SPEC CPU®2017 Floating Point Speed Result

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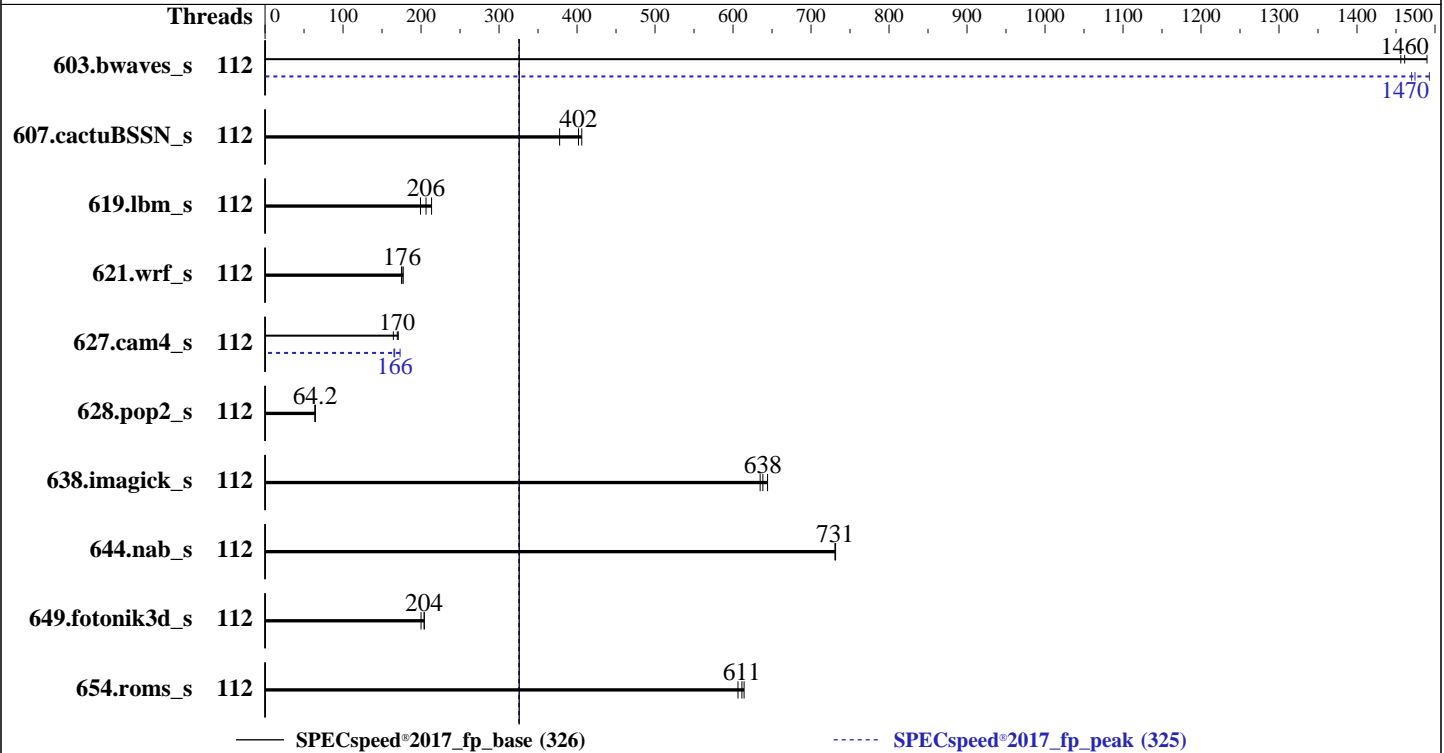# xFusion

FusionServer 5885H V7 (Intel Xeon Platinum 8450H)

$SPECspeed®2017\_fp\_base = 326$

$SPECspeed®2017\_fp\_peak = 325$

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

Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Threads

Benchmark	Threads	Value
603.bwaves_s	112	1460 / 1470
607.cactuBSSN_s	112	402
619.lbm_s	112	206
621.wrf_s	112	176
627.cam4_s	112	170 / 166
628.pop2_s	112	64.2
638.imagick_s	112	638
644.nab_s	112	731
649.fotonik3d_s	112	204
654.roms_s	112	611

—— SPECspeed®2017_fp_base (326)   ----- SPECspeed®2017_fp_peak (325)

Hardware

CPU Name: Intel Xeon Platinum 8450H
 Max MHz: 3500
 Nominal: 2000
Enabled: 112 cores, 4 chips
Orderable: 1,2,4 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 75 MB I+D on chip per chip
 Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 9.0 (Plow)
 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++
 Compiler for Linux;
 Fortran: Version 2023.0 of Intel Fortran Compiler
 for Linux;
Parallel: Yes
Firmware: Version 2.00.34 Released Apr-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: 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	112	40.5	1460	39.6	1490	**40.4**	**1460**	112	40.1	1470	39.5	1490	**40.0**	**1470**
607.cactuBSSN_s	112	44.1	378	41.1	406	**41.5**	**402**	112	44.1	378	41.1	406	**41.5**	**402**
619.lbm_s	112	26.3	199	24.5	213	**25.4**	**206**	112	26.3	199	24.5	213	**25.4**	**206**
621.wrf_s	112	75.6	175	74.7	177	**75.3**	**176**	112	75.6	175	74.7	177	**75.3**	**176**
627.cam4_s	112	**52.3**	**170**	53.9	164	51.9	171	112	**53.3**	**166**	53.6	165	51.2	173
628.pop2_s	112	184	64.5	**185**	**64.2**	186	64.0	112	184	64.5	**185**	**64.2**	186	64.0
638.imagick_s	112	22.7	635	22.4	644	**22.6**	**638**	112	22.7	635	22.4	644	**22.6**	**638**
644.nab_s	112	23.9	731	**23.9**	**731**	23.9	731	112	23.9	731	**23.9**	**731**	23.9	731
649.fotonik3d_s	112	**44.7**	**204**	45.6	200	44.7	204	112	**44.7**	**204**	45.6	200	44.7	204
654.roms_s	112	26.0	606	**25.8**	**611**	25.6	614	112	26.0	606	**25.8**	**611**	25.6	614
SPECspeed®2017_fp_base =		**326**												
SPECspeed®2017_fp_peak =		**325**												

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/Uniautos/cpu2017/lib/intel64:/home/Uniautos/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Redhat Enterprise Linux 8.0
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>        /proc/sys/vm/drop_caches
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
BIOS configuration:
Performance Profile Set to Load Balance
Enable LP [Global] Set to Single LP
```

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Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Platform Notes (Continued)

```
SNC Set to Enable SNC2 (2-clusters)

Sysinfo program /home/Uniautos/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Mon Jun 19 16:37:19 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 250 (250-6.el9_0)
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 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
   x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
    16:37:19 up  3:29,  1 user,  load average: 5.52, 5.63, 3.38
   USER      TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
   root      pts/0       16:31    1:03   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
   data seg size               (kbytes, -d) unlimited
   scheduling priority              (-e) 0
   file size                   (blocks, -f) unlimited
   pending signals                  (-i) 4125259
```

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Platform Notes (Continued)

```
   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) 4125259
   virtual memory              (kbytes, -v) unlimited
   file locks                        (-x) unlimited

   ----------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 30
  /bin/sh ./run_speed.sh
  runcpu --define default-platform-flags -c ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=112
    --tune base,peak -o all --define drop_caches fpspeed
  runcpu --define default-platform-flags --configfile ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define
    cores=112 --tune base,peak --output_format all --define drop_caches --nopower --runmode speed --tune
    base:peak --size refspeed fpspeed --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.030/templogs/preenv.fpspeed.030.0.log --lognum 030.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/Uniautos/cpu2017


   ----------------------------------------------------------
 6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8450H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 8
    microcode       : 0x2b0001b0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 28
    siblings        : 28
    4 physical ids (chips)
    112 processors (hardware threads)
    physical id 0: core ids 0-27
    physical id 1: core ids 0-27
    physical id 2: core ids 0-27
    physical id 3: core ids 0-27
    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
    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
    physical id 2: apicids
    256,258,260,262,264,266,268,270,272,274,276,278,280,282,284,286,288,290,292,294,296,298,300,302,304,306,3
    08,310
    physical id 3: apicids
    384,386,388,390,392,394,396,398,400,402,404,406,408,410,412,414,416,418,420,422,424,426,428,430,432,434,4
    36,438
  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
```

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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):                      112
On-line CPU(s) list:         0-111
Vendor ID:                   GenuineIntel
BIOS Vendor ID:              Intel(R) Corporation
Model name:                  Intel(R) Xeon(R) Platinum 8450H
BIOS Model name:             Intel(R) Xeon(R) Platinum 8450H
CPU family:                  6
Model:                       143
Thread(s) per core:          1
Core(s) per socket:          28
Socket(s):                   4
Stepping:                    8
Frequency boost:             enabled
CPU max MHz:                 2001.0000
CPU min MHz:                 800.0000
BogoMIPS:                    4000.00
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 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 split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
                             arat pln pts 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 avx512_fp16 amx_tile flush_l1d arch_capabilities
Virtualization:              VT-x
L1d cache:                   5.3 MiB (112 instances)
L1i cache:                   3.5 MiB (112 instances)
L2 cache:                    224 MiB (112 instances)
L3 cache:                    300 MiB (4 instances)
NUMA node(s):                8
NUMA node0 CPU(s):           0-13
NUMA node1 CPU(s):           14-27
NUMA node2 CPU(s):           28-41
NUMA node3 CPU(s):           42-55
NUMA node4 CPU(s):           56-69
NUMA node5 CPU(s):           70-83
NUMA node6 CPU(s):           84-97
NUMA node7 CPU(s):           98-111
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:          Not affected
Vulnerability Mds:           Not affected
Vulnerability Meltdown:      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
Vulnerability Srbds:         Not affected
Vulnerability Tsx async abort: Not affected
```

(Continued on next page)

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Platform Notes (Continued)

```
From lscpu --cache:
    NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL  SETS PHY-LINE COHERENCY-SIZE
    L1d      48K      5.3M   12 Data             1    64        1             64
    L1i      32K      3.5M    8 Instruction      1    64        1             64
    L2        2M      224M   16 Unified          2  2048        1             64
    L3       75M      300M   15 Unified          3 81920        1             64


----------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0-13
  node 0 size: 128253 MB
  node 0 free: 120069 MB
  node 1 cpus: 14-27
  node 1 size: 129020 MB
  node 1 free: 128600 MB
  node 2 cpus: 28-41
  node 2 size: 129020 MB
  node 2 free: 128804 MB
  node 3 cpus: 42-55
  node 3 size: 129020 MB
  node 3 free: 128804 MB
  node 4 cpus: 56-69
  node 4 size: 129020 MB
  node 4 free: 128833 MB
  node 5 cpus: 70-83
  node 5 size: 128984 MB
  node 5 free: 128778 MB
  node 6 cpus: 84-97
  node 6 size: 129020 MB
  node 6 free: 128811 MB
  node 7 cpus: 98-111
  node 7 size: 129010 MB
  node 7 free: 128780 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  12  21  21  21  21  21  21
    1:  12  10  21  21  21  21  21  21
    2:  21  21  10  12  21  21  21  21
    3:  21  21  12  10  21  21  21  21
    4:  21  21  21  21  10  12  21  21
    5:  21  21  21  21  12  10  21  21
    6:  21  21  21  21  21  21  10  12
    7:  21  21  21  21  21  21  12  10

----------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056104404 kB


----------------------------------------------------------------
10. who -r
  run-level 3 Jun 19 13:08


----------------------------------------------------------------
11. Systemd service manager version: systemd 250 (250-6.el9_0)
   Default Target  Status
   multi-user      degraded


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

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Platform Notes (Continued)

```
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 chronyd crond
                      dbus-broker firewalld getty@ irqbalance kdump mdmonitor microcode nis-domainname rhsmcertd
                      rsyslog selinux-autorelabel-mark sep5 sshd sssd systemd-network-generator tuned udisks2
     enabled-runtime  systemd-remount-fs
     disabled         chrony-wait console-getty cpupower debug-shell kvm_stat man-db-restart-cache-update
                      nftables rdisc rhsm rhsm-facts rpmdb-rebuild 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

    --------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd1,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
     root=UUID=058bfdf1-c62b-4fad-8d41-5c40aa179007
     ro
     crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
     resume=UUID=b47f1685-a5fa-4d39-b2d7-e3f6e95ad499
     nohz_full=1-479

    --------------------------------------------------------------
15. cpupower frequency-info
     analyzing CPU 0:
       current policy: frequency should be within 800 MHz and 2.00 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
```

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Platform Notes (Continued)

```
    ----------------------------------------------------------------
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 9.0 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
  system-release Red Hat Enterprise Linux release 9.0 (Plow)

    ----------------------------------------------------------------
21. Disk information
SPEC is set to: /home/Uniautos/cpu2017
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/sda5       xfs   820G   53G  767G   7% /home

    ----------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:        XFUSION
    Product:       5885H V7
    Product Family: EagleStream

    ----------------------------------------------------------------
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:
    32x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800


    ----------------------------------------------------------------
24. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:     XFUSION
  BIOS Version:    2.00.34
  BIOS Date:       04/18/2023
```

Compiler Version Notes

```
==============================================================================================
C              | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
----------------------------------------------------------------------------------------------
```

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Compiler Version Notes (Continued)

```
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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==============================================================================================
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 2023.0.0 Build 20221201
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==============================================================================================
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 2023.0.0 Build 20221201
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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`

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SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2023 Standard Performance Evaluation Corporation

xFusion

FusionServer 5885H V7 (Intel Xeon Platinum 8450H)

$SPECspeed^{®}2017\_fp\_base = 326$

$SPECspeed^{®}2017\_fp\_peak = 325$

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

Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Base Portability Flags (Continued)

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:
`-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 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

Fortran benchmarks:
`-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:
`-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++:
`-m64 -std=c++14 -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`

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xFusion

FusionServer 5885H V7 (Intel Xeon Platinum 8450H)

$SPECspeed®2017\_fp\_base = 326$

$SPECspeed®2017\_fp\_peak = 325$

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

Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Peak Compiler Invocation (Continued)

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:

603.bwaves_s: `-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`

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xFusion

FusionServer 5885H V7 (Intel Xeon Platinum 8450H)

SPECspeed®2017_fp_base = 326

SPECspeed®2017_fp_peak = 325

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

Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Peak Optimization Flags (Continued)

627.cam4_s: -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

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-ic2023-official-linux64.html
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-SPR-V1.1-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml
http://www.spec.org/cpu2017/flags/xFusion-Platform-Settings-SPR-V1.1-revC.xml

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

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