New H3C Technologies Co., Ltd. | SPEC CPU®2017 Floating Point Speed Result
--- | ---
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y) | SPECspeed®2017_fp_base = 170
| SPECspeed®2017_fp_peak = 174

<table>
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<tr>
<th>CPU2017 License:</th>
<th>9066</th>
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<tr>
<td>Test Sponsor:</td>
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<tr>
<th>Threads</th>
<th>603.bwaves_s</th>
<th>607.cactuBSSN_s</th>
<th>619.libm_s</th>
<th>621.wrf_s</th>
<th>627.cam4_s</th>
<th>628.pop2_s</th>
<th>638.imagick_s</th>
<th>644.nab_s</th>
<th>649.fotonik3d_s</th>
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| SPECspeed®2017_fp_base (170) | SPECspeed®2017_fp_peak (174) |

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<tr>
<th><strong>Hardware</strong></th>
<th><strong>Software</strong></th>
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<tbody>
<tr>
<td>CPU Name:</td>
<td>OS: Red Hat Enterprise Linux release 8.2 (Ootpa)</td>
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<tr>
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<td>Orderable:</td>
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<td>Cache L1:</td>
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<td>L2:</td>
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<td>L3:</td>
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<tr>
<td>Other:</td>
<td>Parallel: Yes</td>
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<td>Memory:</td>
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<td>Storage:</td>
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<td>Other:</td>
<td>System State: Run level 3 (multi-user)</td>
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<td></td>
<td>Base Pointers: 64-bit</td>
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<tr>
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<td>Peak Pointers: 64-bit</td>
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<tr>
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<td>Other: jemalloc memory allocator V5.0.1</td>
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<td></td>
<td>Power Management: OS set to prefer performance at the cost of additional power usage</td>
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</table>
New H3C Technologies Co., Ltd.  
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)  

SPECspeed®2017_fp_base = 170  
SPECspeed®2017_fp_peak = 174

CPU2017 License: 9066  
Test Sponsor: New H3C Technologies Co., Ltd.  
Tested by: New H3C Technologies Co., Ltd.  
Test Date: Aug-2021  
Hardware Availability: Jun-2021  
Software Availability: Dec-2020

Results Table

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SPECspeed®2017_fp_base = 170  
SPECspeed®2017_fp_peak = 174

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/spec/cpu/lib/intel64:/home/spec/cpu/je5.0.1-64"
MALLOCONF = "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
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

SPECspeed®2017_fp_base = 170
SPECspeed®2017_fp_peak = 174

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

Test Date: Aug-2021
Hardware Availability: Jun-2021
Software Availability: Dec-2020

General Notes (Continued)


Platform Notes

BIOS Settings:
Set Hyper-Threading to disabled
Set Patrol Scrub to disabled

Sysinfo program /home/spec/cpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16a6acfd64
running on localhost.localdomain Fri Jun 22 09:17:55 2018

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 5318Y CPU @ 2.10GHz
 2 "physical id"s (chips)
 48 "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: 24
siblings: 24
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 5318Y CPU @ 2.10GHz
Stepping: 6
CPU MHz: 1577.194
CPU max MHz: 3400.0000
CPU min MHz: 800.0000
BogoMIPS: 4200.00

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

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

- **SPECspeed®2017_fp_base = 170**
- **SPECspeed®2017_fp_peak = 174**

**Platform Notes (Continued)**

- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 36864K
- **NUMA node0 CPU(s):** 0-23
- **NUMA node1 CPU(s):** 24-47
- **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 pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrr 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_13 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts 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_mbb_total cqm_mbb_local wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512v bmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_vbtlalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

```
/proc/cpuinfo cache data
cache size : 36864 KB
```

From numactl --hardware

**WARNING:** a numactl 'node' might or might not correspond to a physical chip.

```
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
node 0 size: 515681 MB
node 0 free: 510782 MB
node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 516060 MB
node 1 free: 515554 MB
node distances:
  node  0   1
  0:  10  20
  1:  20  10
```

From /proc/meminfo

```
MemTotal:          1056503280 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

```
/sbin/tuned-adm active
  Current active profile: throughput-performance
```

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

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

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SPECspeed®2017_fp_base = 170

SPECspeed®2017_fp_peak = 174

---

**Platform Notes (Continued)**

Platform Notes (Continued)

```
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*
```

```
output:
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:

- CVE-2018-12207 (iTLB Multihit): Not affected
- 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/swaps barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- CVE-2020-0543 (Special Register Buffer Data Sampling): No status reported
- CVE-2019-11135 (TSX Asynchronous Abort): Not affected

SPEC is set to: /home/speccpu

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 876G 28G 848G 4% /home
```

From /sys/devices/virtual/dmi/id
```
Vendor: New H3C Technologies Co., Ltd.
Product: UniServer R5300 G5
Product Family: Rack
```

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

New H3C Technologies Co., Ltd.  SPECspeed®2017_fp_peak = 174
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)  SPECspeed®2017_fp_base = 170

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Tested by: New H3C Technologies Co., Ltd.
Test Date: Aug-2021
Hardware Availability: Jun-2021
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Platform Notes (Continued)

Serial: 210235A3WGH213000015

Additional information from dmidecode 3.2 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 HMAA8GR7CJR4N-XN 64 GB 2 rank 3200, configured at 2933
- 16x NO DIMM NO DIMM

BIOS:
- BIOS Vendor: American Megatrends International, LLC.
- BIOS Version: 5.27
- BIOS Date: 06/07/2021
- BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
   | 644.nab_s(base)
==============================================================================
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C | 644.nab_s(peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
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(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

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Compiler Version Notes (Continued)

<table>
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<tr>
<th>C</th>
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<table>
<thead>
<tr>
<th>Fortran, C</th>
<th>621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)</th>
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<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
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New H3C Technologies Co., Ltd.

H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

**SPECspeed®2017_fp_base** = 170

**SPECspeed®2017_fp_peak** = 174

---

**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

---

**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
```

(Continued on next page)
Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):
-`-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp`
-`-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` `-qopenmp`
-`-DSPEC_OPENMP` `-mbranches-within-32B-boundaries` `-nostandard-realloc-lhs`
-`-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

Peak Compiler Invocation

C benchmarks (except as noted below):
`icc`

644.nab_s: `icx`

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

Peak Optimization Flags

C benchmarks:
619.lbm_s: `basepeak = yes`

638.imagick_s: `basepeak = yes`

(Continued on next page)
New H3C Technologies Co., Ltd.

H3C UniServer R5300 G5 (Intel Xeon Gold 5318Y)

**SPECspeed®2017 fp_base = 170**

**SPECspeed®2017 fp_peak = 174**

**CPU2017 License:** 9066  
**Test Date:** Aug-2021  
**Test Sponsor:** New H3C Technologies Co., Ltd.  
**Hardware Availability:** Jun-2021  
**Tested by:** New H3C Technologies Co., Ltd.  
**Software Availability:** Dec-2020

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**Peak Optimization Flags (Continued)**

644.nab_s: 
- m64  
- Wl, -z, muldefs  
- xCORE-AVX512  
- Ofast  
- fffast-math  
- flto  
- mfpmath=sse  
- funroll-loops  
- flipopenmp  
- DSPEC_OPENMP  
- qopt-mem-layout-trans=4  
- fimf-accuracy-bits=14:sqrt  
- 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珙OPENMP  
- ipo  
- xCORE-AVX512  
- O3  
- no-prec-div  
- qopt-prefetch  
- fffinite-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  
- O3  
- no-prec-div  
- qopt-prefetch  
- fffinite-math-only  
- qopt-mem-layout-trans=4  
- DSPEC珙SUPPRESS珙OPENMP  
- qopenmp  
- DSPEC珙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.cactuBSSN_s: basepeak = yes

---

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


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

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml

http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-CPX-Rev0.xml
### SPEC CPU®2017 Floating Point Speed Result

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**CPU2017 License:** 9066

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

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**Test Date:** Aug-2021

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Tested with SPEC CPU®2017 v1.1.8 on 2018-06-22 09:17:55-0400.
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