SPEC CPU®2017 Floating Point Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.80 GHz, Intel Xeon Gold 6526Y)

$SPECspeed®2017\_fp\_base = 267$

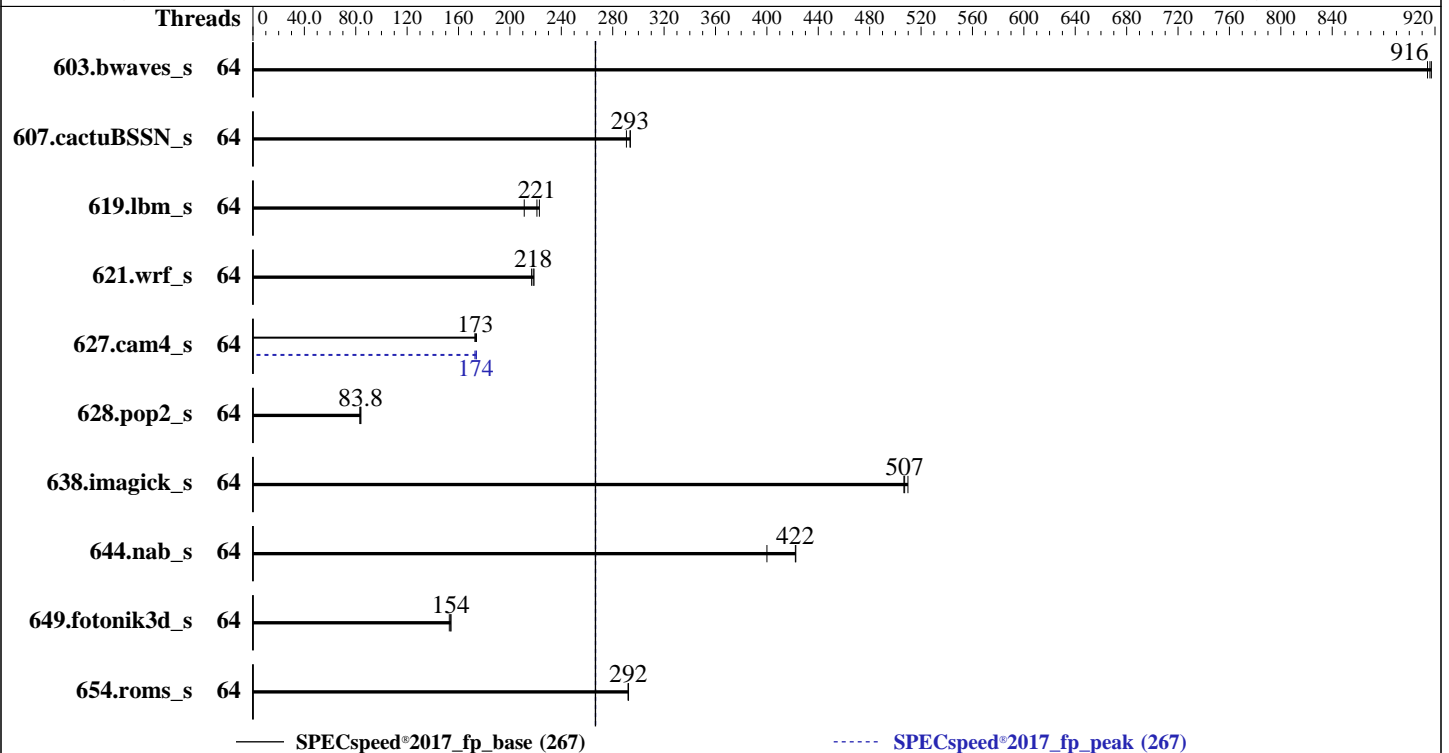$SPECspeed®2017\_fp\_peak = 267$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Jan-2024

Hardware Availability: Feb-2024

Software Availability: Dec-2023

Threads chart (all benchmarks 64 threads):
- 603.bwaves_s 64 — 916
- 607.cactuBSSN_s 64 — 293
- 619.lbm_s 64 — 221
- 621.wrf_s 64 — 218
- 627.cam4_s 64 — 173 (base), 174 (peak)
- 628.pop2_s 64 — 83.8
- 638.imagick_s 64 — 507
- 644.nab_s 64 — 422
- 649.fotonik3d_s 64 — 154
- 654.roms_s 64 — 292

SPECspeed®2017_fp_base (267) — SPECspeed®2017_fp_peak (267)

Hardware

CPU Name: Intel Xeon Gold 6526Y
Max MHz: 3900
Nominal: 2800
Enabled: 32 cores, 2 chips, 2 threads/core
Orderable: 1, 2 chip(s)
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 37.5 MB I+D on chip per chip
Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R, running at 5200)
Storage: 1 x 480 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP5
Kernel 5.14.21-150500.53-default
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: Yes
Firmware: HPE BIOS Version v2.12 12/13/2023 released Dec-2023
File System: btrfs
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_peak = 267

CPU2017 License: 3	**Test Date:** Jan-2024
Test Sponsor: HPE	**Hardware Availability:** Feb-2024
Tested by: HPE	**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	64	64.3	917	**64.4**	**916**	64.5	914	64	64.3	917	**64.4**	**916**	64.5	914
607.cactuBSSN_s	64	**56.8**	**293**	56.8	294	57.4	291	64	**56.8**	**293**	56.8	294	57.4	291
619.lbm_s	64	24.8	211	**23.7**	**221**	23.5	223	64	24.8	211	**23.7**	**221**	23.5	223
621.wrf_s	64	60.5	219	**60.6**	**218**	61.0	217	64	60.5	219	**60.6**	**218**	61.0	217
627.cam4_s	64	**51.2**	**173**	51.3	173	50.9	174	64	51.0	174	**51.1**	**174**	51.3	173
628.pop2_s	64	**142**	**83.8**	141	84.0	143	83.1	64	**142**	**83.8**	141	84.0	143	83.1
638.imagick_s	64	**28.4**	**507**	28.3	510	28.5	507	64	**28.4**	**507**	28.3	510	28.5	507
644.nab_s	64	43.7	400	41.4	423	**41.4**	**422**	64	43.7	400	41.4	423	**41.4**	**422**
649.fotonik3d_s	64	**59.2**	**154**	59.7	153	59.2	154	64	**59.2**	**154**	59.7	153	59.2	154
654.roms_s	64	53.9	292	**53.9**	**292**	53.9	292	64	53.9	292	**53.9**	**292**	53.9	292
SPECspeed®2017_fp_base =								**267**						
SPECspeed®2017_fp_peak =								**267**						

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
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
tuned-adm profile was set to throughput-performance using "tuned-adm profile throughput-performance"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017_new/lib/intel64:/home/cpu2017_new/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
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

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General Notes (Continued)

```
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

```
The system ROM used for this result contains Intel microcode version 0x21000200 for
the Intel Xeon Gold 6526Y processor.
BIOS Configuration:
 Workload Profile set to General Peak Frequency Compute
 Thermal Configuration set to Maximum Cooling
 Memory Patrol Scrubbing set to Disabled
 Enhanced Processor Performance Profile set to Aggressive
 Dead Block Predictor set to Enabled
 Last Level Cache (LLC) Prefetch set to Enabled
 Last Level Cache (LLC) Dead Line Allocation set to Disabled
 Workload Profile set to Custom
 Intel DMI Link Frequency set to Gen2 Speed
  Adjacent Sector Prefetch set to Disabled
  Minimum Processor Idle Power Package C-State set to No Package State

 Sysinfo program /home/cpu2017_new/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Fri Jan 19 01:01:39 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 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
```

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Platform Notes (Continued)

```
         ---------------------------------------------------------
         2. w
            01:01:39 up 1 min,  0 users,  load average: 0.33, 0.13, 0.04
          USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT

         ---------------------------------------------------------
         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) 2062748
           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) 2062748
           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@notty
          bash -c cd $SPEC/ && $SPEC/fpspeed.sh
          runcpu --nobuild --action validate --define default-platform-flags -c
            ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=64 --tune base,peak -o all --define
            drop_caches fpspeed
          runcpu --nobuild --action validate --define default-platform-flags --configfile
            ic2023.2.3-lin-core-avx512-speed-20231121.cfg --define cores=64 --tune base,peak --output_format all
            --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed fpspeed --nopreenv
            --note-preenv --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.fpspeed.001.0.log --lognum 001.0
            --from_runcpu 2
          specperl $SPEC/bin/sysinfo
         $SPEC = /home/cpu2017_new

         ---------------------------------------------------------
         6. /proc/cpuinfo
            model name      : INTEL(R) XEON(R) GOLD 6526Y
            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       : 16
            siblings        : 32
            2 physical ids (chips)
            64 processors (hardware threads)
            physical id 0: core ids 0-15
```

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CPU2017 License:	3	**Test Date:**	Jan-2024
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Platform Notes (Continued)

```
     physical id 1: core ids 0-15
     physical id 0: apicids 0-31
     physical id 1: apicids 128-159
  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):                  64
  On-line CPU(s) list:     0-63
  Vendor ID:               GenuineIntel
  Model name:              INTEL(R) XEON(R) GOLD 6526Y
  CPU family:              6
  Model:                   207
  Thread(s) per core:      2
  Core(s) per socket:      16
  Socket(s):               2
  Stepping:                2
  BogoMIPS:                5600.00
  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 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 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 avx512_fp16 amx_tile flush_l1d arch_capabilities
  Virtualization:          VT-x
  L1d cache:               1.5 MiB (32 instances)
  L1i cache:               1 MiB (32 instances)
  L2 cache:                64 MiB (32 instances)
  L3 cache:                75 MiB (2 instances)
  NUMA node(s):            2
  NUMA node0 CPU(s):       0-15,32-47
  NUMA node1 CPU(s):       16-31,48-63
  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
```

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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     1.5M   12 Data           1    64      1              64
    L1i      32K       1M    8 Instruction    1    64      1              64
    L2        2M      64M   16 Unified        2  2048      1              64
    L3     37.5M      75M   15 Unified        3 40960      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: 0-15,32-47
  node 0 size: 257699 MB
  node 0 free: 256989 MB
  node 1 cpus: 16-31,48-63
  node 1 size: 258018 MB
  node 1 free: 257184 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10


  ---------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       528095412 kB


  ---------------------------------------------------------------
10. who -r
   run-level 3 Jan 19 01:00


  ---------------------------------------------------------------
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
   STATE              UNIT FILES
   enabled            ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor appstream-sync-cache auditd
                      bluetooth cron display-manager getty@ irqbalance issue-generator kbdsettings klog
                      lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked
                      wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant
   enabled-runtime    systemd-remount-fs
   disabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon autofs
                      autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates
                      chrony-wait chronyd console-getty cups cups-browsed debug-shell dnsmasq ebtables
                      exchange-bmc-os-info firewalld gpm grub2-once haveged haveged-switch-root
                      hwloc-dump-hwdata ipmi ipmievd issue-add-ssh-keys kexec-load lunmask man-db-create
                      multipathd nfs nfs-blkmap nmb openvpn@ ostree-remount rpcbind rpmconfigcheck rsyncd
                      rtkit-daemon serial-getty@ smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd
                      systemd-boot-check-no-failures systemd-network-generator systemd-sysext
                      systemd-time-wait-sync systemd-timesyncd tuned udisks2 update-system-flatpaks upower
                      vncserver@ wpa_supplicant@
   indirect           pcscd saned@ wickedd


  ---------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
```

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Platform Notes (Continued)

```
  BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
  root=UUID=6079f3c4-d2d9-4c4b-9d1e-bcf377d7f052
  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

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

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SPECspeed®2017_fp_base = 267

SPECspeed®2017_fp_peak = 267

Platform Notes (Continued)

```
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP5


  ----------------------------------------------------------
  20. Disk information
  SPEC is set to: /home/cpu2017_new
    Filesystem      Type   Size  Used Avail Use% Mounted on
    /dev/sda3       btrfs  444G  272G  172G  62% /home


  ----------------------------------------------------------
  21. /sys/devices/virtual/dmi/id
     Vendor:         HPE
     Product:        ProLiant DL380 Gen11
     Product Family: ProLiant
     Serial:         CNX21000G8


  ----------------------------------------------------------
  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 Hynix HMCG88AGBRA193N 32 GB 2 rank 5600, configured at 5200



  ----------------------------------------------------------
  23. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       HPE
     BIOS Version:      2.12
     BIOS Date:         12/13/2023
     BIOS Revision:     2.12
     Firmware Revision: 1.50
```

Compiler Version Notes

```
==============================================================================
C               | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
```

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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 2023.2.3 Build x
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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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 -xCORE-AVX512 -Ofast -ffast-math`

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.80 GHz, Intel Xeon Gold 6526Y)

SPECspeed®2017_fp_base = 267

SPECspeed®2017_fp_peak = 267

CPU2017 License:	3	**Test Date:**	Jan-2024
Test Sponsor:	HPE	**Hardware Availability:**	Feb-2024
Tested by:	HPE	**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 -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using both Fortran and C:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, C, and C++:
```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP -Wno-implicit-int
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

Fortran benchmarks:
```
ifx
```

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

Benchmarks using Fortran, C, and C++:
```
icpx icx ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.80 GHz, Intel Xeon Gold 6526Y)

$SPECspeed^{®}2017\_fp\_base = 267$

$SPECspeed^{®}2017\_fp\_peak = 267$

CPU2017 License:	3	**Test Date:**	Jan-2024
Test Sponsor:	HPE	**Hardware Availability:**	Feb-2024
Tested by:	HPE	**Software Availability:**	Dec-2023

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: `-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc`

628.pop2_s: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-EMR-rev1.0.html
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-EMR-rev1.0.xml
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml

SPEC CPU®2017 Floating Point Speed Result

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(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.80 GHz, Intel Xeon Gold 6526Y)

$SPECspeed®2017\_fp\_base = 267$

$SPECspeed®2017\_fp\_peak = 267$

CPU2017 License:	3	**Test Date:**	Jan-2024
Test Sponsor:	HPE	**Hardware Availability:**	Feb-2024
Tested by:	HPE	**Software Availability:**	Dec-2023

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

Tested with SPEC CPU®2017 v1.1.9 on 2024-01-18 14:31:38-0500.
Report generated on 2024-02-28 19:17:24 by CPU2017 PDF formatter v6716.
Originally published on 2024-02-27.