# SPEC CPU®2017 Integer Rate Result

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

**H3C UniServer R4900 G5 (Intel Xeon Silver 4310)**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 172</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 176</td>
</tr>
</tbody>
</table>

**Cpu2017 License:** 9066

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

**Test Date:** Nov-2021

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

**Hardware Availability:** Sep-2020

**Software Availability:** Jan-2021

---

<table>
<thead>
<tr>
<th><strong>Copies</strong></th>
<th>0</th>
<th>15.0</th>
<th>30.0</th>
<th>45.0</th>
<th>60.0</th>
<th>75.0</th>
<th>90.0</th>
<th>105.0</th>
<th>120.0</th>
<th>135.0</th>
<th>150.0</th>
<th>165.0</th>
<th>180.0</th>
<th>195.0</th>
<th>210.0</th>
<th>225.0</th>
<th>240.0</th>
<th>255.0</th>
<th>270.0</th>
<th>285.0</th>
<th>300.0</th>
<th>315.0</th>
<th>330.0</th>
<th>345.0</th>
<th>360.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>48</td>
<td>117</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
<td></td>
<td>149</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>48</td>
<td></td>
<td></td>
<td>167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td>121</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>525.x264_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

## Hardware

**CPU Name:** Intel Xeon Silver 4310

**Max MHz:** 3300

**Nominal:** 2100

**Enabled:** 24 cores, 2 chips, 2 threads/core

**Orderable:** 1.2 chips

**Cache L1:** 32 KB I + 48 KB D on chip per core

**L2:** 1.25 MB I+D on chip per core

**L3:** 18 MB I+D on chip per chip

**Other:** None

**Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200V-R, running at 2666)

**Storage:** 1 x 480 TB 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 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux;

Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;

C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux

**Parallel:** No

**Firmware:** Version 5.23 released Apr-2021 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:** BIOS and OS set to prefer performance at the cost of additional power usage.
New H3C Technologies Co., Ltd.

H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>48</td>
<td>650</td>
<td>118</td>
<td>650</td>
<td>117</td>
<td>650</td>
<td>117</td>
<td>48</td>
<td>572</td>
<td>133</td>
<td>572</td>
<td>134</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
<td>458</td>
<td>149</td>
<td>455</td>
<td>149</td>
<td>456</td>
<td>149</td>
<td>48</td>
<td>407</td>
<td>167</td>
<td>406</td>
<td>167</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>48</td>
<td>262</td>
<td>296</td>
<td>263</td>
<td>295</td>
<td>262</td>
<td>296</td>
<td>48</td>
<td>262</td>
<td>296</td>
<td>263</td>
<td>295</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
<td>522</td>
<td>121</td>
<td>523</td>
<td>121</td>
<td>521</td>
<td>121</td>
<td>48</td>
<td>522</td>
<td>121</td>
<td>523</td>
<td>121</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
<td>223</td>
<td>227</td>
<td>224</td>
<td>227</td>
<td>223</td>
<td>227</td>
<td>48</td>
<td>223</td>
<td>227</td>
<td>224</td>
<td>227</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>48</td>
<td>245</td>
<td>342</td>
<td>246</td>
<td>342</td>
<td>246</td>
<td>342</td>
<td>48</td>
<td>234</td>
<td>358</td>
<td>235</td>
<td>358</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
<td>455</td>
<td>121</td>
<td>455</td>
<td>121</td>
<td>455</td>
<td>121</td>
<td>48</td>
<td>455</td>
<td>121</td>
<td>455</td>
<td>121</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>48</td>
<td>669</td>
<td>119</td>
<td>669</td>
<td>119</td>
<td>669</td>
<td>119</td>
<td>48</td>
<td>669</td>
<td>119</td>
<td>669</td>
<td>119</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>48</td>
<td>374</td>
<td>336</td>
<td>375</td>
<td>336</td>
<td>375</td>
<td>336</td>
<td>48</td>
<td>374</td>
<td>336</td>
<td>375</td>
<td>336</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
<td>539</td>
<td>96.2</td>
<td>537</td>
<td>96.3</td>
<td>539</td>
<td>96.3</td>
<td>48</td>
<td>556</td>
<td>93.2</td>
<td>557</td>
<td>93.0</td>
</tr>
</tbody>
</table>

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"
MALLOCCONF = "retain:true"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1
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)
### General Notes (Continued)

- 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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
```

### Platform Notes

#### BIOS Settings:
- Set SNC to Enabled
- Set Power Performance Tuning to BIOS Controls EPB
- Set Energy Performance BIAS to Performance
- Set XPT Prefetch to Enabled

Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Wed Nov 3 17:22:28 2021

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) Silver 4310 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: 12
  - siblings: 24
  - physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11
  - physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11

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: 2
- Core(s) per socket: 12

(Continued on next page)
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

New H3C Technologies Co., Ltd.
H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

SPECrate®2017_int_base = 172
SPECrate®2017_int_peak = 176

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Tested by: New H3C Technologies Co., Ltd.
Test Date: Nov-2021
Hardware Availability: Sep-2020
Software Availability: Jan-2021

Platform Notes (Continued)

Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Silver 4310 CPU @ 2.10GHz
Stepping: 6
CPU MHz: 2699.987
CPU max MHz: 3300.0000
CPU min MHz: 800.0000
BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 18432K
NUMA node0 CPU(s): 0-5, 24-29
NUMA node1 CPU(s): 6-11, 30-35
NUMA node2 CPU(s): 12-17, 36-41
NUMA node3 CPU(s): 18-23, 42-47
Flags: fpu vme de pse tsc msr pae mce 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 aperffperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtopr 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 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmsn flexpriority ept vpid fsgsbse 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 xsaves xsaveopt xsetbv1 xsaves cqm_llc cqm_occu_llc cqm_mbm_total cqm_mbm_local wbnoinvd dtscnta ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg跷req avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

From numactl --hardware

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

available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
node 0 size: 128355 MB
node 0 free: 127962 MB
node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
node 1 size: 129021 MB
node 1 free: 128806 MB

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

SPECrater®2017_int_base = 172
SPECrater®2017_int_peak = 176

Platform Notes (Continued)

node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
node 2 size: 128993 MB
node 2 free: 128454 MB
node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
node 3 size: 129018 MB
node 3 free: 128728 MB
node distances:
node 0 1 2 3
d 0: 10 11 20 20
d 1: 11 10 20 20
d 2: 20 20 10 11
d 3: 20 20 11 10

From /proc/meminfo
MemTotal: 527758408 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

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

From /etc/*release* /etc/*version*
s=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:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected

(Continued on next page)
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

SPECRate®2017_int_base = 172
SPECRate®2017_int_peak = 176

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

Test Date: Nov-2021
Hardware Availability: Sep-2020
Software Availability: Jan-2021

Platform Notes (Continued)

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
CVE-2020-0543 (Special Register Buffer Data Sampling): No status reported
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 3 17:17
SPEC is set to: /home/speccpu
Filesystem            Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   392G   63G  329G  17% /home

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:
15x Hynix HMA84GR7DJR4N-XN 32 GB 2 rank 3200, configured at 2666
1x Micron 36ASF4G72PZ-3G2E7 32 GB 2 rank 3200, configured at 2666
16x NO DIMM NO DIMM

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 5.23
BIOS Date: 04/12/2021
BIOS Revision: 5.21

(End of data from sysinfo program)

Compiler Version Notes

C | 500.perlbench_r(peak) 557.xz_r(peak)

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

H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

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

Test Date: Nov-2021
Hardware Availability: Sep-2020
Software Availability: Jan-2021

Compiler Version Notes (Continued)

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 | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
    525.x264_r(base, peak) 557.xz_r(base)
------------------------------------------------------------------------------
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 | 500.perlbench_r(peak) 557.xz_r(peak)
------------------------------------------------------------------------------
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 | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
    525.x264_r(base, peak) 557.xz_r(base)
------------------------------------------------------------------------------
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.
Compiler Version Notes (Continued)

C       | 500.perlbench_r(peak) 557.xz_r(peak)
-------|-----------------------------------
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       | 502.gcc_r(peak)
-------|-----------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version
       2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
-------

C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
       | 525.x264_r(base, peak) 557.xz_r(base)
-------|-----------------------------------
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++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak)
       | 531.deepsjeng_r(base, peak) 541.leela_r(base, 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.
-------

Fortran  | 548.exchange2_r(base, peak)
-------|-----------------------------------
Intel(R) Fortran 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.
-------

Base Compiler Invocation

C benchmarks:
icx

(Continued on next page)
**Base Compiler Invocation (Continued)**

C++ benchmarks:
- `icpx`

Fortran benchmarks:
- `ifort`

**Base Portability Flags**

```plaintext
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_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:
- `-w` `-std=c11` `-m64` `-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
- `-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries
- -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
- `-lqkmalloc`

C++ benchmarks:
- `-w` `-m64` `-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
- `-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries
- -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
- `-lqkmalloc`

Fortran benchmarks:
- `-w` `-m64` `-Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
- `-auto -mbranches-within-32B-boundaries
- -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
```

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G5 (Intel Xeon Silver 4310)  

**SPEC CPU®2017 Integer Rate Result**

**Copyright 2017-2021 Standard Performance Evaluation Corporation**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 172</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 176</td>
</tr>
</tbody>
</table>

CPU2017 License: 9066  
Test Sponsor: New H3C Technologies Co., Ltd.  
Tested by: New H3C Technologies Co., Ltd.  
Test Date: Nov-2021  
Hardware Availability: Sep-2020  
Software Availability: Jan-2021

### Base Optimization Flags (Continued)

Fortran benchmarks (continued):
- `-lqkmalloc`

### Peak Compiler Invocation

C benchmarks (except as noted below):
- `icx`
- `500.perlbench_r: icc`
- `557.xz_r: icc`

C++ benchmarks:
- `icpx`

Fortran benchmarks:
- `ifort`

### 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: -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`

### Peak Optimization Flags

C benchmarks:
- `500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)`
- `xCORE-AVX512 -ipo -O3 -no-prec-div`
- `qopt-mem-layout-trans=4 -fno-strict-overflow`
- `mbranches-within-32B-boundaries`
- `-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin`

*(Continued on next page)*
New H3C Technologies Co., Ltd.
H3C UniServer R4900 G5 (Intel Xeon Silver 4310)

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Tested by: New H3C Technologies Co., Ltd.
Test Date: Nov-2021
Hardware Availability: Sep-2020
Software Availability: Jan-2021

SPEC CPU®2017 Integer Rate Result

SPECrate®2017_int_base = 172
SPECrate®2017_int_peak = 176

Peak Optimization Flags (Continued)

500.perlbench_r (continued):
-1qkmallocc

502.gcc_r: -m32
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xcORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xcORE-AVX512 -flto
-O3 -ffast-math -qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-1qkmallocc

557.xz_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-1qkmallocc

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: 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-RevD.xml
### SPEC CPU®2017 Integer Rate Result

<table>
<thead>
<tr>
<th>New H3C Technologies Co., Ltd.</th>
<th>SPECrate®2017_int_base = 172</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3C UniServer R4900 G5 (Intel Xeon Silver 4310)</td>
<td>SPECrate®2017_int_peak = 176</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 9066</th>
<th>Test Date: Nov-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: New H3C Technologies Co., Ltd.</td>
<td>Hardware Availability: Sep-2020</td>
</tr>
<tr>
<td>Tested by: New H3C Technologies Co., Ltd.</td>
<td>Software Availability: Jan-2021</td>
</tr>
</tbody>
</table>

---

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU®2017 v1.1.8 on 2021-11-03 05:22:28-0400.
Originally published on 2021-11-23.