New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G3 (Intel Xeon Gold 5115)  

| SPECrate®2017_int_base = 107 | SPECrate®2017_int_peak = 111 |

**CPU2017 License:** 9066  
**Test Date:** Dec-2019  
**Test Sponsor:** New H3C Technologies Co., Ltd.  
**Hardware Availability:** Jul-2017  
**Tested by:** New H3C Technologies Co., Ltd.  
**Software Availability:** May-2019

<table>
<thead>
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<th>SPECrate®2017_int_base (107)</th>
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<table>
<thead>
<tr>
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</tr>
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</table>
| **CPU Name:** Intel Xeon Gold 5115  
**Max MHz:** 3200  
**Nominal:** 2400  
**Enabled:** 20 cores, 2 chips, 2 threads/core  
**Orderable:** 1.2 chips  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**Cache L2:** 1 MB I+D on chip per core  
**Cache L3:** 13.75 MB I+D on chip per chip  
**Other:** None  
**Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)  
**Storage:** 1 x 1 TB SATA SSD  
**Other:** None |

<table>
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<tr>
<th>Software</th>
</tr>
</thead>
</table>
| **OS:** Red Hat Enterprise Linux Server release 7.5 (Maipo)  
3.10.0-957.el7.x86_64  
**Compiler:** C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux;  
Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux |
| **Parallel:** No  
**Firmware:** Version 2.00.32P05 released Sep-2019 BIOS  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** 32/64-bit  
**Other:** jemalloc memory allocator V5.0.1  
**Power Management:** -- |
## SPEC CPU®2017 Integer Rate Result

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

H3C UniServer R4900 G3 (Intel Xeon Gold 5115)

**SPECrate®2017_int_base = 107**

**SPECrate®2017_int_peak = 111**

### Results Table

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**SPECrate®2017_int_base = 107**

**SPECrate®2017_int_peak = 111**

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"

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:

`LD_LIBRARY_PATH = 
"/home/speccpu/lib/intel64:/home/speccpu/lib/ia32:/home/speccpu/je5.0.1-32"

### General Notes

Environment variables set by runcpu before the start of the run:

`LD_LIBRARY_PATH = 
"/home/speccpu/lib/intel64:/home/speccpu/lib/ia32:/home/speccpu/je5.0.1-32"

Binaries compiled on a system with 1x Intel Core i9-799X 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:

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

H3C UniServer R4900 G3 (Intel Xeon Gold 5115)

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

Test Date: Dec-2019
Hardware Availability: Jul-2017
Software Availability: May-2019

General Notes (Continued)

sync; echo 3 > /proc/sys/vm/drop_caches
runcpu command invoked through numaclt i.e.:
numactl --interleave=all runcpu <etc>
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 Enabled
Set IMC Interleaving to 1-way Interleave
Set DCU Streamer Prefetcher to Disabled
Set XPT Prefetch to Enabled

Sysinfo program /home/spec/cpu/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e6a485a0011
running on localhost.localdomain Wed Dec 11 21:06:11 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 5115 CPU @ 2.40GHz
  2 "physical id"s (chips)
  40 "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 : 10
  siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 40
On-line CPU(s) list: 0-39

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G3 (Intel Xeon Gold 5115)

SPEC CPU®2017 Integer Rate Result

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Platform Notes (Continued)

Thread(s) per core: 2
Core(s) per socket: 10
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5115 CPU @ 2.40GHz
Stepping: 4
CPU MHz: 1869.580
CPU max MHz: 3200.0000
CPU min MHz: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9,20-29
NUMA node1 CPU(s): 10-19,30-39

Flags:
- fpu
- vme
- de
- pse
- msr
- pae
- mce
- cx8
- apic
- sep
- mtrr
- pga
- mca
- cmov
- pat
- pse36
- clflush
dts
acpi
mmx
fxsr
ssse2
ss
tm
pbe
syscall
nx
pdpe1gb
rdtscp
lm
constant_tsc
art
arch_perfmon
pebs
bts
rep_good
nop1
xtopology
nonstop_tsc
aperf
mperf
eagerfpu
pni
pclmulqdq
dtes64
monitor
ds_cpl
vmx
smx
est
tm2
ssse3
sdbg
fma
cx16
txpr
pdcm
cpcid
da
sse4_1
sse4_2
x2apic
movbe
popcnt
tsc
deadline
aes
xsave
avx
f16c
rdrand
lahelper
3nowprefetch
epb
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cdp_13
intel_ppln
intel_pt
ssbd
mba
ibrs
stibp
tpr_shadow
vmx
flexpriority
vptid
fsqsb
base
tsc_adjust
bm1
hle
avx2
smep
bmi2
erms
invpcid
rtm
cqm
mpx
rdt_a
avx512f
avx512dq
rdseed
adx
smap
clflushopt
clwb
avx512cd
avx512bw
avx512vl
xsaveopt
xsavec
xgetbv1
cqm_llc
cqm_occup_llc
cqm_mbb_total
cqm_mbb_local
dtherm
ida
arat
pln
ts
hwp
hwp_act_window
hwp_epp
hwp_pkg_req
pku
ospke
spec_ctrl
intel_stibp
flush_lld

/proc/cpuinfo cache data
- cache size: 14080 KB

From numactl --hardware

available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 20 21 22 23 24 25 26 27 28 29
node 0 size: 196184 MB
node 0 free: 191110 MB
node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39
node 1 size: 196608 MB
node 1 free: 191913 MB
node distances:
- node 0: 0 1
- node 1: 10 21

(Continued on next page)
Platform Notes (Continued)

1: 21 10

From /proc/meminfo
MemTotal: 395592412 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
    os-release:
        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)
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-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: SMT vulnerable, LID conditional cache flushes
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitation
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Dec 11 20:58

SPEC is set to: /home/speccpu
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs 876G 15G 861G 2% /home

From /sys/devices/virtual/dmi/id
    BIOS: American Megatrends Inc. 2.00.32P05 09/21/2019
    Vendor: Unis Huashan Technologies Co., Ltd.
    Product: UniServer R4900 G3

(Continued on next page)
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Platform Notes (Continued)

Serial: 210200A00QH177000025

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:
12x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666, configured at 2400
12x NO DIMM NO DIMM

(End of data from sysinfo program)

Compiler Version Notes

| C | 502.gcc_r(peak) |
| Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.4.227 Build 20190416 Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |

| C | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(base, peak) |
| Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |

| C | 502.gcc_r(peak) |
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**Compiler Version Notes (Continued)**

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<tr>
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| C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base, peak) 541.leela_r(base, peak) |
| Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |
| Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |

| C++ | 523.xalancbmk_r(peak) |
| Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.4.227 Build 20190416 |
| Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |

| C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base, peak) 541.leela_r(base, peak) |
| Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |
| Copyright (C) 1985-2019 Intel Corporation. All rights reserved. |

| Fortran | 548.exchange2_r(base, peak) |
| Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416 |
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Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

500.perlibench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalanchbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

C++ benchmarks:
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
## Peak Compiler Invocation

C benchmarks (except as noted below):

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


C++ benchmarks (except as noted below):

```bash
icpc -m64
```

523.xalancbmk_r:icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/ia32_lin

Fortran benchmarks:

```bash
ifort -m64
```

## Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64

502.gcc_r: -D_FILE_OFFSET_BITS=64

505.mcf_r: -DSPEC_LP64

520.omnetpp_r: -DSPEC_LP64

523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX

525.x264_r: -DSPEC_LP64

531.deepsjeng_r: -DSPEC_LP64

541.leela_r: -DSPEC_LP64

548.exchange2_r: -DSPEC_LP64

557.xz_r: -DSPEC_LP64

## Peak Optimization Flags

C benchmarks:

```bash
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=4 -fno-strict-overflow -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64 -lqkmalloc
```

```bash
502.gcc_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=4 -L/usr/local/je5.0.1-32/lib -ljemalloc
```

```bash
505.mcf_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
```

(Continued on next page)
# SPEC CPU®2017 Integer Rate Result

## New H3C Technologies Co., Ltd.

**H3C UniServer R4900 G3 (Intel Xeon Gold 5115)**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
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### Peak Optimization Flags (Continued)

505.mcf_r (continued):
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

525.x264_r: `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -fno-alias`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

557.xz_r: Same as 505.mcf_r

### C++ benchmarks:

520.omnetpp_r: `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

523.xalancbmk_r: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo`
- `-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=4`
- `-L/usr/local/je5.0.1-32/lib`
- `-ljemalloc`

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

### Fortran benchmarks:

- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64`
- `-lqkmalloc`

---

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/New_H3C-Platform-Settings-V1.3-SKL-RevE.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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