# SPEC CPU®2017 Floating Point Speed Result

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## New H3C Technologies Co., Ltd.

H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

$SPECspeed^{®}2017\_fp\_base = 423$

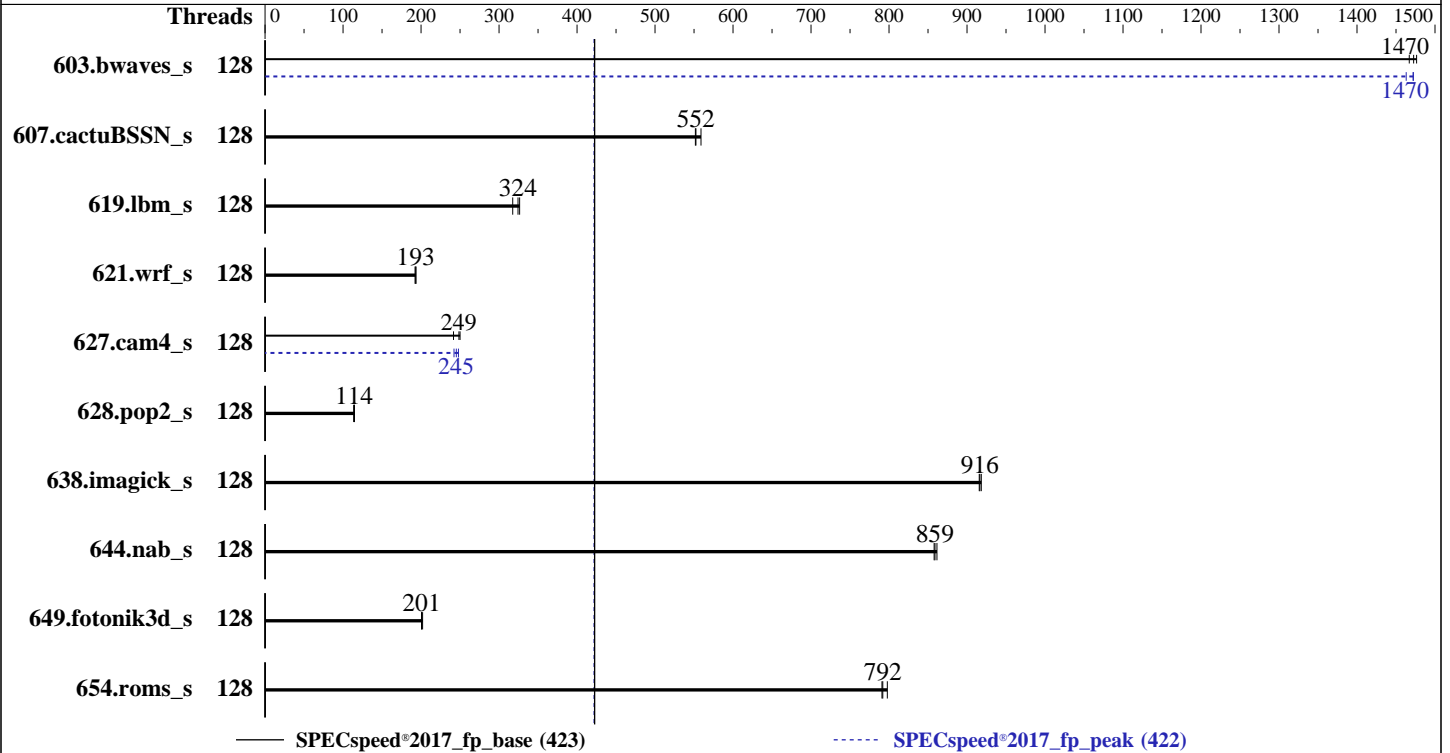$SPECspeed^{®}2017\_fp\_peak = 422$

**CPU2017 License:** 9066

**Test Sponsor:** New H3C Technologies Co., Ltd.

**Tested by:** New H3C Technologies Co., Ltd.

**Test Date:** Apr-2024

**Hardware Availability:** Oct-2023

**Software Availability:** Apr-2024

| Threads | | |
|---|---|---|
| 603.bwaves_s | 128 | 1470 / 1470 |
| 607.cactuBSSN_s | 128 | 552 |
| 619.lbm_s | 128 | 324 |
| 621.wrf_s | 128 | 193 |
| 627.cam4_s | 128 | 249 / 245 |
| 628.pop2_s | 128 | 114 |
| 638.imagick_s | 128 | 916 |
| 644.nab_s | 128 | 859 |
| 649.fotonik3d_s | 128 | 201 |
| 654.roms_s | 128 | 792 |

SPECspeed®2017_fp_base (423)    SPECspeed®2017_fp_peak (422)

## Hardware

CPU Name: Intel Xeon Platinum 8592+

Max MHz: 3900

Nominal: 1900

Enabled: 128 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: 320 MB I+D on chip per chip

Other: None

Memory: 512 GB (16 x 32 GB 2Rx8 PC5-5600B-R)

Storage: 1 x 3.2TB PCIe NVMe SSD

Other: CPU Cooling: Air

## Software

OS: SUSE Linux Enterprise Server 15 SP5
5.14.21-150500.53-default

Compiler: C/C++: Version 2024.0.2 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2024.0.2 of Intel Fortran Compiler for Linux;

Parallel: Yes

Firmware: Version 5.32 released Apr-2024 BIOS

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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| | | |
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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 | 128 | 40.2 | 1470 | 40.0 | 1480 | **40.1** | **1470** | 128 | 40.1 | 1470 | 40.3 | 1460 | **40.1** | **1470** |
| 607.cactuBSSN_s | 128 | 29.8 | 559 | **30.2** | **552** | 30.2 | 552 | 128 | 29.8 | 559 | **30.2** | **552** | 30.2 | 552 |
| 619.lbm_s | 128 | **16.2** | **324** | 16.5 | 318 | 16.0 | 326 | 128 | **16.2** | **324** | 16.5 | 318 | 16.0 | 326 |
| 621.wrf_s | 128 | 68.8 | 192 | 68.4 | 193 | **68.4** | **193** | 128 | 68.8 | 192 | 68.4 | 193 | **68.4** | **193** |
| 627.cam4_s | 128 | 36.7 | 242 | 35.4 | 250 | **35.7** | **249** | 128 | 36.6 | 242 | **36.1** | **245** | 35.7 | 248 |
| 628.pop2_s | 128 | **104** | **114** | 104 | 114 | 104 | 115 | 128 | **104** | **114** | 104 | 114 | 104 | 115 |
| 638.imagick_s | 128 | 15.8 | 916 | 15.7 | 918 | **15.7** | **916** | 128 | 15.8 | 916 | 15.7 | 918 | **15.7** | **916** |
| 644.nab_s | 128 | 20.3 | 861 | 20.4 | 858 | **20.3** | **859** | 128 | 20.3 | 861 | 20.4 | 858 | **20.3** | **859** |
| 649.fotonik3d_s | 128 | 45.1 | 202 | **45.4** | **201** | 45.4 | 201 | 128 | 45.1 | 202 | **45.4** | **201** | 45.4 | 201 |
| 654.roms_s | 128 | 19.7 | 798 | **19.9** | **792** | 19.9 | 791 | 128 | 19.7 | 798 | **19.9** | **792** | 19.9 | 791 |

| | |
|---|---|
| **SPECspeed®2017_fp_base =** | **423** |
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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/SPECCPU/lib/intel64:/home/SPECCPU/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.
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
```

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## Platform Notes

```
BIOS Settings:
 Set Enable LP [Global] to Single LP
 Set Adjacent Cache Prefetch to Disabled
 Set Power Performance Tuning to BIOS Controls EFB
 Set ENERGY_PERF_BIAS_CFG mode to Performance

 Sysinfo program /home/SPECCPU/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Mon Apr 29 10:53:14 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. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. 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


 ------------------------------------------------------------
 2. w
    10:53:14 up  1:10,  1 user,  load average: 10.38, 45.72, 80.15
   USER      TTY       FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
   root      pts/0     172.16.16.103   09:51   18.00s  0.80s  0.00s sh speed.sh


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

<div align="center">(<strong>Continued on next page</strong>)</div>

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## Platform Notes (Continued)

```
   pending signals              (-i) 2060448
   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) 2060448
   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@pts/0
  -bash
  sh speed.sh
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2024.0.2-lin-sapphirerapids-speed-20231213.cfg --define cores=128 --tune base,peak -o all --define
    drop_caches fpspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
    ic2024.0.2-lin-sapphirerapids-speed-20231213.cfg --define cores=128 --tune base,peak --output_format all
    --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed fpspeed --nopreenv
    --note-preenv --logfile $SPEC/tmp/CPU2017.005/templogs/preenv.fpspeed.005.0.log --lognum 005.0
    --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/SPECCPU


   ------------------------------------------------------------
 6. /proc/cpuinfo
    model name        : INTEL(R) XEON(R) PLATINUM 8592+
    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         : 64
    siblings          : 64
    2 physical ids (chips)
    128 processors (hardware threads)
    physical id 0: core ids 0-63
    physical id 1: core ids 0-63
    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
    ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126
    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
    2,234,236,238,240,242,244,246,248,250,252,254
   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:
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
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):                             128
On-line CPU(s) list:                0-127
Vendor ID:                          GenuineIntel
Model name:                         INTEL(R) XEON(R) PLATINUM 8592+
CPU family:                         6
Model:                              207
Thread(s) per core:                 1
Core(s) per socket:                 64
Socket(s):                          2
Stepping:                           2
CPU max MHz:                        3900.0000
CPU min MHz:                        800.0000
BogoMIPS:                           3800.00
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 hwp
                                    hwp_act_window hwp_epp hwp_pkg_req 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:                          6 MiB (128 instances)
L1i cache:                          4 MiB (128 instances)
L2 cache:                           256 MiB (128 instances)
L3 cache:                           640 MiB (2 instances)
NUMA node(s):                       2
NUMA node0 CPU(s):                  0-63
NUMA node1 CPU(s):                  64-127
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       6M   12 Data            1     64        1             64
    L1i       32K       4M    8 Instruction     1     64        1             64
```

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## Platform Notes (Continued)

```
    L2         2M     256M   16 Unified       2    2048     1            64
    L3       320M     640M   20 Unified       3 262144     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: 0-63
   node 0 size: 257551 MB
   node 0 free: 254938 MB
   node 1 cpus: 64-127
   node 1 size: 257590 MB
   node 1 free: 250510 MB
   node distances:
   node   0   1
     0:  10  21
     1:  21  10


   ------------------------------------------------------------
 9. /proc/meminfo
   MemTotal:       527505316 kB


   ------------------------------------------------------------
 10. who -r
   run-level 3 Apr 29 09:43


   ------------------------------------------------------------
 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         YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance
                   issue-generator kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections postfix
                   purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4
                   wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
   enabled-runtime systemd-remount-fs
   disabled        autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                   chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                   fancontrol firewalld gpm grub2-once haveged haveged-switch-root ipmi ipmievd
                   issue-add-ssh-keys kdump kdump-early kexec-load lm_sensors lunmask man-db-create
                   multipathd nfs nfs-blkmap nvmf-autoconnect rpcbind rpmconfigcheck rsyncd serial-getty@
                   smartd_generate_opts snmpd snmptrapd sysstat systemd-boot-check-no-failures
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
                   vncserver@
   indirect        wickedd


   ------------------------------------------------------------
 13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
   root=UUID=befab1a9-6492-412a-9d0b-079466ad03eb
   splash=silent
   resume=/dev/disk/by-uuid/64b85326-8619-4fcb-8127-1e8683bd7471
   mitigations=auto
   quiet
   security=apparmor
   crashkernel=403M,high
   crashkernel=72M,low
```

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## Platform Notes (Continued)

```
   ----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 800 MHz and 3.90 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
     boost state support:
       Supported: yes
       Active: yes


   ----------------------------------------------------------
15. 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                    60
   vm.watermark_boost_factor     15000
   vm.watermark_scale_factor        10
   vm.zone_reclaim_mode              0


   ----------------------------------------------------------
16. /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


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


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


   ----------------------------------------------------------
19. Disk information
SPEC is set to: /home/SPECCPU
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/nvme1n1p5 xfs   522G  131G  392G  26% /home
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
    ----------------------------------------------------------
 20. /sys/devices/virtual/dmi/id
     Vendor:        New H3C Technologies Co., Ltd.
     Product:       H3C UniServer R4900 G6 Ultra
     Product Family: Rack
     Serial:        210235A4CJ4900060001


    ----------------------------------------------------------
 21. 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:
     8x Samsung M321R4GA3PB0-CWMCH 32 GB 2 rank 5600
     8x Samsung M321R4GA3PB0-CWMXH 32 GB 2 rank 5600


    ----------------------------------------------------------
 22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:      American Megatrends International, LLC.
     BIOS Version:     6.10.38
     BIOS Date:        04/16/2024
     BIOS Revision:    5.32
```

## Compiler Version Notes

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


==================================================================================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
--------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
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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 2024.0.2 Build 20231213
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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 2024.0.2 Build 20231213
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```

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## New H3C Technologies Co., Ltd.

H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

SPECspeed®2017_fp_base = 423

SPECspeed®2017_fp_peak = 422

**CPU2017 License:** 9066
**Test Sponsor:** New H3C Technologies Co., Ltd.
**Tested by:** New H3C Technologies Co., Ltd.

**Test Date:** Apr-2024
**Hardware Availability:** Oct-2023
**Software Availability:** Apr-2024

## Compiler Version Notes (Continued)

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

# Base Compiler Invocation

C benchmarks:
```
icx
```

Fortran benchmarks:
```
ifx
```

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

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

# Base Portability Flags

603.bwaves_s: `-DSPEC_LP64`
607.cactuBSSN_s: `-DSPEC_LP64`
619.lbm_s: `-DSPEC_LP64`
621.wrf_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
627.cam4_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
628.pop2_s: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian -assume byterecl`
638.imagick_s: `-DSPEC_LP64`
644.nab_s: `-DSPEC_LP64`
649.fotonik3d_s: `-DSPEC_LP64`
654.roms_s: `-DSPEC_LP64`

# Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -Wno-implicit-int -mprefer-vector-width=512
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -DSPEC_OPENMP -xsapphirerapids -Ofast
```

**(Continued on next page)**

# SPEC CPU®2017 Floating Point Speed Result
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## New H3C Technologies Co., Ltd.
H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

SPECspeed®2017_fp_base = 423

SPECspeed®2017_fp_peak = 422

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# Base Optimization Flags (Continued)

Fortran benchmarks (continued):
```
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -nostandard-realloc-lhs
-align array32byte -auto -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using both Fortran and C:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Benchmarks using Fortran, C, and C++:
```
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP -Wno-implicit-int
-mprefer-vector-width=512 -nostandard-realloc-lhs -align array32byte
-auto -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

# Peak Compiler Invocation

C benchmarks:
```
icx
```

Fortran benchmarks:
```
ifx
```

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

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

# Peak Portability Flags

```
Same as Base Portability Flags
```

# SPEC CPU®2017 Floating Point Speed Result

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## New H3C Technologies Co., Ltd.

H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

$SPECspeed^{®}2017\_fp\_base = 423$

$SPECspeed^{®}2017\_fp\_peak = 422$

**CPU2017 License:** 9066
**Test Sponsor:** New H3C Technologies Co., Ltd.
**Tested by:** New H3C Technologies Co., Ltd.

**Test Date:** Apr-2024
**Hardware Availability:** Oct-2023
**Software Availability:** Apr-2024

# Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes

644.nab_s: basepeak = yes

Fortran benchmarks:

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

649.fotonik3d_s: basepeak = yes

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: -w -m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-Wno-implicit-int -mprefer-vector-width=512
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevD.xml

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

# SPEC CPU®2017 Floating Point Speed Result
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## New H3C Technologies Co., Ltd.

H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

$SPECspeed®2017\_fp\_base = 423$

$SPECspeed®2017\_fp\_peak = 422$

| | | | |
|---|---|---|---|
| **CPU2017 License:** 9066 | | **Test Date:** | Apr-2024 |
| **Test Sponsor:** | New H3C Technologies Co., Ltd. | **Hardware Availability:** | Oct-2023 |
| **Tested by:** | New H3C Technologies Co., Ltd. | **Software Availability:** | Apr-2024 |

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 2024-04-28 22:53:13-0400.
Report generated on 2024-06-05 10:39:26 by CPU2017 PDF formatter v6716.
Originally published on 2024-06-04.