SPEC CPU®2017 Floating Point Speed Result

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xFusion
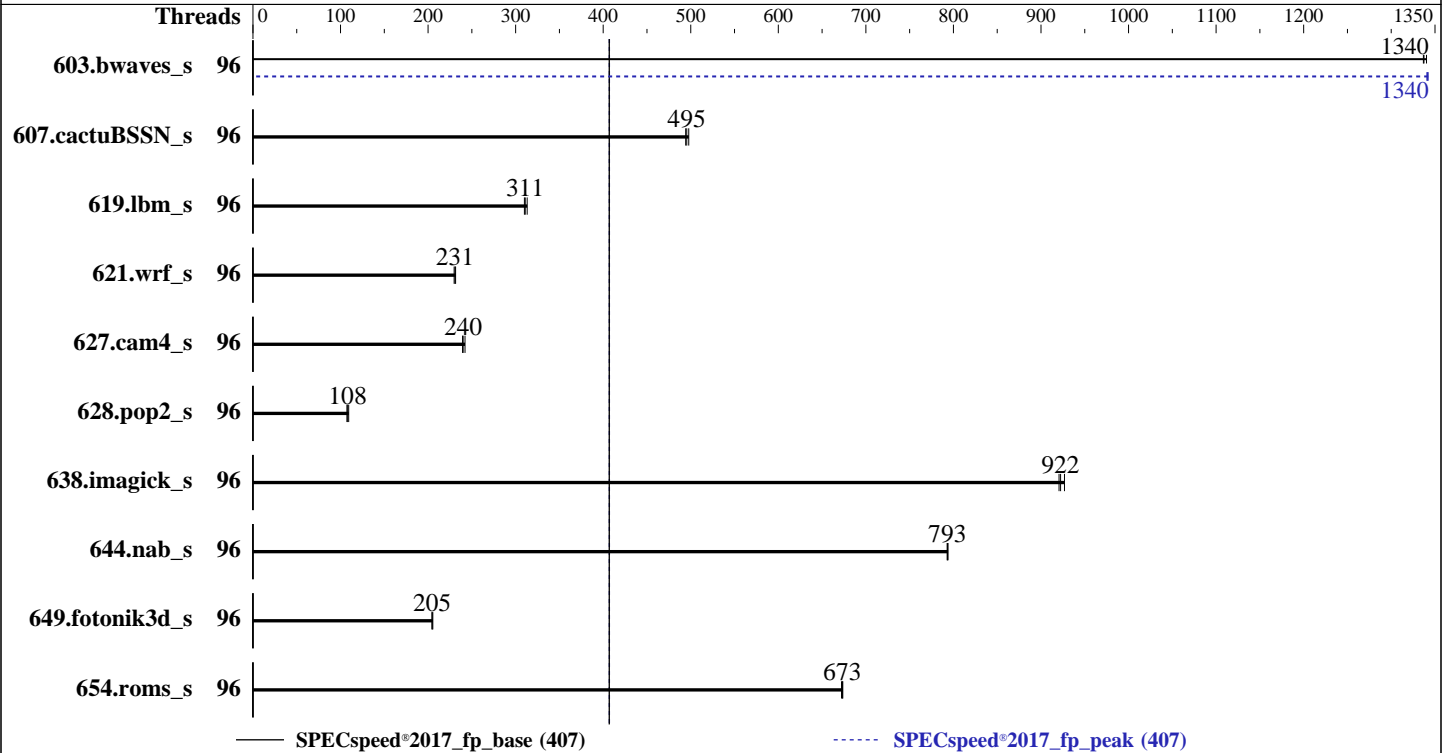
FusionServer 2288H V7 (Intel Xeon Platinum 8558P)

$SPECspeed®2017\_fp\_base = 407$

$SPECspeed®2017\_fp\_peak = 407$

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

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

Threads

Benchmark	Threads	Result
603.bwaves_s	96	1340 / 1340
607.cactuBSSN_s	96	495
619.lbm_s	96	311
621.wrf_s	96	231
627.cam4_s	96	240
628.pop2_s	96	108
638.imagick_s	96	922
644.nab_s	96	793
649.fotonik3d_s	96	205
654.roms_s	96	673

SPECspeed®2017_fp_base (407)   SPECspeed®2017_fp_peak (407)

Hardware

CPU Name: Intel Xeon Platinum 8558P
 Max MHz: 4000
 Nominal: 2700
Enabled: 96 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: 260 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R)
Storage: 1 x 1.92 TB SATA SSD
Other: CPU Cooling: Air

Software

OS: Red Hat Enterprise Linux 9.2 (Plow)
 5.14.0-284.11.1.el9_2.x86_64
Compiler: C/C++: Version 2024.0.2 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2024.0.2 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: Version 01.01.03.05 Released Apr-2024
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	96	44.0	1340	**44.1**	**1340**	44.1	1340	96	**44.0**	**1340**	44.0	1340	44.0	1340
607.cactuBSSN_s	96	33.7	494	33.5	498	**33.6**	**495**	96	33.7	494	33.5	498	**33.6**	**495**
619.lbm_s	96	16.9	310	**16.8**	**311**	16.7	313	96	16.9	310	**16.8**	**311**	16.7	313
621.wrf_s	96	57.6	230	57.1	231	**57.3**	**231**	96	57.6	230	57.1	231	**57.3**	**231**
627.cam4_s	96	**36.9**	**240**	36.6	242	37.0	239	96	**36.9**	**240**	36.6	242	37.0	239
628.pop2_s	96	111	107	**110**	**108**	109	109	96	111	107	**110**	**108**	109	109
638.imagick_s	96	15.6	927	**15.6**	**922**	15.7	921	96	15.6	927	**15.6**	**922**	15.7	921
644.nab_s	96	22.0	793	**22.0**	**793**	22.0	794	96	22.0	793	**22.0**	**793**	22.0	794
649.fotonik3d_s	96	44.6	204	**44.5**	**205**	44.4	205	96	44.6	204	**44.5**	**205**	44.4	205
654.roms_s	96	23.4	672	**23.4**	**673**	23.4	674	96	23.4	672	**23.4**	**673**	23.4	674
SPECspeed®2017_fp_base =			**407**											
SPECspeed®2017_fp_peak =			**407**											

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"
Kernel Boot Parameter set with : nohz_full=1-95
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/Uniautos/speccpu2017/lib/intel64:/home/Uniautos/speccpu2017/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:
Performance Profile Set to Load Balance
SNC Set to Disable
Enable LP [Global] Set to Single LP

 Sysinfo program /home/Uniautos/speccpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Wed May 29 14:26:03 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 (252-13.el9_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. Disk information
 22. /sys/devices/virtual/dmi/id
 23. dmidecode
 24. BIOS
 ------------------------------------------------------------


 ------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-284.11.1.el9_2.x86_64 #1 SMP PREEMPT_DYNAMIC Wed Apr 12 10:45:03 EDT
   2023 x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
   14:26:03 up  3:09,  2 users,  load average: 5.74, 5.15, 3.07
   USER     TTY          LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1         11:20    3:05m  0.99s  0.00s -bash
   root     pts/0        11:16    2:54m  0.06s  0.06s -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
```

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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) 2060183
   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) 2060183
   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
  runcpu --define default-platform-flags -c ic2024.0.2-lin-sapphirerapids-speed-20231213.cfg --define cores=96
    --tune base,peak -o all --define drop_caches fpspeed
  runcpu --define default-platform-flags --configfile ic2024.0.2-lin-sapphirerapids-speed-20231213.cfg
    --define cores=96 --tune base,peak --output_format all --define drop_caches --nopower --runmode speed
    --tune base:peak --size refspeed fpspeed --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.046/templogs/preenv.fpspeed.046.0.log --lognum 046.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/Uniautos/speccpu2017


 -----------------------------------------------------------
 6. /proc/cpuinfo
    model name       : INTEL(R) XEON(R) PLATINUM 8558P
    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        : 48
    siblings         : 48
    2 physical ids (chips)
    96 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    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
    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
  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
```

(Continued on next page)

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Platform Notes (Continued)

```
CPU op-mode(s):          32-bit, 64-bit
Address sizes:           46 bits physical, 57 bits virtual
Byte Order:              Little Endian
CPU(s):                  96
On-line CPU(s) list:     0-95
Vendor ID:               GenuineIntel
BIOS Vendor ID:          Intel(R) Corporation
Model name:              INTEL(R) XEON(R) PLATINUM 8558P
BIOS Model name:         INTEL(R) XEON(R) PLATINUM 8558P
CPU family:              6
Model:                   207
Thread(s) per core:      1
Core(s) per socket:      48
Socket(s):               2
Stepping:                2
Frequency boost:         enabled
CPU max MHz:             2701.0000
CPU min MHz:             800.0000
BogoMIPS:                5400.00
Flags:                   fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                         clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                         lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                         nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                         ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1
                         sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand
                         lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3
                         invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                         vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 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 avx_vnni
                         avx512_bf16 wbnoinvd dtherm ida arat pln pts hfi 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:               4.5 MiB (96 instances)
L1i cache:               3 MiB (96 instances)
L2 cache:                192 MiB (96 instances)
L3 cache:                520 MiB (2 instances)
NUMA node(s):            2
NUMA node0 CPU(s):       0-47
NUMA node1 CPU(s):       48-95
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 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     4.5M   12 Data            1     64        1             64
```

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Platform Notes (Continued)

```
    L1i        32K       3M   8 Instruction   1    64        1          64
    L2          2M      192M  16 Unified      2   2048       1          64
    L3        260M      520M  20 Unified      3 212992       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: 0-47
  node 0 size: 257095 MB
  node 0 free: 248650 MB
  node 1 cpus: 48-95
  node 1 size: 257993 MB
  node 1 free: 250684 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


   ----------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       527450592 kB


   ----------------------------------------------------------------
10. who -r
   run-level 3 May 29 11:16


   ----------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-13.el9_2)
   Default Target  Status
   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


   ----------------------------------------------------------------
13. Services, from systemctl list-unit-files
   STATE            UNIT FILES
   enabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond
                    dbus-broker getty@ insights-client-boot irqbalance kdump lvm2-monitor mdmonitor microcode
                    nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sep5 sshd sssd
                    systemd-boot-update systemd-network-generator tuned udisks2
   enabled-runtime  systemd-remount-fs
   disabled         blk-availability console-getty cpupower debug-shell dnf-system-upgrade firewalld kvm_stat
                    man-db-restart-cache-update nftables 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


   ----------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-284.11.1.el9_2.x86_64
   root=/dev/mapper/rhel-root
   ro
   crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
   resume=/dev/mapper/rhel-swap
   rd.lvm.lv=rhel/root
```

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Platform Notes (Continued)

```
    rd.lvm.lv=rhel/swap
    nohz_full=1-95


    ----------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 800 MHz and 2.70 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      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


    ----------------------------------------------------------
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_shared         256
  max_ptes_swap           64
  pages_to_scan           4096
  scan_sleep_millisecs    10000


    ----------------------------------------------------------
20. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 9.2 (Plow)
```

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Platform Notes (Continued)

```
   redhat-release Red Hat Enterprise Linux release 9.2 (Plow)
   system-release Red Hat Enterprise Linux release 9.2 (Plow)


  -----------------------------------------------------------
  21. Disk information
  SPEC is set to: /home/Uniautos/speccpu2017
    Filesystem          Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs  1.7T  177G  1.5T  11% /home


  -----------------------------------------------------------
  22. /sys/devices/virtual/dmi/id
     Vendor:         XFUSION
     Product:        2288H V7
     Product Family: Eagle Stream
     Serial:         2106182101X3N8000001


  -----------------------------------------------------------
  23. dmidecode
    Additional information from dmidecode 3.3 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:
      8x Hynix HMCG88AGBRA190N 32 GB 2 rank 5600
      8x Hynix HMCG88AGBRA191N 32 GB 2 rank 5600


  -----------------------------------------------------------
  24. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:     XFUSION
     BIOS Version:    01.01.03.05
     BIOS Date:       04/12/2024
     BIOS Revision:   3.5
```

Compiler Version Notes

```
==============================================================================================
C             | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
----------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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 2024.0.2 Build 20231213
```

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Compiler Version Notes (Continued)

```
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 2024.0.2 Build 20231213
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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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 -xsapphirerapids -Ofast -ffast-math`

(Continued on next page)

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8558P)

$SPECspeed^®2017\_fp\_base = 407$

$SPECspeed^®2017\_fp\_peak = 407$

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

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

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-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
```

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
```

SPEC CPU®2017 Floating Point Speed Result

xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8558P)

SPECspeed®2017_fp_base = 407

SPECspeed®2017_fp_peak = 407

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:

603.bwaves_s: -w -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xsapphirerapids
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

649.fotonik3d_s: basepeak = yes

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-EMR-V1.0.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-EMR-V1.0.xml

SPEC CPU®2017 Floating Point Speed Result

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xFusion

FusionServer 2288H V7 (Intel Xeon Platinum 8558P)

$SPECspeed®2017\_fp\_base = 407$

$SPECspeed®2017\_fp\_peak = 407$

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

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