New H3C Technologies Co., Ltd. | SPECspeed®2017_fp_base = 193  
H3C UniServer R6900 G3 (Intel Xeon Gold 6254) | SPECspeed®2017_fp_peak = 194

**CPU2017 License:** 9066  
**Test Sponsor:** New H3C Technologies Co., Ltd.  
**Tested by:** New H3C Technologies Co., Ltd.  
**Test Date:** Sep-2020  
**Hardware Availability:** Jun-2019  
**Software Availability:** Apr-2020

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<th>Threads</th>
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<tr>
<td>654.roms_s 72</td>
<td>190</td>
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</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6254  
- **Max MHz:** 4000  
- **Nominal:** 3100  
- **Enabled:** 72 cores, 4 chips  
- **Orderable:** 1,2,3,4 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 24.75 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933V-R)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux release 8.2 (Ootpa) 4.18.0-193.el8.x86_64  
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler Build 20200306 for Linux; Fortran: Version 19.1.1.217 of Intel Fortran Compiler Build 20200306 for Linux  
- **Parallel:** Yes  
- **Firmware:** Version 2.00.33 released Aug-2019 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 set to prefer performance at the cost of additional power usage
New H3C Technologies Co., Ltd.  
H3C UniServer R6900 G3 (Intel Xeon Gold 6254)

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

**Test Date:** Sep-2020  
**Hardware Availability:** Jun-2019  
**Software Availability:** Apr-2020

### Results Table

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</tbody>
</table>

**SPECspeed®2017_fp_base = 193**  
**SPECspeed®2017_fp_peak = 194**

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 1x Intel Core i9-7980XE CPU + 64GB 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

(Continued on next page)
**SPEC CPU®2017 Floating Point Speed Result**

New H3C Technologies Co., Ltd. | SPECspeed®2017_fp_base = 193
---|---
H3C UniServer R6900 G3 (Intel Xeon Gold 6254) | SPECspeed®2017_fp_peak = 194

| CPU2017 License: | 9066 |
| Test Sponsor: | New H3C Technologies Co., Ltd. |
| Tested by: | New H3C Technologies Co., Ltd. |
| Test Date: | Sep-2020 |
| Hardware Availability: | Jun-2019 |
| Software Availability: | Apr-2020 |

**General Notes (Continued)**


**Platform Notes**

BIOS Settings:
Set Hyper Threading to Disabled
Set Patrol Scrub to Disabled
Set IMC Interleaving to 2-way Interleave

Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed81e6e46a485a0011
running on localhost.localdomain Fri Sep 18 13:42:36 2020

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) Gold 6254 CPU @ 3.10GHz
 4 "physical id"s (chips)
72 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 18
siblings : 18
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 72
On-line CPU(s) list: 0-71
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6254 CPU @ 3.10GHz
Stepping: 7
CPU MHz: 1230.869
```

(Continued on next page)
New H3C Technologies Co., Ltd. | H3C UniServer R6900 G3 (Intel Xeon Gold 6254)

**SPECspeed®2017_fp_base = 193**

**SPECspeed®2017_fp_peak = 194**

---

**CPU2017 License:** 9066  
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**Tested by:** New H3C Technologies Co., Ltd.  
**Test Date:** Sep-2020  
**Hardware Availability:** Jun-2019  
**Software Availability:** Apr-2020

---

### Platform Notes (Continued)

- **CPU max MHz:** 4000.0000  
- **CPU min MHz:** 1200.0000  
- **BogoMIPS:** 6200.00  
- **Virtualization:** VT-x  
- **L1d cache:** 32K  
- **L1i cache:** 32K  
- **L2 cache:** 1024K  
- **L3 cache:** 25344K  
- **NUMA node0 CPU(s):** 0-17  
- **NUMA node1 CPU(s):** 18-35  
- **NUMA node2 CPU(s):** 36-53  
- **NUMA node3 CPU(s):** 54-71  
- **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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pclid 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 cdp_l3 invpcid_single intel_pni ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsavesopt xsaves cqm_llc cqm_occuj_llc cqm_mb_mtotal cqm_mb_m_local dtherm ida arat pln pts hwp act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni md_clear flush_lld arch_capabilities

/proc/cpuinfo cache data

- **cache size:** 25344 KB

---

From `numactl --hardware` WARNING: a number 'node' might or might not correspond to a physical chip.

- **available:** 4 nodes (0-3)
- **node 0 cpus:** 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
- **node 0 size:** 95042 MB
- **node 0 free:** 94846 MB
- **node 1 cpus:** 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
- **node 1 size:** 96763 MB
- **node 1 free:** 89472 MB
- **node 2 cpus:** 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53
- **node 2 size:** 96763 MB
- **node 2 free:** 95454 MB
- **node 3 cpus:** 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71
- **node 3 size:** 96763 MB
- **node 3 free:** 96456 MB
- **node distances:**
  - **node 0:** 1 2 3
  - **node 1:** 21 10 21 21

---

(Continued on next page)
Platform Notes (Continued)

2: 21 21 10 21
3: 21 21 21 10

From /proc/meminfo
MemTotal: 394581764 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
For release:
NAME="Red Hat Enterprise Linux"
VERSION="8.2 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.2"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
itlb_multihit: KVM: Mitigation: Split huge pages
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
tsx_async_abort: Mitigation: Clear CPU buffers; SMT disabled

run-level 3 Sep 18 09:29

SPEC is set to: /home/speccpu
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 839G 23G 816G 3% /home

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

New H3C Technologies Co., Ltd.
H3C UniServer R6900 G3 (Intel Xeon Gold 6254)

SPECspeed®2017_fp_base = 193
SPECspeed®2017_fp_peak = 194

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Tested by: New H3C Technologies Co., Ltd.
Test Date: Sep-2020
Hardware Availability: Jun-2019
Software Availability: Apr-2020

Platform Notes (Continued)

BIOS: American Megatrends Inc. 2.00.33 08/22/2019
Vendor: New H3C Technologies Co., Ltd.
Product: H3C UniServer R6900 G3
Product Family: Rack
Serial: 210235A3T0H204000004

Additional information from dmidecode 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:
24x Micron 18ASF2G72PDZ-2G9E1 16 GB 2 rank 2933
24x NO DIMM NO DIMM

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C               | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C++, C, Fortran | 607.cactuBSSN_s(base, peak)
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

(Continued on next page)
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CPU2017 License: 9066
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Test Date: Sep-2020
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Compiler Version Notes (Continued)

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------------------------------------------------------------------------
Fortran, C
621.wrf_s(base, peak) 627.cam4_s(base, peak)
628.pop2_s(base, peak)

------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

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
New H3C Technologies Co., Ltd. | SPECspeed®2017_fp_base = 193
H3C UniServer R6900 G3 (Intel Xeon Gold 6254) | SPECspeed®2017_fp_peak = 194

**CPU2017 License:** 9066
**Test Sponsor:** New H3C Technologies Co., Ltd.
**Test Date:** Sep-2020
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**Hardware Availability:** Jun-2019
**Software Availability:** Apr-2020

### Base Optimization Flags

**C benchmarks:**
- `-m64` `-std=c11` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-gopenmp` `-DSPEC_OPENMP`
- `-mbranches-within-32B-boundaries`

**Fortran benchmarks:**
- `-m64` `-Wl,-z,muldefs` `-DSPEC_OPENMP` `-xCORE-AVX512` `-ipo` `-O3`
- `-no-prec-div` `-qopt-prefetch` `-ffinite-math-only`
- `-qopt-mem-layout-trans=4` `-gopenmp` `-nostandard-realloc-lhs`
- `-mbranches-within-32B-boundaries` `-L/usr/local/jemalloc64-5.0.1/lib`
- `-ljemalloc`

**Benchmarks using both Fortran and C:**
- `-m64` `-std=c11` `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
- `-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-gopenmp`
- `-DSPEC_OPENMP` `-mbranches-within-32B-boundaries` `-nostandard-realloc-lhs`
- `-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

**Benchmarks using Fortran, C, and C++:**
- `-m64` `-std=c11` `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
- `-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-gopenmp`
- `-DSPEC_OPENMP` `-mbranches-within-32B-boundaries` `-nostandard-realloc-lhs`
- `-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

### Peak Compiler Invocation

**C benchmarks:**
- `icc`

**Fortran benchmarks:**
- `ifort`

**Benchmarks using both Fortran and C:**
- `ifort icc`

**Benchmarks using Fortran, C, and C++:**
- `icpc icc ifort`

### Peak Portability Flags

Same as Base Portability Flags
New H3C Technologies Co., Ltd.  
H3C UniServer R6900 G3 (Intel Xeon Gold 6254)

**SPEC CPU®2017 Floating Point Speed Result**

**SPECspeed®2017_fp_base** = 193  
**SPECspeed®2017_fp_peak** = 194

<table>
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<th>CPU2017 License:</th>
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<td>New H3C Technologies Co., Ltd.</td>
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<td>Software Availability:</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

**Peak Optimization Flags**

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes

644.nab_s: -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP  
-mbranches-within-32B-boundaries  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:

603.bwaves_s: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)  
-DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512  
-03 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4 -qopenmp -nostandard-realloc-lhs  
-mbranches-within-32B-boundaries  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1)  
-prof-use(pass 2) -ipo -xCORE-AVX512 -03 -no-prec-div  
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4  
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP  
-mbranches-within-32B-boundaries -nostandard-realloc-lhs  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:

607.cactusBSSN_s: basepeak = yes

The flags files that were used to format this result can be browsed at


http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.html
## SPEC CPU®2017 Floating Point Speed Result

**New H3C Technologies Co., Ltd.**

**H3C UniServer R6900 G3 (Intel Xeon Gold 6254)**

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### CPU2017 License: 9066

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

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

**Test Date:** Sep-2020

**Hardware Availability:** Jun-2019

**Software Availability:** Apr-2020

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You can also download the XML flags sources by saving the following links:

- [http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.xml](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.xml)

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

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