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

H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

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<th>Threads</th>
<th>603.bwaves_s</th>
<th>607.cactuBSSN_s</th>
<th>619.ibm_s</th>
<th>621.wrf_s</th>
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<th>628.pop2_s</th>
<th>638.imagick_s</th>
<th>644.nab_s</th>
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</table>

| SPECspeed2017_fp_base | 125 |
| SPECspeed2017_fp_peak  | 126 |

**Hardware**

- **CPU Name:** Intel Xeon Gold 6150
- **Max MHz.:** 3700
- **Nominal:** 2700
- **Enabled:** 36 cores, 2 chips
- **Orderable:** 1,2 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 core
- **Other:** None
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)
- **Storage:** 1 x 1 TB 7200RPM SATA HDD
- **Other:** None

**Software**

- **OS:** Red Hat Enterprise Linux Server release 7.5 (Maipo)
- **Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux;
  Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux
- **Parallel:** Yes
- **Firmware:** Version 2.00.24 released Mar-2019 BIOS
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** None
New H3C Technologies Co., Ltd. | SPECspeed2017_fp_base = 125
-----------------------------|-----------------------------
H3C UniServer R4900 G3 (Intel Xeon Gold 6150) | SPECspeed2017_fp_peak = 126

CPU2017 License: 9066
Test Date: Apr-2019
Test Sponsor: New H3C Technologies Co., Ltd.
Hardware Availability: Dec-2018
Tested by: New H3C Technologies Co., Ltd.
Software Availability: Mar-2019

Results Table

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SPECspeed2017_fp_base = 125
SPECspeed2017_fp_peak = 126

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"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/speccpu/lib/ia32:/home/speccpu/lib/intel64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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
Yes: 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.

Platform Notes

BIOS Settings:
Set SNC to Disabled
Set Hyper-Threading to Disabled

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

SPECspeed2017_fp_base = 125
SPECspeed2017_fp_peak = 126

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

Test Date: Apr-2019
Hardware Availability: Dec-2018
Software Availability: Mar-2019

Platform Notes (Continued)

Set Autonomous Core C-State to Enabled
Set Stale Atos to Enabled
Set Intel VT for Directed I/O (VT-d) to Disabled
Sysinfo program /home/speccpu/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on localhost.localdomain Mon Apr  1 21:06:31 2019

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 6150 CPU @ 2.70GHz
  2 "physical id"s (chips)
  36 "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

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 36
On-line CPU(s) list: 0-35
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6150 CPU @ 2.70GHz
Stepping: 4
CPU MHz: 1200.036
CPU max MHz: 3700.0000
CPU min MHz: 1200.0000
BogoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

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New H3C Technologies Co., Ltd.
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

SPECspeed2017_fp_base = 125
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Test Sponsor: New H3C Technologies Co., Ltd.
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Hardware Availability: Dec-2018
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Test Date: Apr-2019

Platform Notes (Continued)

NUMA node0 CPU(s): 0-17
NUMA node1 CPU(s): 18-35
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 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 pge mca cmov
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
node 0 size: 195224 MB
node 0 free: 181905 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: 196608 MB
node 1 free: 187082 MB
node distances:
node 0 1
0: 10 21
1: 21 10

From /proc/meminfo
MemTotal: 394623728 kB
HugePages_Total: 0
Hugepagesize: 4096 kB

From /etc/*release* /etc/*version*
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="OpenShift Enterprise"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
**Platform Notes (Continued)**

```
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server
uname -a:
    Linux localhost.localdomain 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Apr 1 16:17

SPEC is set to: /home/speccpu
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda2      xfs   293G   14G  280G   5% /home

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.
    BIOS American Megatrends Inc. 2.00.24 03/08/2019
    Memory:
        12x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666
        12x NO DIMM NO DIMM
```

(End of data from sysinfo program)

---

**Compiler Version Notes**

```
CC  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 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC  607.cactuBSSN_s(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
    Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

<table>
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<th>SPECspeed2017_fp_base</th>
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CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Tested by: New H3C Technologies Co., Ltd.

**Compiler Version Notes (Continued)**

Intel (R) C Intel (R) 64 Compiler for applications running on Intel (R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R)
64, Version 19.0.1.144 Build 20181018
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Intel (R) C Intel (R) 64 Compiler for applications running on Intel (R) 64,
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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
**SPEC CPU2017 Floating Point Speed Result**

New H3C Technologies Co., Ltd.  | SPECspeed2017_fp_base = 125  
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)  | SPECspeed2017_fp_peak = 126

| CPU2017 License:  | 9066                   |
| Test Sponsor:     | New H3C Technologies Co., Ltd. |
| Tested by:       | New H3C Technologies Co., Ltd. |
| Test Date:       | Apr-2019               |
| Hardware Availability: | Dec-2018               |
| Software Availability: | Mar-2019               |

**Base Compiler Invocation**

C benchmarks:

```
icc -m64 -std=c11
```

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
ifort -m64 icc -m64 -std=c11
```

Benchmarks using Fortran, C, and C++:

```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

**Base Portability Flags**

```bash
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 -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:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
```

Fortran benchmarks:

```
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs
```

(Continued on next page)
# SPEC CPU2017 Floating Point Speed Result

**New H3C Technologies Co., Ltd.**  
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

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| Test Date: | Apr-2019 |
| Hardware Availability: | Dec-2018 |
| Software Availability: | Mar-2019 |

## Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs

## Peak Compiler Invocation

### C benchmarks:

```bash
icc -m64 -std=c11
```

### Fortran benchmarks:

```bash
ifort -m64
```

### Benchmarks using both Fortran and C:

```bash
ifort -m64 icc -m64 -std=c11
```

### Benchmarks using Fortran, C, and C++:

```bash
icpc -m64 icc -m64 -std=c11 ifort -m64
```

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

### C benchmarks:

```bash
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
```

### Fortran benchmarks:

```bash
603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=4
-qopenmp -nostandard-realloc-lhs

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4
```

(Continued on next page)
**SPEC CPU2017 Floating Point Speed Result**

New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G3 (Intel Xeon Gold 6150)

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**CPU2017 License:** 9066  
**Test Sponsor:** New H3C Technologies Co., Ltd.  
**Test Date:** Apr-2019  
**Hardware Availability:** Dec-2018  
**Tested by:** New H3C Technologies Co., Ltd.  
**Software Availability:** Mar-2019

**Peak Optimization Flags (Continued)**

654.roms_s (continued):
- `-qopenmp`  
- `-nostandard-realloc-lhs`

Benchmarks using both Fortran and C:

621.wrf_s: `-prof-gen(pass 1)` `-prof-use(pass 2)` `-O2` `-xCORE-AVX512`  
- `-qopt-prefetch` `-ipo` `-O3` `-ffinite-math-only` `-no-prec-div`  
- `-qopt-mem-layout-trans=4` `-DSPEC_SUPPRESS_OPENMP` `-qopenmp`  
- `-DSPEC_OPENMP` `-nostandard-realloc-lhs`

627.cam4_s: `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`  
- `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp`  
- `-DSPEC_OPENMP` `-nostandard-realloc-lhs`

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

- `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`  
- `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp` `-DSPEC_OPENMP`  
- `-nostandard-realloc-lhs`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.3-SKL-RevC.html  

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.3-SKL-RevC.xml  

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

Tested with SPEC CPU2017 v1.0.5 on 2019-04-01 09:06:30-0400.  
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