SPEC CPU®2017 Floating Point Speed Result

Dell Inc.

$SPECspeed^{®}2017\_fp\_base = 403$

PowerEdge C6620 (Intel Xeon Platinum 8580)

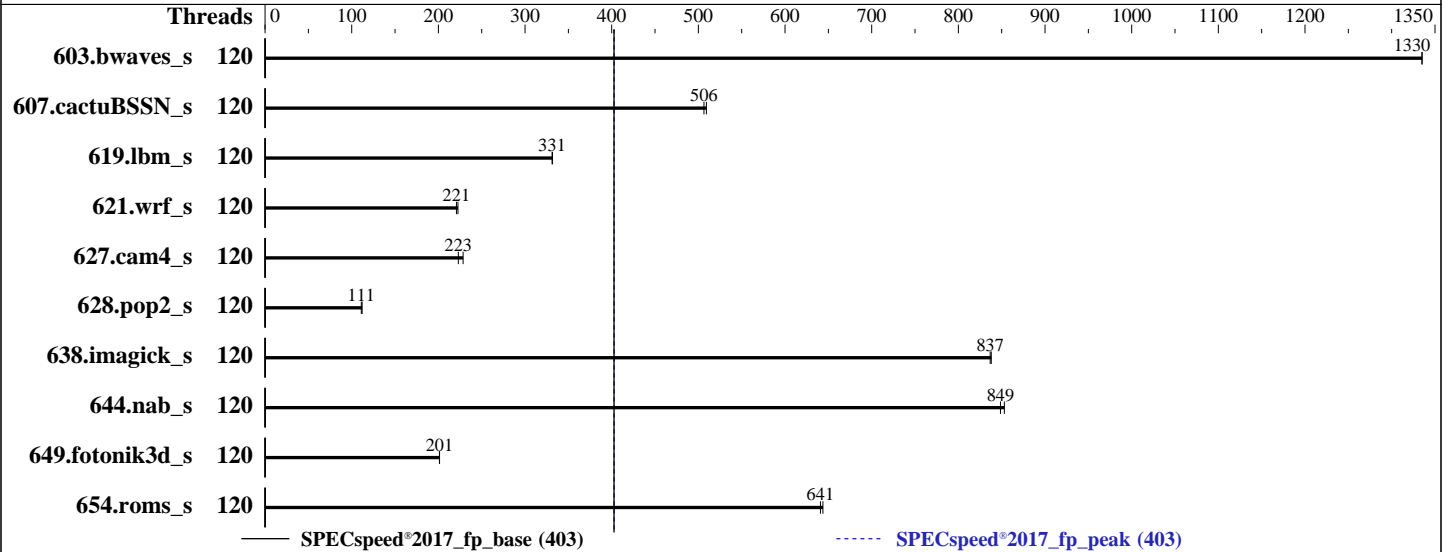$SPECspeed^{®}2017\_fp\_peak = 403$

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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

Threads bar chart (scale 0 to 1350):

Benchmark	Threads	Result
603.bwaves_s	120	1330
607.cactuBSSN_s	120	506
619.lbm_s	120	331
621.wrf_s	120	221
627.cam4_s	120	223
628.pop2_s	120	111
638.imagick_s	120	837
644.nab_s	120	849
649.fotonik3d_s	120	201
654.roms_s	120	641

SPECspeed®2017_fp_base (403)   SPECspeed®2017_fp_peak (403)

Hardware

CPU Name: Intel Xeon Platinum 8580
  Max MHz: 4000
  Nominal: 2000
Enabled: 120 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: 300 MB I+D on chip per chip
  Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R)
Storage: 80 GB on tmpfs
Other: Cooling: DLC

Software

OS: SUSE Linux Enterprise Server 15 SP5
  5.14.21-150500.53-default
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 1.9.10 released Oct-2023
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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SPECspeed®2017_fp_base = 403

SPECspeed®2017_fp_peak = 403

CPU2017 License: 6573	**Test Date:**	Dec-2023
Test Sponsor: Dell Inc.	**Hardware Availability:**	Feb-2024
Tested by: Dell Inc.	**Software Availability:**	Dec-2023

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	120	44.2	1340	**44.2**	**1330**			120	44.2	1340	**44.2**	**1330**		
607.cactuBSSN_s	120	32.7	509	**32.9**	**506**			120	32.7	509	**32.9**	**506**		
619.lbm_s	120	15.8	332	**15.8**	**331**			120	15.8	332	**15.8**	**331**		
621.wrf_s	120	59.4	223	**59.9**	**221**			120	59.4	223	**59.9**	**221**		
627.cam4_s	120	38.8	229	**39.7**	**223**			120	38.8	229	**39.7**	**223**		
628.pop2_s	120	**107**	**111**	106	112			120	**107**	**111**	106	112		
638.imagick_s	120	17.2	838	**17.2**	**837**			120	17.2	838	**17.2**	**837**		
644.nab_s	120	20.5	853	**20.6**	**849**			120	20.5	853	**20.6**	**849**		
649.fotonik3d_s	120	**45.3**	**201**	45.3	201			120	**45.3**	**201**	45.3	201		
654.roms_s	120	**24.6**	**641**	24.5	644			120	**24.6**	**641**	24.5	644		
SPECspeed®2017_fp_base =		**403**												
SPECspeed®2017_fp_peak =		**403**												

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH =
    "/mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/lib_2023.0/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/je5.0.
    1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Redhat Enterprise Linux 8.0
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>   /proc/sys/vm/drop_caches
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.

Benchmark run from a 80 GB ramdisk created with the cmd: "mount -t tmpfs -o size=80G tmpfs /mnt/ramdisk"

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Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8580)

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CPU2017 License: 6573		**Test Date:**	Dec-2023
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Feb-2024
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Platform Notes

```
BIOS settings:
                   ADDDC Setting : Disabled
        DIMM Self Healing on
   Uncorrectable Memory Error : Disabled

            Logical Processor : Disabled
   Virtualization Technology : Disabled
     DCU Streamer Prefetcher : Disabled
              Optimizer Mode : Enabled

              System Profile : Custom
        CPU Power Management : Maximum Performance
                         C1E : Disabled
                    C States : Autonomous
         Memory Patrol Scrub : Disabled
      Energy Efficiency Policy : Performance
           PCI ASPM L1 Link
              Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Thu Dec 21 13:12:45 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 249 (249.16+suse.171.gdad0071f15)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS
-----------------------------------------------------------

-----------------------------------------------------------
1. uname -a
  Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)
  x86_64 x86_64 x86_64 GNU/Linux

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

(Continued on next page)

Dell Inc.

$SPECspeed®2017\_fp\_base = 403$

PowerEdge C6620 (Intel Xeon Platinum 8580)

$SPECspeed®2017\_fp\_peak = 403$

CPU2017 License: 6573
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Platform Notes (Continued)

```
 2. w
    13:12:45 up  2:11,  1 user,  load average: 3.33, 4.16, 2.75
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                11:02    2:10m  0.96s  0.00s /bin/bash ./dell-run-speccpu.sh speed
    --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-adddcD=1 --define DL-VERS=v4.8.6 --output_format
    html,pdf,txt --define DL-LQC=1

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

   ----------------------------------------------------------------
 4. ulimit -a
    core file size          (blocks, -c) unlimited
    data seg size           (kbytes, -d) unlimited
    scheduling priority             (-e) 0
    file size               (blocks, -f) unlimited
    pending signals                 (-i) 4126141
    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) 4126141
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited

   ----------------------------------------------------------------
 5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 29
    login -- root
    -bash
    /bin/bash ./DELL_speed.sh
    /bin/bash ./dell-run-main.sh speed
    /bin/bash ./dell-run-main.sh speed
    /bin/bash ./dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-adddcD=1
      --define DL-VERS=v4.8.6 --output_format html,pdf,txt --define DL-LQC=1
    /bin/bash ./dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-adddcD=1
      --define DL-VERS=v4.8.6 --output_format html,pdf,txt --define DL-LQC=1
    runcpu --nobuild --action validate --define default-platform-flags -c
      ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=120 --tune base,peak -o all --define
      drop_caches --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-adddcD=1 --define
      DL-VERS=v4.8.6 --output_format html,pdf,txt --define DL-LQC=1 fpspeed
    runcpu --nobuild --action validate --define default-platform-flags --configfile
      ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=120 --tune base,peak --output_format all
      --define drop_caches --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-5.inc --define DL-BIOS-adddcD=1
      --define DL-VERS=v4.8.6 --output_format html,pdf,txt --define DL-LQC=1 --nopower --runmode speed --tune
      base:peak --size refspeed fpspeed --nopreenv --note-preenv --logfile
      $SPEC/tmp/CPU2017.002/templogs/preenv.fpspeed.002.0.log --lognum 002.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3

   ----------------------------------------------------------------
 6. /proc/cpuinfo
    model name      : INTEL(R) XEON(R) PLATINUM 8580
    vendor_id       : GenuineIntel
    cpu family      : 6
```

(Continued on next page)

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Software Availability: Dec-2023

Platform Notes (Continued)

```
      model           : 207
      stepping        : 2
      microcode       : 0x21000190
      bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
      cpu cores       : 60
      siblings        : 60
      2 physical ids (chips)
      120 processors (hardware threads)
      physical id 0: core ids 0-59
      physical id 1: core ids 0-59
      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
      ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118
      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
      80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230,23
      2,234,236,238,240,242,244,246
  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
    CPU op-mode(s):                32-bit, 64-bit
    Address sizes:                 46 bits physical, 57 bits virtual
    Byte Order:                    Little Endian
    CPU(s):                        120
    On-line CPU(s) list:           0-119
    Vendor ID:                     GenuineIntel
    Model name:                    INTEL(R) XEON(R) PLATINUM 8580
    CPU family:                    6
    Model:                         207
    Thread(s) per core:            1
    Core(s) per socket:            60
    Socket(s):                     2
    Stepping:                      2
    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 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 fsgsbase tsc_adjust bmi1 hle
                                   avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
                                   avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                                   xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                   cqm_mbm_local 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
    L1d cache:                     5.6 MiB (120 instances)
    L1i cache:                     3.8 MiB (120 instances)
    L2 cache:                      240 MiB (120 instances)
    L3 cache:                      600 MiB (2 instances)
    NUMA node(s):                  2
```

(Continued on next page)

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Platform Notes (Continued)

```
  NUMA node0 CPU(s):               0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,5
                                   2,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84,86,88,90,92,94,96,98,100
                                   ,102,104,106,108,110,112,114,116,118
  NUMA node1 CPU(s):               1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,5
                                   3,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95,97,99,101
                                   ,103,105,107,109,111,113,115,117,119
  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 and seccomp
  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     5.6M   12 Data          1     64       1            64
    L1i      32K     3.8M    8 Instruction   1     64       1            64
    L2        2M     240M   16 Unified       2   2048       1            64
    L3      300M     600M   20 Unified       3 245760       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:
  0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72,7
  4,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118
  node 0 size: 515498 MB
  node 0 free: 513823 MB
  node 1 cpus:
  1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,7
  5,77,79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109,111,113,115,117,119
  node 1 size: 516059 MB
  node 1 free: 501192 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056316028 kB


------------------------------------------------------------
10. who -r
   run-level 3 Dec 21 11:02


------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
   Default Target  Status
   multi-user      running


------------------------------------------------------------
12. Services, from systemctl list-unit-files
```

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Platform Notes (Continued)

```
    STATE              UNIT FILES
    enabled            apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings
                       nvmefc-boot-connections postfix purge-kernels rollback sshd systemd-pstore tuned wicked
                       wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
    enabled-runtime    systemd-remount-fs
    disabled           boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell ebtables
                       grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load lunmask
                       nvmf-autoconnect rpmconfigcheck rsyncd serial-getty@ systemd-boot-check-no-failures
                       systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
    indirect           wickedd

  ----------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
    root=UUID=aa1ffe9d-5851-4d06-be29-02be8b9d35b8
    splash=silent
    mitigations=auto
    quiet
    security=apparmor

  ----------------------------------------------------------
  14. cpupower frequency-info
    analyzing CPU 0:
      Unable to determine current policy
      boost state support:
        Supported: yes
        Active: yes

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

  ----------------------------------------------------------
  16. sysctl
    kernel.numa_balancing            1
    kernel.randomize_va_space        2
    vm.compaction_proactiveness      20
    vm.dirty_background_bytes        0
    vm.dirty_background_ratio        10
    vm.dirty_bytes                   0
    vm.dirty_expire_centisecs        3000
    vm.dirty_ratio                   20
    vm.dirty_writeback_centisecs     500
    vm.dirtytime_expire_seconds      43200
    vm.extfrag_threshold             500
    vm.min_unmapped_ratio            1
    vm.nr_hugepages                  0
    vm.nr_hugepages_mempolicy        0
    vm.nr_overcommit_hugepages       0
    vm.swappiness                    10
    vm.watermark_boost_factor        15000
    vm.watermark_scale_factor        10
    vm.zone_reclaim_mode             0

  ----------------------------------------------------------
  17. /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
```

(Continued on next page)

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Platform Notes (Continued)

```
     ----------------------------------------------------------------
     18. /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

     ----------------------------------------------------------------
     19. OS release
       From /etc/*-release /etc/*-version
       os-release SUSE Linux Enterprise Server 15 SP5

     ----------------------------------------------------------------
     20. Disk information
     SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2023.2.3
       Filesystem      Type   Size  Used Avail Use% Mounted on
       tmpfs          tmpfs    80G   11G   70G  13% /mnt/ramdisk

     ----------------------------------------------------------------
     21. /sys/devices/virtual/dmi/id
         Vendor:         Dell Inc.
         Product:        PowerEdge C6620
         Product Family: PowerEdge
         Serial:         SL6C201

     ----------------------------------------------------------------
     22. dmidecode
       Additional information from dmidecode 3.4 follows.  WARNING: Use caution when you interpret this section.
       The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
       determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
       "DMTF SMBIOS" standard.
       Memory:
         16x 00CE063200CE M321R8GA0PB0-CWMKH 64 GB 2 rank 5600


     ----------------------------------------------------------------
     23. BIOS
     (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:      Dell Inc.
       BIOS Version:     1.9.10
       BIOS Date:        10/12/2023
       BIOS Revision:    1.9
```

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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
```

(Continued on next page)

SPEC CPU®2017 Floating Point Speed Result

Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8580)

$SPECspeed^{®}2017\_fp\_base = 403$

$SPECspeed^{®}2017\_fp\_peak = 403$

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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

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.
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
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
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.
------------------------------------------------------------------------------
```

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`

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Base Portability Flags (Continued)

```
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
```

Fortran benchmarks:
```
ifx
```

Benchmarks using both Fortran and C:
```
ifx icx
```

(Continued on next page)

SPEC CPU®2017 Floating Point Speed Result

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PowerEdge C6620 (Intel Xeon Platinum 8580)

$SPECspeed^{®}2017\_fp\_base = 403$

$SPECspeed^{®}2017\_fp\_peak = 403$

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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

Peak Compiler Invocation (Continued)

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: `basepeak = yes`

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`

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SPEC CPU®2017 Floating Point Speed Result

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Dell Inc.

PowerEdge C6620 (Intel Xeon Platinum 8580)

$SPECspeed®2017\_fp\_base = 403$

$SPECspeed®2017\_fp\_peak = 403$

CPU2017 License: 6573		**Test Date:**	Dec-2023
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Feb-2024
Tested by:	Dell Inc.	**Software Availability:**	Dec-2023

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/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.6.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/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.6.xml

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

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