New H3C Technologies Co., Ltd. | H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

| SPECrate®2017_fp_base = 275 | SPECrate®2017_fp_peak = 291 |

**CPU2017 License:** 9066 | **Test Date:** Aug-2021

**Test Sponsor:** New H3C Technologies Co., Ltd. | **Hardware Availability:** Jun-2019

**Tested by:** New H3C Technologies Co., Ltd. | **Software Availability:** Dec-2020

### Copies

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Count</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>112</td>
<td>56</td>
<td>378</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>112</td>
<td>56</td>
<td>237</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>112</td>
<td>124</td>
<td>353</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>112</td>
<td>142</td>
<td>388</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>112</td>
<td>173</td>
<td>307</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>112</td>
<td>222</td>
<td>308</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>112</td>
<td>243</td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>112</td>
<td>97,6</td>
<td>178</td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Intel Xeon Platinum 8276

- Max MHz: 4000
- Nominal: 2200
- Enabled: 56 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: 38.5 MB I+D on chip per chip
- Other: None
- Memory: 384 GB (12 x 32 GB 2Rx8 PC4-2933Y-R)
- Storage: 1.6 TB SSD NVME
- 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

**Firmware:**

- Version 2.00.48 released Mar-2021 BIOS

**Power Management:**

- BIOS set to prefer performance at the cost of additional power usage

- jemalloc memory allocator V5.0.1

## Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Count</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>112</td>
<td>56</td>
<td>378</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>112</td>
<td>56</td>
<td>237</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>112</td>
<td>124</td>
<td>353</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>112</td>
<td>142</td>
<td>388</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>112</td>
<td>173</td>
<td>307</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>112</td>
<td>222</td>
<td>308</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>112</td>
<td>243</td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>112</td>
<td>97,6</td>
<td>178</td>
</tr>
</tbody>
</table>

**Power Management:**

- BIOS set to prefer performance at the cost of additional power usage

- jemalloc memory allocator V5.0.1
## SPEC CPU®2017 Floating Point Rate Result

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

H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

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

### SPECrate®2017 fp_base = 275

### SPECrate®2017 fp_peak = 291

#### 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>503.bwaves_r</td>
<td>112</td>
<td>2293</td>
<td>490</td>
<td>2292</td>
<td>490</td>
<td>2294</td>
<td>490</td>
<td>56</td>
<td>1114</td>
<td>504</td>
<td>1114</td>
<td>504</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>112</td>
<td>376</td>
<td>378</td>
<td>375</td>
<td>378</td>
<td>375</td>
<td>378</td>
<td>112</td>
<td>376</td>
<td>378</td>
<td>375</td>
<td>378</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>112</td>
<td>449</td>
<td>237</td>
<td>449</td>
<td>237</td>
<td>447</td>
<td>238</td>
<td>112</td>
<td>449</td>
<td>237</td>
<td>449</td>
<td>237</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>112</td>
<td>2358</td>
<td>124</td>
<td>2374</td>
<td>123</td>
<td>2368</td>
<td>124</td>
<td>56</td>
<td>852</td>
<td>172</td>
<td>850</td>
<td>172</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>112</td>
<td>741</td>
<td>353</td>
<td>740</td>
<td>354</td>
<td>743</td>
<td>352</td>
<td>112</td>
<td>674</td>
<td>388</td>
<td>676</td>
<td>387</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>112</td>
<td>680</td>
<td>173</td>
<td>687</td>
<td>172</td>
<td>680</td>
<td>174</td>
<td>112</td>
<td>680</td>
<td>173</td>
<td>687</td>
<td>172</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>112</td>
<td>1132</td>
<td>222</td>
<td>1131</td>
<td>222</td>
<td>1132</td>
<td>222</td>
<td>56</td>
<td>517</td>
<td>243</td>
<td>518</td>
<td>242</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>112</td>
<td>556</td>
<td>307</td>
<td>556</td>
<td>307</td>
<td>557</td>
<td>306</td>
<td>112</td>
<td>556</td>
<td>307</td>
<td>556</td>
<td>307</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>112</td>
<td>637</td>
<td>308</td>
<td>637</td>
<td>308</td>
<td>636</td>
<td>308</td>
<td>112</td>
<td>637</td>
<td>308</td>
<td>637</td>
<td>308</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>112</td>
<td>311</td>
<td>896</td>
<td>317</td>
<td>879</td>
<td>310</td>
<td>899</td>
<td>112</td>
<td>311</td>
<td>896</td>
<td>317</td>
<td>879</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>112</td>
<td>347</td>
<td>543</td>
<td>345</td>
<td>546</td>
<td>346</td>
<td>544</td>
<td>112</td>
<td>341</td>
<td>553</td>
<td>341</td>
<td>553</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>112</td>
<td>2770</td>
<td>158</td>
<td>2781</td>
<td>157</td>
<td>2778</td>
<td>157</td>
<td>112</td>
<td>2770</td>
<td>158</td>
<td>2781</td>
<td>157</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>112</td>
<td>1823</td>
<td>97.6</td>
<td>1817</td>
<td>97.9</td>
<td>1823</td>
<td>97.6</td>
<td>56</td>
<td>757</td>
<td>118</td>
<td>761</td>
<td>117</td>
</tr>
</tbody>
</table>

**SPECrate®2017 fp_base = 275**  
**SPECrate®2017 fp_peak = 291**

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/je5.0.1-64"  
MALLOC_CONF = "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)

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)  

**SPECrate®2017_fp_base = 275**  
**SPECrate®2017_fp_peak = 291**

<table>
<thead>
<tr>
<th>CPU2017 License: 9066</th>
<th>Test Date: Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: New H3C Technologies Co., Ltd.</td>
<td>Hardware Availability: Jun-2019</td>
</tr>
<tr>
<td>Tested by: New H3C Technologies Co., Ltd.</td>
<td>Software Availability: Dec-2020</td>
</tr>
</tbody>
</table>

**General Notes (Continued)**

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
```
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 IMC Interleaving to 1-way Interleave

Sysinfo program /home/speccpu/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
running on localhost.localdomain Thu Aug 5 04:59:50 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) Platinum 8276 CPU @ 2.20GHz
  2 "physical id"s (chips)
  112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
```

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): 112
On-line CPU(s) list: 0-111
```

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

H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 275
SPECrate®2017_fp_peak = 291

CPU2017 License: 9066
Test Sponsor: New H3C Technologies Co., Ltd.
Hardware Availability: Jun-2019
Test Date: Aug-2021
Tested by: New H3C Technologies Co., Ltd.
Software Availability: Dec-2020

Platform Notes (Continued)

| Thread(s) per core: | 2 |
| Core(s) per socket: | 28 |
| Socket(s): | 2 |
| NUMA node(s): | 4 |
| Vendor ID: | GenuineIntel |
| CPU family: | 6 |
| Model: | 85 |
| Model name: | Intel(R) Xeon(R) Platinum 8276 CPU @ 2.20GHz |
| Stepping: | 5 |
| CPU MHz: | 2998.774 |
| CPU max MHz: | 4000.000 |
| CPU min MHz: | 1000.000 |
| BogoMIPS: | 4400.00 |
| Virtualization: | VT-x |
| L1d cache: | 32K |
| L1i cache: | 32K |
| L2 cache: | 1024K |
| L3 cache: | 39424K |

NUMA node0 CPU(s): 0-3,7,9,14-17,21-23,26-28,63-65,70-73,77-79
NUMA node1 CPU(s): 4-6,10-13,18-20,24-27,60-62,66-69,74-76,80-83
NUMA node2 CPU(s): 28-31,35-37,42-45,49-51,84-87,91-93,98-101,105-107
NUMA node3 CPU(s): 32-34,38-41,46-48,52-55,88-90,94-97,102-104,108-111

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 rdtsdp
l m constant_tsc art arch_perfmon pbus bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtses64 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebp cat_l3 cdp_l3 invpcid_single intel_pni ssbd mba ibrs ibpb tpr_shadow vnmi fpxprec ept vpid fxsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rd_t_a avx512f avx512dq rdseed adx smap clfshopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occu牵头 llc cqm_mmb_total cqm_mmb_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke md_clear flush_lld
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 7 8 9 14 15 16 17 21 22 23 56 57 58 59 63 64 65 70 71 72 73 77 78 79
node 0 size: 95089 MB
node 0 free: 81057 MB
node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 60 61 62 66 67 68 69 74 75 76 80 81 82 83

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

SPECrate®2017_fp_base = 275  
SPECrate®2017_fp_peak = 291

Platform Notes (Continued)

node 1 size: 96761 MB  
node 1 free: 85271 MB  
node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 84 85 86 87 91 92 93 98 99 100 101 105 106 107  
node 2 size: 96734 MB  
node 2 free: 84357 MB  
node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 88 89 90 94 95 96 97 102 103 104 108 109 110 111  
node 3 size: 96761 MB  
node 3 free: 85192 MB  
node distances:  
node  0   1   2   3  
0:  10  11  21  21  
1:  11  10  21  21  
2:  21  21  10  11  
3:  21  21  11  10

From /proc/meminfo  
MemTotal:       394594796 kB  
HugePages_Total:       0  
Hugepagesize:       2048 kB  

/sbin/tuned-adm active  
Current active profile: accelerator-performance  
/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

From /etc/*release* /etc/*version*  
os-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:

(Continued on next page)
Spec CPU®2017 Floating Point Rate Result

New H3C Technologies Co., Ltd. SPECrate®2017_fp_base = 275
H3C UniServer R4900 G3 (Intel Xeon Platinum 8276) SPECrate®2017_fp_peak = 291

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

Test Date: Aug-2021
Hardware Availability: Jun-2019
Software Availability: Dec-2020

Platform Notes (Continued)

CVE-2018-12207 (iTLB Multihit):
CVE-2018-3620 (L1 Terminal Fault):
Microarchitectural Data Sampling:
CVE-2017-5754 (Meltdown):
CVE-2018-3639 (Speculative Store Bypass):
CVE-2017-5753 (Spectre variant 1):
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling):
CVE-2019-11135 (TSX Asynchronous Abort):

KVM: Mitigation: Split huge pages
Not affected
Mitigation: Clear CPU buffers; SMT vulnerable
Not affected
Mitigation: Speculative Store Bypass disabled via prctl and seccomp
Mitigation: usercopy/swapgs barriers and __user pointer sanitization
Mitigation: Full generic retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling
No status reported
Mitigation: Clear CPU buffers; SMT vulnerable

SPEC is set to: /home/speccpu
Filesysten Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 1.5T 125G 1.3T 9% /home

From /sys/devices/virtual/dmi/id
Vendor: New H3C Technologies Co., Ltd.
Product: UniServer R4900 G3
Product Family: Rack
Serial: 210235A3TKH193000008

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:
12x Micron 18ASF4G72PDZ-2G9E1 32 GB 2 rank 2933
12x NO DIMM NO DIMM

BIOS:
BIOS Vendor: American Megatrends Inc.
BIOS Version: 2.00.48
BIOS Date: 03/10/2021
BIOS Revision: 5.14

(End of data from sysinfo program)
## Compiler Version Notes

<table>
<thead>
<tr>
<th>Language</th>
<th>Example Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)</td>
</tr>
<tr>
<td>C++</td>
<td>508.namd_r(base, peak) 510.parest_r(base, peak)</td>
</tr>
<tr>
<td>C++, C</td>
<td>511.povray_r(peak)</td>
</tr>
<tr>
<td>C++, C</td>
<td>511.povray_r(base) 526.blender_r(base, peak)</td>
</tr>
</tbody>
</table>

---

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.

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.

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.

Continued on next page
New H3C Technologies Co., Ltd.  SPECrate®2017_fp_base = 275
H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)  SPECrate®2017_fp_peak = 291

CPU2017 License: 9066  Test Date:  Aug-2021
Test Sponsor:  New H3C Technologies Co., Ltd.  Hardware Availability:  Jun-2019
Tested by:  New H3C Technologies Co., Ltd.  Software Availability:  Dec-2020

Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
| C++, C          | 511.povray_r(base) 526.blender_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.
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++, C, Fortran  | 507.cactuBSSN_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.
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.
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.

------------------------------------------------------------------------------
| Fortran         | 503.bwaves_r(base, peak) 549.fotonik3d_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.

------------------------------------------------------------------------------
| Fortran, C      | 521.wrf_r(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.

(Continued on next page)
### Compiler Version Notes (Continued)

```plaintext
Fortran, C    | 521.wrf_r(base) 527.cam4_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.
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.
---
```

```plaintext
Fortran, C    | 521.wrf_r(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.
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.
---
```

```plaintext
Fortran, C    | 521.wrf_r(base) 527.cam4_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.
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.
---
```

### Base Compiler Invocation

- **C benchmarks:**
  - icx

- **C++ benchmarks:**
  - icpx

- **Fortran benchmarks:**
  - ifort

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

New H3C Technologies Co., Ltd.

H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

| SPECrate®2017_fp_base = 275 |
| SPECrate®2017_fp_peak = 291 |

**CPU2017 License:** 9066  
**Test Sponsor:** New H3C Technologies Co., Ltd.  
**Test Date:** Aug-2021  
**Hardware Availability:** Jun-2019  
**Tested by:** New H3C Technologies Co., Ltd.  
**Software Availability:** Dec-2020

### Base Compiler Invocation (Continued)

- Benchmarks using both Fortran and C:
  - ifort icx
- Benchmarks using both C and C++:
  - icpx icx
- Benchmarks using Fortran, C, and C++:
  - icpx icx ifort

### Base Portability Flags

- 503.bwaves_r: -DSPEC_LP64
- 507.cactuBSSN_r: -DSPEC_LP64
- 508.namd_r: -DSPEC_LP64
- 510.parest_r: -DSPEC_LP64
- 511.povray_r: -DSPEC_LP64
- 519.lbm_r: -DSPEC_LP64
- 521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
- 526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
- 527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
- 538.imagick_r: -DSPEC_LP64
- 544.nab_r: -DSPEC_LP64
- 549.fotonik3d_r: -DSPEC_LP64
- 554.roms_r: -DSPEC_LP64

### Base Optimization Flags

**C benchmarks:**
- -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

**C++ benchmarks:**
- -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
- -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

**Fortran benchmarks:**
- -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
- -qopt-prefetch -ffinite-math-only

(Continued on next page)
New H3C Technologies Co., Ltd.  
H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

SPECrate®2017_fp_base = 275  
SPECrate®2017_fp_peak = 291

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
- qopt-multiple-gather-scatter-by-shuffles
- qopt-mem-layout-trans=4
- nostandard-realloc-lhs
- align array32byte
- auto
- mbranches-within-32B-boundaries
- ljemalloc
- L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
- w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
- no-prec-div
- qopt-prefetch
- ffinite-math-only
- qopt-multiple-gather-scatter-by-shuffles
- mbranches-within-32B-boundaries
- nostandard-realloc-lhs
- align array32byte
- auto
- ljemalloc
- L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
- w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- mbranches-within-32B-boundaries
- ljemalloc
- L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
- w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
- no-prec-div
- qopt-prefetch
- ffinite-math-only
- qopt-multiple-gather-scatter-by-shuffles
- mbranches-within-32B-boundaries
- nostandard-realloc-lhs
- align array32byte
- auto
- ljemalloc
- L/usr/local/jemalloc64-5.0.1/lib

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
521.wrf_r: ifort icc

(Continued on next page)
Peak Compiler Invocation (Continued)

527.cam4_r: ifort icx

Benchmarks using both C and C++:

511.povray_r: icpc icc

526.blender_r: icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

538.imagick_r: basepeak = yes

544.nab_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-Ofast -qopt-mem-layout-trans=4
-flto-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -03 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only

(Continued on next page)
<table>
<thead>
<tr>
<th>Peak Optimization Flags (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r (continued):</td>
</tr>
<tr>
<td>-qopt-multiple-gather-scatter-by-shuffles</td>
</tr>
<tr>
<td>-qopt-mem-layout-trans=4 -nostandard-realloc-lhs</td>
</tr>
<tr>
<td>-align array32byte -auto -mbranches-within-32B-boundaries</td>
</tr>
<tr>
<td>-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib</td>
</tr>
<tr>
<td>549.fotonik3d_r: basepeak = yes</td>
</tr>
<tr>
<td>554.roms_r: Same as 503.bwaves_r</td>
</tr>
</tbody>
</table>

Benchmarks using both Fortran and C:

- **521.wrf_r**: 
  -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3 
  -ipo -no-prec-div -qopt-prefetch -ffinite-math-only 
  -qopt-multiple-gather-scatter-by-shuffles 
  -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries 
  -nostandard-realloc-lhs -align array32byte -auto 
  -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc 

- **527.cam4_r**: basepeak = yes 

Benchmarks using both C and C++:

- **511.povray_r**: 
  -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3 
  -ipo -no-prec-div -qopt-prefetch -ffinite-math-only 
  -qopt-multiple-gather-scatter-by-shuffles 
  -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries 
  -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc 

- **526.blender_r**: basepeak = yes 

Benchmarks using Fortran, C, and C++:

- **507.cactuBSSN_r**: 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](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.html)

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

- [http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.xml](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.4-CLX-RevB.xml)
## SPEC CPU®2017 Floating Point Rate Result

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

H3C UniServer R4900 G3 (Intel Xeon Platinum 8276)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 275</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak = 291</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 9066</th>
<th>Test Date: Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: New H3C Technologies Co., Ltd.</td>
<td>Hardware Availability: Jun-2019</td>
</tr>
<tr>
<td>Tested by: New H3C Technologies Co., Ltd.</td>
<td>Software Availability: Dec-2020</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 2021-08-04 16:59:50-0400.
Report generated on 2021-09-01 14:19:32 by CPU2017 PDF formatter v6442.
Originally published on 2021-08-31.