SPEC CPU®2017 Floating Point Speed Result

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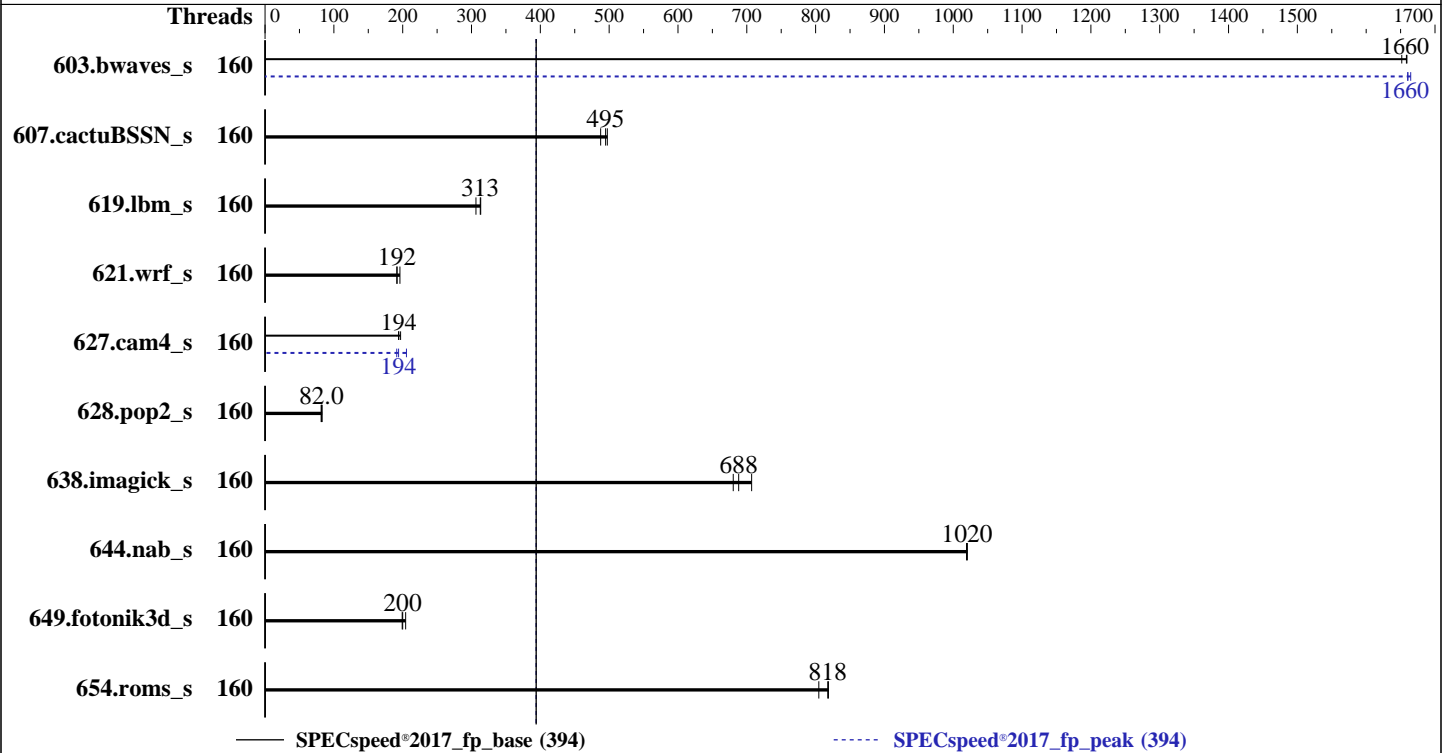## xFusion

FusionServer 5885H V7 (Intel Xeon Platinum 8460H)

$SPECspeed^®2017\_fp\_base = 394$

$SPECspeed^®2017\_fp\_peak = 394$

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

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

Threads

- 603.bwaves_s 160 — 1660 / 1660
- 607.cactuBSSN_s 160 — 495
- 619.lbm_s 160 — 313
- 621.wrf_s 160 — 192
- 627.cam4_s 160 — 194 / 194
- 628.pop2_s 160 — 82.0
- 638.imagick_s 160 — 688
- 644.nab_s 160 — 1020
- 649.fotonik3d_s 160 — 200
- 654.roms_s 160 — 818

SPECspeed®2017_fp_base (394)   SPECspeed®2017_fp_peak (394)

Hardware

CPU Name: Intel Xeon Platinum 8460H
 Max MHz: 3800
 Nominal: 2200
Enabled: 160 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: 105 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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$SPECspeed^{®}2017\_fp\_base = 394$

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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	160	35.7	1650	**35.6**	**1660**	35.6	1660	160	**35.5**	**1660**	35.5	1660	35.4	1660
607.cactuBSSN_s	160	34.2	488	**33.7**	**495**	33.5	497	160	34.2	488	**33.7**	**495**	33.5	497
619.lbm_s	160	16.7	313	17.1	306	**16.8**	**313**	160	16.7	313	17.1	306	**16.8**	**313**
621.wrf_s	160	**68.9**	**192**	67.5	196	69.1	191	160	**68.9**	**192**	67.5	196	69.1	191
627.cam4_s	160	45.0	197	45.7	194	**45.6**	**194**	160	46.3	191	**45.7**	**194**	43.1	205
628.pop2_s	160	**145**	**82.0**	146	81.5	143	83.0	160	**145**	**82.0**	146	81.5	143	83.0
638.imagick_s	160	**21.0**	**688**	20.4	707	21.2	680	160	**21.0**	**688**	20.4	707	21.2	680
644.nab_s	160	17.1	1020	17.1	1020	**17.1**	**1020**	160	17.1	1020	17.1	1020	**17.1**	**1020**
649.fotonik3d_s	160	45.7	199	**45.6**	**200**	44.6	204	160	45.7	199	**45.6**	**200**	44.6	204
654.roms_s	160	19.2	819	19.6	805	**19.3**	**818**	160	19.2	819	19.6	805	**19.3**	**818**
SPECspeed®2017_fp_base =		**394**												
SPECspeed®2017_fp_peak =		**394**												

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
```

(Continued on next page)

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$SPECspeed^{®}2017\_fp\_base = 394$

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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 Tue Jun  6 23:26:48 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
    23:26:48 up  2:01,  1 user,  load average: 4.93, 4.50, 2.73
   USER      TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root      pts/0      21:26    1:58m  0.96s  0.03s -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) 4125183
```

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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) 4125183
   virtual memory              (kbytes, -v) unlimited
   file locks                       (-x) unlimited

 ----------------------------------------------------------
 5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 30
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: root [priv]
 sshd: root@pts/0
 -bash
 /bin/sh ./run_speed.sh
 runcpu --define default-platform-flags -c ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=160
   --tune base,peak -o all --define drop_caches fpspeed
 runcpu --define default-platform-flags --configfile ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define
   cores=160 --tune base,peak --output_format all --define drop_caches --nopower --runmode speed --tune
   base:peak --size refspeed fpspeed --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.015/templogs/preenv.fpspeed.015.0.log --lognum 015.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
 $SPEC = /home/Uniautos/cpu2017


 ----------------------------------------------------------
 6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8460H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 8
    microcode       : 0x2b0001b0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 40
    siblings        : 40
    4 physical ids (chips)
    160 processors (hardware threads)
    physical id 0: core ids 0-39
    physical id 1: core ids 0-39
    physical id 2: core ids 0-39
    physical id 3: core ids 0-39
    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
    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
    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
    08,310,312,314,316,318,320,322,324,326,328,330,332,334
    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
    36,438,440,442,444,446,448,450,452,454,456,458,460,462
    Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
    virtualized systems.  Use the above data carefully.
```

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Platform Notes (Continued)

```
          -------------------------------------------------------------
          7. lscpu

          From lscpu from util-linux 2.37.4:
            Architecture:                   x86_64
            CPU op-mode(s):                 32-bit, 64-bit
            Address sizes:                  46 bits physical, 57 bits virtual
            Byte Order:                     Little Endian
            CPU(s):                         160
            On-line CPU(s) list:            0-159
            Vendor ID:                      GenuineIntel
            BIOS Vendor ID:                 Intel(R) Corporation
            Model name:                     Intel(R) Xeon(R) Platinum 8460H
            BIOS Model name:                Intel(R) Xeon(R) Platinum 8460H
            CPU family:                     6
            Model:                          143
            Thread(s) per core:             1
            Core(s) per socket:             40
            Socket(s):                      4
            Stepping:                       8
            BogoMIPS:                       4400.00
            Flags:                          fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                                            clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                                            lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                                            nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 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:                      7.5 MiB (160 instances)
            L1i cache:                      5 MiB (160 instances)
            L2 cache:                       320 MiB (160 instances)
            L3 cache:                       420 MiB (4 instances)
            NUMA node(s):                   8
            NUMA node0 CPU(s):              0-19
            NUMA node1 CPU(s):              20-39
            NUMA node2 CPU(s):              40-59
            NUMA node3 CPU(s):              60-79
            NUMA node4 CPU(s):              80-99
            NUMA node5 CPU(s):              100-119
            NUMA node6 CPU(s):              120-139
            NUMA node7 CPU(s):              140-159
            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
```

(Continued on next page)

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Platform Notes (Continued)

```
  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     7.5M   12 Data            1     64        1             64
    L1i      32K       5M    8 Instruction     1     64        1             64
    L2        2M     320M   16 Unified         2   2048        1             64
    L3      105M     420M   15 Unified         3 114688        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: 0-19
  node 0 size: 128251 MB
  node 0 free: 123307 MB
  node 1 cpus: 20-39
  node 1 size: 129019 MB
  node 1 free: 128359 MB
  node 2 cpus: 40-59
  node 2 size: 129019 MB
  node 2 free: 128773 MB
  node 3 cpus: 60-79
  node 3 size: 129019 MB
  node 3 free: 128767 MB
  node 4 cpus: 80-99
  node 4 size: 129019 MB
  node 4 free: 128759 MB
  node 5 cpus: 100-119
  node 5 size: 128983 MB
  node 5 free: 128722 MB
  node 6 cpus: 120-139
  node 6 size: 129019 MB
  node 6 free: 128765 MB
  node 7 cpus: 140-159
  node 7 size: 128999 MB
  node 7 free: 128779 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:       1056084996 kB


------------------------------------------------------------
10. who -r
   run-level 3 Jun 6 21:25


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

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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


   ----------------------------------------------------------
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=(hd0,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:
       Unable to determine current policy
       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
```

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Platform Notes (Continued)

```
   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 9.0 (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   44G  777G   6% /home


   ----------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
      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:       Byosoft Corporation
   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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FusionServer 5885H V7 (Intel Xeon Platinum 8460H)

$SPECspeed^{®}2017\_fp\_base = 394$

$SPECspeed^{®}2017\_fp\_peak = 394$

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

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

Compiler Version Notes (Continued)

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

==============================================================================================
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
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
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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Intel(R) oneAPI DPC++/C++ 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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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 8460H)

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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

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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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