SPEC CPU®2017 Floating Point Speed Result

Esconet Technologies Ltd.

Hexadata HDR-RM2386212I Ver: ILX-002
(Intel Xeon Gold 6338N, 2.20 GHz)

$SPECspeed^{®}2017\_fp\_base = 212$
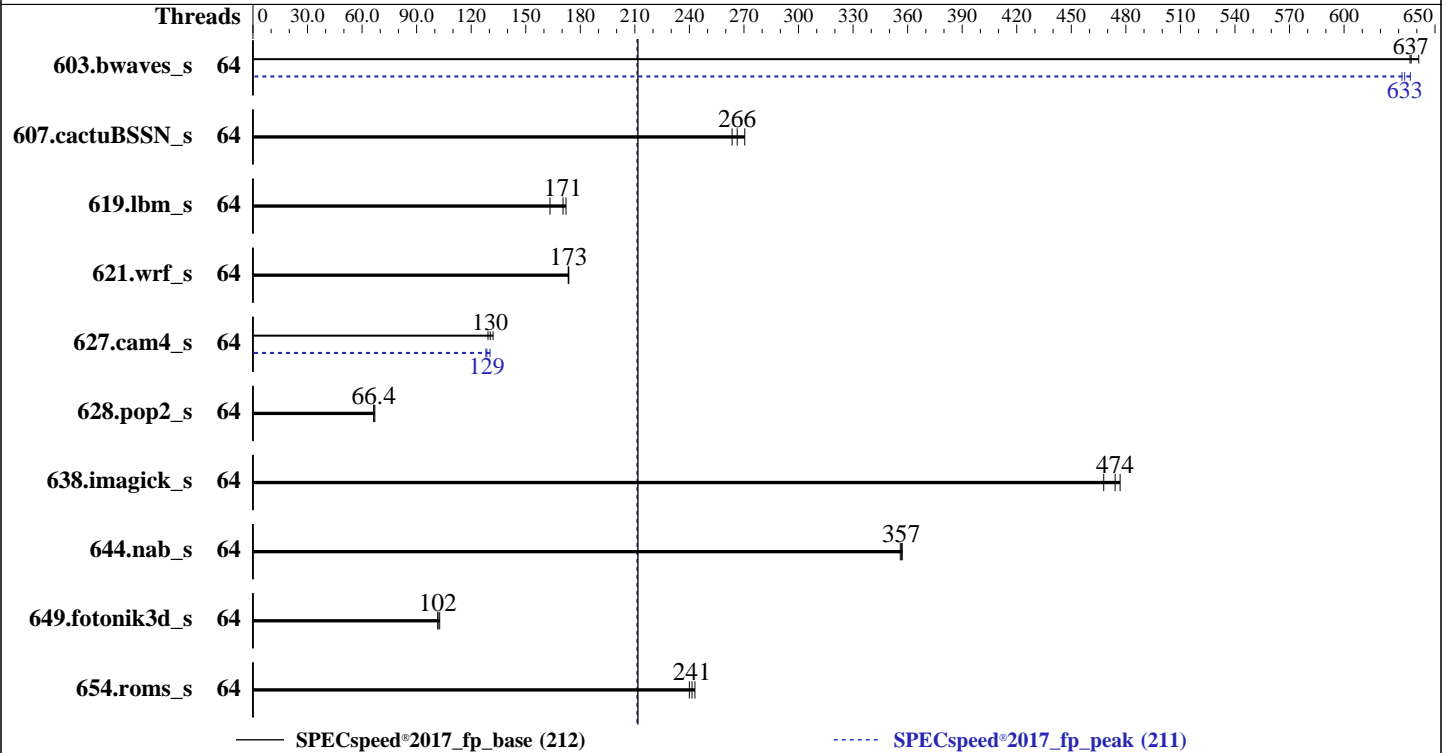
$SPECspeed^{®}2017\_fp\_peak = 211$

CPU2017 License: 6523

Test Sponsor: Esconet Technologies Ltd.

Tested by: Esconet Technologies Ltd.

Test Date: Dec-2023

Hardware Availability: May-2021

Software Availability: Dec-2023

Threads	0 30.0 60.0 90.0 120 150 180 210 240 270 300 330 360 390 420 450 480 510 540 570 600 650
603.bwaves_s 64	637 / 633
607.cactuBSSN_s 64	266
619.lbm_s 64	171
621.wrf_s 64	173
627.cam4_s 64	130 / 129
628.pop2_s 64	66.4
638.imagick_s 64	474
644.nab_s 64	357
649.fotonik3d_s 64	102
654.roms_s 64	241

SPECspeed®2017_fp_base (212)   SPECspeed®2017_fp_peak (211)

Hardware

CPU Name: Intel Xeon Gold 6338N
 Max MHz: 3500
 Nominal: 2200
Enabled: 64 cores, 2 chips, 2 threads/core
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: 48 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)
Storage: 960 GB SSD
Other: None

Software

OS: CentOS Linux 8
 4.18.0-348.7.1.el8_5.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 F26 released May-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: OS set to prefer performance at the cost of additional power usage.

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SPECspeed®2017_fp_peak = 211

CPU2017 License: 6523	**Test Date:** Dec-2023
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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	64	92.0	641	92.7	636	**92.6**	**637**	64	**93.2**	**633**	92.7	636	93.4	632
607.cactuBSSN_s	64	63.3	263	61.6	270	**62.6**	**266**	64	63.3	263	61.6	270	**62.6**	**266**
619.lbm_s	64	32.1	163	**30.7**	**171**	30.4	172	64	32.1	163	**30.7**	**171**	30.4	172
621.wrf_s	64	76.1	174	**76.2**	**173**	76.3	173	64	76.1	174	**76.2**	**173**	76.3	173
627.cam4_s	64	67.1	132	68.6	129	**67.9**	**130**	64	**68.9**	**129**	69.2	128	68.0	130
628.pop2_s	64	**179**	**66.4**	179	66.4	177	67.0	64	**179**	**66.4**	179	66.4	177	67.0
638.imagick_s	64	**30.4**	**474**	30.8	468	30.3	477	64	**30.4**	**474**	30.8	468	30.3	477
644.nab_s	64	49.1	356	48.9	357	**49.0**	**357**	64	49.1	356	48.9	357	**49.0**	**357**
649.fotonik3d_s	64	89.7	102	88.8	103	**89.6**	**102**	64	89.7	102	88.8	103	**89.6**	**102**
654.roms_s	64	**65.2**	**241**	65.6	240	64.8	243	64	**65.2**	**241**	65.6	240	64.8	243
SPECspeed®2017_fp_base =		**212**												
SPECspeed®2017_fp_peak =		**211**												

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,1,0"
LD_LIBRARY_PATH = "/home/ub/cpu17/lib/intel64:/home/ub/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.
```

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Test Date: Dec-2023
Hardware Availability: May-2021
Software Availability: Dec-2023

Platform Notes

```
BIOS settings: Default

Sysinfo program /home/ub/cpu17/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Fri Dec 22 23:01:41 2023

SUT (System Under Test) info as seen by some common utilities.

------------------------------------------------------------
Table of contents
------------------------------------------------------------
 1. uname -a
 2. w
 3. Username
 4. ulimit -a
 5. sysinfo process ancestry
 6. /proc/cpuinfo
 7. lscpu
 8. numactl --hardware
 9. /proc/meminfo
10. who -r
11. Systemd service manager version: systemd 239 (239-51.el8_5.2)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
22. Disk information
23. /sys/devices/virtual/dmi/id
24. dmidecode
25. BIOS
------------------------------------------------------------


------------------------------------------------------------
1. uname -a
  Linux localhost.localdomain 4.18.0-348.7.1.el8_5.x86_64 #1 SMP Wed Dec 22 13:25:12 UTC 2021 x86_64 x86_64
  x86_64 GNU/Linux


------------------------------------------------------------
2. w
   23:01:41 up  3:54,  1 user,  load average: 6.02, 6.96, 4.08
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  ub       tty1     -                19:07    3:53m  1.07s  0.00s sh
  reportable-ic2023.2.3-lin-core-avx512-speed-smt-on-20231121.sh


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


------------------------------------------------------------
4. ulimit -a
  core file size          (blocks, -c) 0
  data seg size           (kbytes, -d) unlimited
  scheduling priority             (-e) 0
```

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Platform Notes (Continued)

```
   file size               (blocks, -f) unlimited
   pending signals                 (-i) 4125541
   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) 4125541
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


 ----------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 18
  login -- ub
  -bash
  sh reportable-ic2023.2.3-lin-core-avx512-speed-smt-on-20231121.sh
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=64 --tune base,peak -o all --define smt-on
    --define drop_caches fpspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
    ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=64 --tune base,peak --output_format all
    --define smt-on --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 = /home/ub/cpu17


 ----------------------------------------------------------
 6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 106
    stepping        : 6
    microcode       : 0xd0003a5
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 32
    siblings        : 64
    2 physical ids (chips)
    128 processors (hardware threads)
    physical id 0: core ids 0-31
    physical id 1: core ids 0-31
    physical id 0: apicids 0-63
    physical id 1: apicids 128-191
  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 2.32.1:
   Architecture:       x86_64
   CPU op-mode(s):     32-bit, 64-bit
   Byte Order:         Little Endian
   CPU(s):             128
   On-line CPU(s) list: 0-127
```

(Continued on next page)

Esconet Technologies Ltd.

SPECspeed®2017_fp_base = 212

Hexadata HDR-RM2386212I Ver: ILX-002
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SPECspeed®2017_fp_peak = 211

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Test Date: Dec-2023
Hardware Availability: May-2021
Software Availability: Dec-2023

Platform Notes (Continued)

```
   Thread(s) per core:    2
   Core(s) per socket:    32
   Socket(s):             2
   NUMA node(s):          2
   Vendor ID:             GenuineIntel
   CPU family:            6
   Model:                 106
   Model name:            Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
   Stepping:              6
   CPU MHz:               947.572
   CPU max MHz:           3500.0000
   CPU min MHz:           800.0000
   BogoMIPS:              4400.00
   Virtualization:        VT-x
   L1d cache:             48K
   L1i cache:             32K
   L2 cache:              1280K
   L3 cache:              49152K
   NUMA node0 CPU(s):     0-31,64-95
   NUMA node1 CPU(s):     32-63,96-127
   Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts
                          acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art
                          arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni
                          pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca
                          sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm
                          abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single intel_ppin ssbd mba ibrs ibpb
                          stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust
                          sgx bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                          avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
                          xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect
                          wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi
                          umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                          avx512_vpopcntdq la57 rdpid sgx_lc fsrm md_clear pconfig flush_l1d arch_capabilities

   ----------------------------------------------------------------
   8. numactl --hardware
   NOTE: a numactl 'node' might or might not correspond to a physical chip.
     available: 2 nodes (0-1)
     node 0 cpus: 0-31,64-95
     node 0 size: 515379 MB
     node 0 free: 512577 MB
     node 1 cpus: 32-63,96-127
     node 1 size: 516042 MB
     node 1 free: 510184 MB
     node distances:
     node   0   1
       0:  10  20
       1:  20  10


   ----------------------------------------------------------------
   9. /proc/meminfo
     MemTotal:       1056175752 kB


   ----------------------------------------------------------------
   10. who -r
     run-level 3 Dec 22 19:07


   ----------------------------------------------------------------
   11. Systemd service manager version: systemd 239 (239-51.el8_5.2)
     Default Target  Status
```

(Continued on next page)

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Platform Notes (Continued)

```
   multi-user      degraded


  ----------------------------------------------------------
  12. Failed units, from systemctl list-units --state=failed
     UNIT                   LOAD   ACTIVE SUB    DESCRIPTION
   * sep5.service           loaded failed failed systemd script to load sep5 driver at boot time
   * systemd-sysctl.service loaded failed failed Apply Kernel Variables


  ----------------------------------------------------------
  13. Services, from systemctl list-unit-files
     STATE     UNIT FILES
     enabled   NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd autovt@ crond
               firewalld getty@ import-state irqbalance kdump loadmodules lvm2-monitor mdmonitor microcode
               nis-domainname rsyslog selinux-autorelabel-mark sep5 sshd sssd syslog tuned udisks2
     disabled  blk-availability console-getty cpupower debug-shell ebtables iprdump iprinit iprupdate kvm_stat
               man-db-restart-cache-update nftables rdisc serial-getty@ sshd-keygen@ systemd-resolved tcsd
     indirect  sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo


  ----------------------------------------------------------
  14. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd1,gpt2)/vmlinuz-4.18.0-348.7.1.el8_5.x86_64
     root=/dev/mapper/cl-root
     ro
     crashkernel=auto
     resume=/dev/mapper/cl-swap
     rd.lvm.lv=cl/root
     rd.lvm.lv=cl/swap
     rhgb
     quiet


  ----------------------------------------------------------
  15. cpupower frequency-info
     analyzing CPU 0:
       current policy: frequency should be within 800 MHz and 3.50 GHz.
                       The governor "performance" may decide which speed to use
                       within this range.
     boost state support:
       Supported: yes
       Active: yes


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


  ----------------------------------------------------------
  17. sysctl
     kernel.numa_balancing            1
     kernel.randomize_va_space        2
     vm.compaction_proactiveness      0
     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
```

(Continued on next page)

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Platform Notes (Continued)

```
   vm.nr_overcommit_hugepages         0
   vm.swappiness                     10
   vm.watermark_boost_factor      15000
   vm.watermark_scale_factor         10
   vm.zone_reclaim_mode               0


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


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


   ----------------------------------------------------------
20. OS release
   From /etc/*-release /etc/*-version
   os-release     CentOS Linux 8
   redhat-release CentOS Linux release 8.5.2111
   system-release CentOS Linux release 8.5.2111


   ----------------------------------------------------------
21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
   itlb_multihit       Not affected
   l1tf                Not affected
   mds                 Not affected
   meltdown            Not affected
   spec_store_bypass   Mitigation: Speculative Store Bypass disabled via prctl and seccomp
   spectre_v1          Mitigation: usercopy/swapgs barriers and __user pointer sanitization
   spectre_v2          Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
   srbds               Not affected
   tsx_async_abort     Not affected
For more information, see the Linux documentation on hardware vulnerabilities, for example
     https://www.kernel.org/doc/html/latest/admin-guide/hw-vuln/index.html


   ----------------------------------------------------------
22. Disk information
SPEC is set to: /home/ub/cpu17
   Filesystem          Type  Size  Used Avail Use% Mounted on
   /dev/mapper/cl-home xfs   819G  160G  659G  20% /home


   ----------------------------------------------------------
23. /sys/devices/virtual/dmi/id
   Vendor:         ESCONET TECHNOLOGIES LTD.
   Product:        HEXADATA
   Product Family: Server


   ----------------------------------------------------------
24. dmidecode
   Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you interpret this section.
   The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
```

(Continued on next page)

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Platform Notes (Continued)

```
     "DMTF SMBIOS" standard.
   Memory:
     16x Samsung M393A8G40AB2-CWE 64 GB 2 rank 3200, configured at 2666


   ------------------------------------------------------------
   25. BIOS
   (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       GIGABYTE
     BIOS Version:      F26
     BIOS Date:         05/29/2023
     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
```

(Continued on next page)

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Base Compiler Invocation (Continued)

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`
`-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`

(Continued on next page)

SPEC CPU®2017 Floating Point Speed Result

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Esconet Technologies Ltd.

Hexadata HDR-RM2386212I Ver: ILX-002
(Intel Xeon Gold 6338N, 2.20 GHz)

SPECspeed®2017_fp_base = 212

SPECspeed®2017_fp_peak = 211

CPU2017 License: 6523		**Test Date:**	Dec-2023
Test Sponsor:	Esconet Technologies Ltd.	**Hardware Availability:**	May-2021
Tested by:	Esconet Technologies Ltd.	**Software Availability:**	Dec-2023

Base Optimization Flags (Continued)

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`

Fortran benchmarks:

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

Esconet Technologies Ltd.

Hexadata HDR-RM2386212I Ver: ILX-002
(Intel Xeon Gold 6338N, 2.20 GHz)

SPECspeed®2017_fp_base = 212

SPECspeed®2017_fp_peak = 211

CPU2017 License: 6523		**Test Date:**	Dec-2023
Test Sponsor:	Esconet Technologies Ltd.	**Hardware Availability:**	May-2021
Tested by:	Esconet Technologies Ltd.	**Software Availability:**	Dec-2023

Peak Optimization Flags (Continued)

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