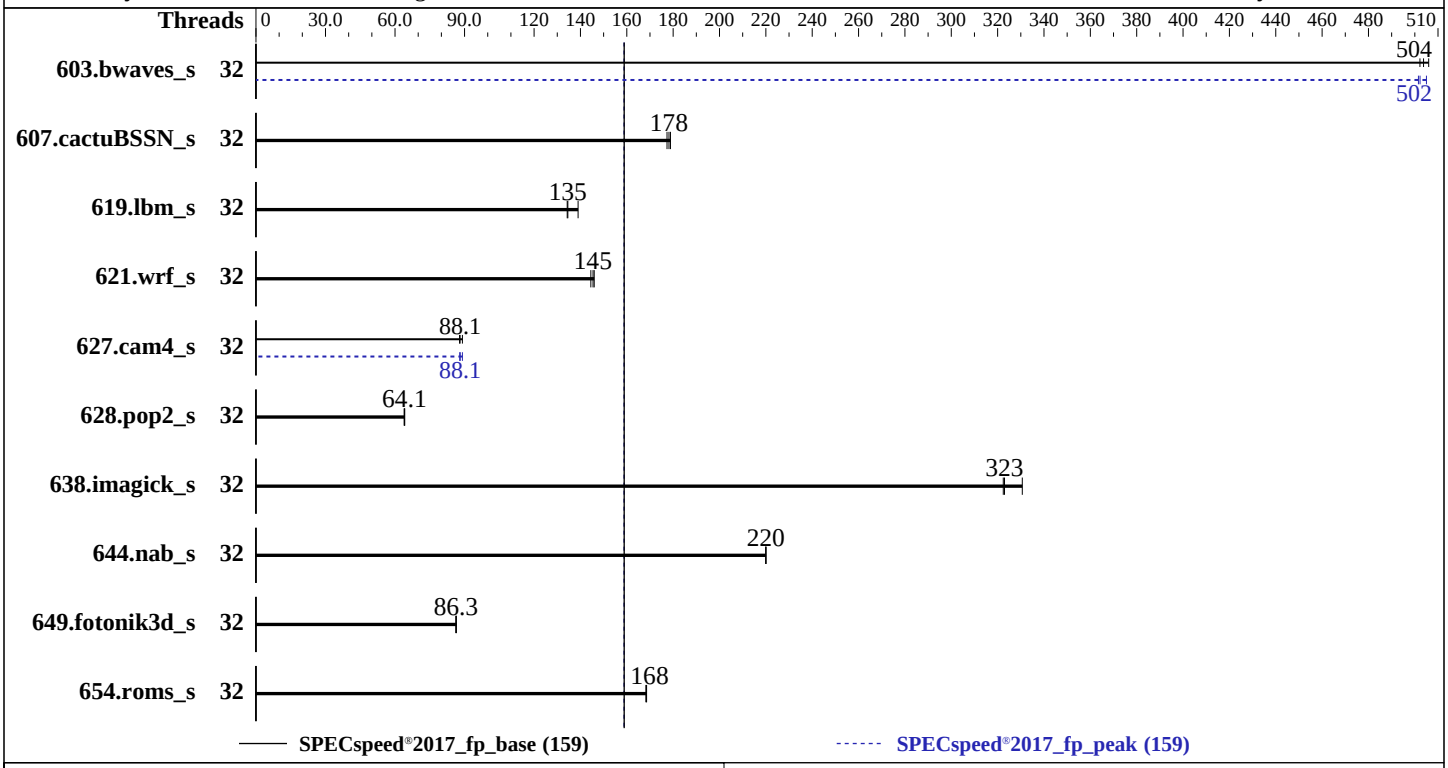
Hexadata HD-RS3000 Ver: ILX-002
(Intel Xeon Silver 4314, 2.40 GHz)

SPECspeed®2017_fp_base = 159

SPECspeed®2017_fp_peak = 159

CPU2017 License: 6523
Test Sponsor: Esconet Technologies Ltd.
Tested by: Esconet Technologies Ltd.

Test Date: Apr-2025
Hardware Availability: May-2021
Software Availability: Jun-2024



Hardware

CPU Name:	Intel Xeon Silver 4314
Max MHz:	3400
Nominal:	2400
Enabled:	32 cores, 2 chips
Orderable:	1,2 chips
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	1.25 MB I+D on chip per core
L3:	24 MB I+D on chip per chip
Other:	None
Memory:	2 TB (16 x 128 GB 4Rx4 PC4-3200AA-R, running at 2666)
Storage:	125 GB on tmpfs
Other:	CPU Cooling: Air

Software

OS:	SUSE Linux Enterprise Server 15 SP6 6.4.0-150600.21-default
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 P1.00 released Aug-2022
File System:	tmpfs
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	32	117	502	**117**	**504**	117	506	32	118	502	**117**	**502**	117	505
607.cactuBSSN_s	32	93.2	179	**93.5**	**178**	94.0	177	32	93.2	179	**93.5**	**178**	94.0	177
619.lbm_s	32	37.7	139	**38.9**	**135**	39.0	134	32	37.7	139	**38.9**	**135**	39.0	134
621.wrf_s	32	90.6	146	**90.9**	**145**	91.5	144	32	90.6	146	**90.9**	**145**	91.5	144
627.cam4_s	32	101	87.8	**101**	**88.1**	99.5	89.1	32	99.5	89.1	**101**	**88.1**	101	87.9
628.pop2_s	32	**185**	**64.1**	186	63.9	185	64.2	32	**185**	**64.1**	186	63.9	185	64.2
638.imagick_s	32	43.6	331	**44.7**	**323**	44.7	322	32	43.6	331	**44.7**	**323**	44.7	322
644.nab_s	32	79.4	220	79.4	220	**79.4**	**220**	32	79.4	220	79.4	220	**79.4**	**220**
649.fotonik3d_s	32	106	86.3	105	86.5	**106**	**86.3**	32	106	86.3	105	86.5	**106**	**86.3**
654.roms_s	32	93.4	169	**93.5**	**168**	93.6	168	32	93.4	169	**93.5**	**168**	93.6	168

SPECspeed®2017_fp_base = 159

SPECspeed®2017_fp_peak = 159

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 = "/mnt/ramdisk/cpu17/lib/intel64:/mnt/ramdisk/cpu17/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
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

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.

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"
```

Platform Notes

```
BIOS Settings:
          Logical Processor = Disabled

Sysinfo program /mnt/ramdisk/cpu17/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Wed Apr  9 21:27:32 2025

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 254 (254.10+suse.84.ge8d77af424)
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 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
  x86_64 x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   21:27:32 up  4:24,  1 user,  load average: 5.55, 6.04, 3.55
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1     -                17:08    4:13m  1.14s  0.00s sh
  reportable-ic2023.2.3-lin-core-avx512-speed-smt-off-20231121.sh

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

------------------------------------------------------------
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) 8253805
```

(Continued on next page)

Platform Notes (Continued)

```
   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) 8253805
   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
 sh reportable-ic2023.2.3-lin-core-avx512-speed-smt-off-20231121.sh
 runcpu --nobuild --action validate --define default-platform-flags -c
   ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=32 --tune base,peak -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=32 --tune base,peak --output_format all
   --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed fpspeed --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.002/templogs/preenv.fpspeed.002.0.log --lognum 002.0
   --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu17

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Silver 4314 CPU @ 2.40GHz
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 106
    stepping        : 6
    microcode       : 0xd0003d1
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs mmio_stale_data eibrs_pbrsb gds bhi
    cpu cores       : 16
    siblings        : 16
    2 physical ids (chips)
    32 processors (hardware threads)
    physical id 0: core ids 0-15
    physical id 1: core ids 0-15
    physical id 0: apicids 0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30
    physical id 1: apicids 64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94
  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 2.39.3:
  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):                               32
  On-line CPU(s) list:                  0-31
  Vendor ID:                            GenuineIntel
```

(Continued on next page)

Platform Notes (Continued)

```
   BIOS Vendor ID:                    Intel(R) Corporation
   Model name:                        Intel(R) Xeon(R) Silver 4314 CPU @ 2.40GHz
   BIOS Model name:                   Intel(R) Xeon(R) Silver 4314 CPU @ 2.40GHz  CPU @ 2.4GHz
   BIOS CPU family:                   179
   CPU family:                        6
   Model:                             106
   Thread(s) per core:                1
   Core(s) per socket:                16
   Socket(s):                         2
   Stepping:                          6
   CPU(s) scaling MHz:                55%
   CPU max MHz:                       3400.0000
   CPU min MHz:                       800.0000
   BogoMIPS:                          4800.00
   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 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
                                      intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                                      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 split_lock_detect wbnoinvd dtherm ida arat pln pts hwp
                                      hwp_act_window hwp_epp hwp_pkg_req vnmi avx512vbmi umip pku ospke
                                      avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                                      avx512_vpopcntdq la57 rdpid fsrm md_clear pconfig flush_l1d
                                      arch_capabilities
   Virtualization:                    VT-x
   L1d cache:                         1.5 MiB (32 instances)
   L1i cache:                         1 MiB (32 instances)
   L2 cache:                          40 MiB (32 instances)
   L3 cache:                          48 MiB (2 instances)
   NUMA node(s):                      2
   NUMA node0 CPU(s):                 0-15
   NUMA node1 CPU(s):                 16-31
   Vulnerability Gather data sampling:  Mitigation; Microcode
   Vulnerability Itlb multihit:       Not affected
   Vulnerability L1tf:                Not affected
   Vulnerability Mds:                 Not affected
   Vulnerability Meltdown:            Not affected
   Vulnerability Mmio stale data:     Mitigation; Clear CPU buffers; SMT disabled
   Vulnerability Reg file data sampling: Not affected
   Vulnerability Retbleed:            Not affected
   Vulnerability Spec rstack overflow:  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; BHI SW loop, KVM SW loop
   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     1.5M   12 Data            1    64        1             64
      L1i       32K       1M    8 Instruction     1    64        1             64
      L2       1.3M      40M   20 Unified         2  1024        1             64
```

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Platform Notes (Continued)

```
     L3        24M      48M   12 Unified         3 32768        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: 0-15
  node 0 size: 1031705 MB
  node 0 free: 1026206 MB
  node 1 cpus: 16-31
  node 1 size: 1031771 MB
  node 1 free: 1023488 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       2113000260 kB

------------------------------------------------------------
10. who -r
  run-level 3 Apr 9 17:03

------------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings kdump
                   kdump-early kdump-notify nvmefc-boot-connections nvmf-autoconnect postfix purge-kernels
                   rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                   wickedd-nanny
  enabled-runtime  systemd-remount-fs
  disabled         boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell ebtables fsidd
                   grub2-once haveged issue-add-ssh-keys kexec-load lunmask nfs nfs-blkmap rpcbind
                   rpmconfigcheck serial-getty@ systemd-boot-check-no-failures systemd-confext
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
  indirect         systemd-userdbd wickedd

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
  root=UUID=49309a94-677e-49bd-9d6a-63d4d0c75f08
  splash=silent
  mitigations=auto
  quiet
  security=apparmor
  crashkernel=365M,high
  crashkernel=72M,low

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 31:
    current policy: frequency should be within 800 MHz and 3.40 GHz.
                    The governor "performance" may decide which speed to use
```

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Platform Notes (Continued)

```
                  within this range.
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
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 SUSE Linux Enterprise Server 15 SP6

------------------------------------------------------------
19. Disk information
SPEC is set to: /mnt/ramdisk/cpu17
  Filesystem     Type   Size  Used Avail Use% Mounted on
  tmpfs          tmpfs  125G   11G  115G   9% /mnt/ramdisk

------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Product:        HDR-RM2386212I

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

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Platform Notes (Continued)

```
21. 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 Hynix TLR4128G32Q422 128 GB 4 rank 3200, configured at 2666


------------------------------------------------------------
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       American Megatrends International, LLC.
   BIOS Version:      P1.00
   BIOS Date:         08/23/2022
   BIOS Revision:     5.22
```

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 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 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, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)
--------------------------------------------------------------------------------------------------------------
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, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)
--------------------------------------------------------------------------------------------------------------
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.
--------------------------------------------------------------------------------------------------------------
```

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)

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

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

Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes

644.nab_s: basepeak = yes

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Peak Optimization Flags (Continued)

Fortran benchmarks:

603.bwaves_s: `-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`

649.fotonik3d_s: `basepeak = yes`

654.roms_s: `basepeak = yes`

Benchmarks using both Fortran and C:

621.wrf_s: `basepeak = yes`

627.cam4_s: `-w -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`

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/Intel-ic2023p2-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Hexadata-Platform-Flags-Intel-ICX.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/Hexadata-Platform-Flags-Intel-ICX.xml`

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

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