



# SPEC CPU®2017 Integer Speed Result

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## New H3C Technologies Co., Ltd.

H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

**SPECspeed®2017\_int\_base = 14.6**

**SPECspeed®2017\_int\_peak = Not Run**

**CPU2017 License:** 9066

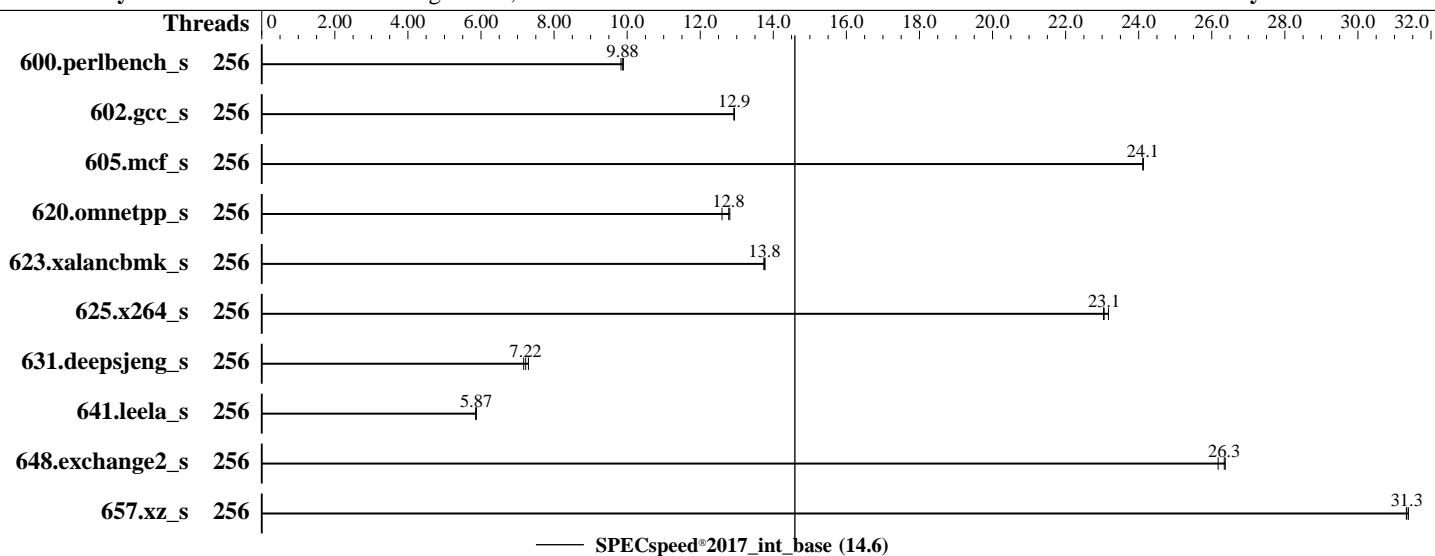
**Test Sponsor:** New H3C Technologies Co., Ltd.

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

**Test Date:** Jun-2025

**Hardware Availability:** Oct-2023

**Software Availability:** Mar-2024



### Hardware

CPU Name: Intel Xeon Platinum 8592+  
 Max MHz: 3900  
 Nominal: 1900  
 Enabled: 128 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 320 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R)  
 Storage: 1 x 3.2 TB NVME SSD  
 Other: CPU Cooling: Air

### Software

OS: SUSE Linux Enterprise Server 15 SP5 5.14.21-150500.53-default  
 Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;  
 Parallel: Yes  
 Firmware: Version 6.10.38 released Mar-2024 BIOS  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: jemalloc memory allocator V5.0.1  
 Power Management: BIOS set to prefer performance at the cost of additional power usage.



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## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	256	179	9.90	181	9.83	<u>180</u>	<u>9.88</u>							
602.gcc_s	256	308	12.9	<u>308</u>	<u>12.9</u>	308	12.9							
605.mcf_s	256	<u>196</u>	<u>24.1</u>	196	24.1	196	24.1							
620.omnetpp_s	256	127	12.8	129	12.6	<u>128</u>	<u>12.8</u>							
623.xalancbmk_s	256	103	13.7	103	13.8	<u>103</u>	<u>13.8</u>							
625.x264_s	256	76.6	23.0	76.1	23.2	<u>76.5</u>	<u>23.1</u>							
631.deepsjeng_s	256	<u>198</u>	<u>7.22</u>	196	7.30	200	7.17							
641.leela_s	256	291	5.85	291	5.87	<u>291</u>	<u>5.87</u>							
648.exchange2_s	256	112	26.2	111	26.4	<u>112</u>	<u>26.3</u>							
657.xz_s	256	197	31.4	<u>197</u>	<u>31.3</u>	197	31.3							

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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,scatter"

LD\_LIBRARY\_PATH = "/home/speccpu/lib/intel64:/home/speccpu/je5.0.1-64"

MALLOC\_CONF = "retain:true"

OMP\_STACKSIZE = "192M"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB 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 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases



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## Platform Notes

### BIOS Settings:

CPU C6 report = Enabled  
SNC = Enable SNC2 (2-clusters)  
LLC Prefetch = Enabled

### BMC Settings:

Fan mode = powerful mode

```
Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Sat Jun  7 02:37:07 2025
```

SUT (System Under Test) info as seen by some common utilities.

### Table of contents

- 1. uname -a
- 2. w
- 3. Username
- 4. ulimit -a
- 5. sysinfo process ancestry
- 6. /proc/cpuinfo
- 7. lscpu
- 8. numactl --hardware
- 9. /proc/meminfo
- 10. who -r
- 11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
- 12. Services, from systemctl list-unit-files
- 13. Linux kernel boot-time arguments, from /proc/cmdline
- 14. cpupower frequency-info
- 15. tuned-adm active
- 16. sysctl
- 17. /sys/kernel/mm/transparent\_hugepage
- 18. /sys/kernel/mm/transparent\_hugepage/khugepaged
- 19. OS release
- 20. Disk information
- 21. /sys/devices/virtual/dmi/id
- 22. dmidecode
- 23. BIOS

```
1. uname -a
Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
02:37:07 up 25 min, 1 user, load average: 0.14, 0.03, 0.02
USER   TTY      FROM          LOGIN@    IDLE      JCPU     PCPU WHAT
root   ttys1     -           02:36    11.00s  1.02s   0.01s -bash
```

```
3. Username
From environment variable $USER: root
```

```
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size            (kbytes, -d) unlimited
```

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## Platform Notes (Continued)

```
scheduling priority          (-e) 0
file size                  (blocks, -f) unlimited
pending signals             (-i) 4126259
max locked memory          (kbytes, -l) 64
max memory size            (kbytes, -m) unlimited
open files                 (-n) 1024
pipe size                  (512 bytes, -p) 8
POSIX message queues       (bytes, -q) 819200
real-time priority          (-r) 0
stack size                 (kbytes, -s) unlimited
cpu time                   (seconds, -t) unlimited
max user processes          (-u) 4126259
virtual memory              (kbytes, -v) unlimited
file locks                 (-x) unlimited
```

---

### 5. sysinfo process ancestry

```
/usr/lib/systemd/systemd --switched-root --system --deserialize 30
login -- root
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags -c
  ic2024.1-lin-sapphirerapids-speed-20240308.cfg --define cores=256 --tune base -o all --define
  intspeedaffinity --define drop_caches intspeed
runcpu --nobuild --action validate --define default-platform-flags --configfile
  ic2024.1-lin-sapphirerapids-speed-20240308.cfg --define cores=256 --tune base --output_format all --define
  intspeedaffinity --define drop_caches --nopower --runmode speed --tune base --size refspeed intspeed
  --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.103/templogs/preenv.intspeed.103.0.log --lognum 103.0
  --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/speccpu
```

---

### 6. /proc/cpuinfo

```
model name      : INTEL(R) XEON(R) PLATINUM 8592+
vendor_id       : GenuineIntel
cpu family     : 6
model          : 207
stepping        : 2
microcode       : 0x21000200
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrp_brs
cpu cores       : 64
siblings         : 128
2 physical ids (chips)
256 processors (hardware threads)
physical id 0: core ids 0-63
physical id 1: core ids 0-63
physical id 0: apicids 0-127
physical id 1: apicids 128-255
```

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

---

### 7. lscpu

From lscpu from util-linux 2.37.4:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         46 bits physical, 57 bits virtual
Byte Order:            Little Endian
```

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## Platform Notes (Continued)

```

CPU(s): 256
On-line CPU(s) list: 0-255
Vendor ID: GenuineIntel
Model name: INTEL(R) XEON(R) PLATINUM 8592+
CPU family: 6
Model: 207
Thread(s) per core: 2
Core(s) per socket: 64
Socket(s): 2
Stepping: 2
Frequency boost: enabled
CPU max MHz: 1901.0000
CPU min MHz: 800.0000
BogoMIPS: 3800.00
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 aperf mperf tsc_known_freq pni pclmulqdq dtes64 monitor
       ds_cpl 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 epb cat_13 cat_12 cdp_13 invpcid_single
       cdp_12 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmil hle
       avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
       avx512fma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
       xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
       cqm_mbm_local avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts
       avx512vbmi umip pkru ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq
       avx512_vnni avx512_bitlg tme avx512_vpocntdq la57 rdpid bus_lock_detect
       cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig
       arch_lbr avx512_fp16 amx_tile flush_l1d arch_capabilities
       6 MiB (128 instances)
L1d cache: 4 MiB (128 instances)
L1i cache: 256 MiB (128 instances)
L2 cache: 640 MiB (2 instances)
L3 cache: 4
NUMA node(s): 0-31,128-159
NUMA node0 CPU(s): 32-63,160-191
NUMA node1 CPU(s): 64-95,192-223
NUMA node2 CPU(s): 96-127,224-255
NUMA node3 CPU(s): 256-383
Vulnerability Itlb multihit: Not affected
Vulnerability Llft: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling, PBRSB-eIBRS SW
sequence
Vulnerability Srbds: Not affected
Vulnerability Tsx sync abort: Not affected

```

```

From lscpu --cache:
  NAME ONE-SIZE ALL-SIZE WAYS TYPE      LEVEL    SETS PHY-LINE COHERENCY-SIZE
  L1d     48K      6M   12 Data        1      64      1          64
  L1i     32K      4M    8 Instruction  1      64      1          64
  L2      2M      256M   16 Unified     2    2048      1          64
  L3     320M     640M   20 Unified     3  262144      1          64
-----
```

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## Platform Notes (Continued)

8. numactl --hardware

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

```
available: 4 nodes (0-3)
node 0 cpus: 0-31,128-159
node 0 size: 257608 MB
node 0 free: 256846 MB
node 1 cpus: 32-63,160-191
node 1 size: 258031 MB
node 1 free: 256922 MB
node 2 cpus: 64-95,192-223
node 2 size: 258031 MB
node 2 free: 257332 MB
node 3 cpus: 96-127,224-255
node 3 size: 257922 MB
node 3 free: 256743 MB
node distances:
node 0 1 2 3
 0: 10 12 21 21
 1: 12 10 21 21
 2: 21 21 10 12
 3: 21 21 12 10
```

9. /proc/meminfo

```
MemTotal: 1056352844 kB
```

10. who -r

```
run-level 3 Jun 7 02:12
```

11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)

```
Default Target Status
multi-user running
```

12. Services, from systemctl list-unit-files

STATE	UNIT FILES
enabled	YaST2-Firstboot YaST2-Second-Stage apparmor cron display-manager getty@ issue-generator kbdsettings klog lvm2-monitor nsqd nvmefc-boot-connections purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime	systemd-remount-fs
disabled	auditd autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info fancontrol firewalld gpm grub2-once haveged haveged-switch-root ipmi ipmievrd irqbalance issue-add-ssh-keys kdump kdump-early kexec-load lm_sensors lunmask man-db-create multipathd ndctl-monitor nfs nfs-blkmap nmb nvmf-autoconnect postfix rpcbind rpmconfigcheck rsyncd serial-getty@ smartd_generate_opts smb snmpd snmptrapd svncserve sysstat systemd-boot-check-no-failures systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned vncserver@
indirect	pcscd wickedd

13. Linux kernel boot-time arguments, from /proc/cmdline

```
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
root=UUID=befabla9-6492-412a-9d0b-079466ad03eb
splash=silent
resume=/dev/disk/by-uuid/64b85326-8619-4fc8-8127-1e8683bd7471
mitigations=auto
quiet
```

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## Platform Notes (Continued)

```
splash=silent  
mitigations=auto
```

```
-----  
14. cpupower frequency-info  
analyzing CPU 0:  
    current policy: frequency should be within 800 MHz and 1.90 GHz.  
        The governor "ondemand" may decide which speed to use  
        within this range.  
    boost state support:  
        Supported: yes  
        Active: yes
```

```
-----  
15. tuned-adm active  
It seems that tuned daemon is not running, preset profile is not activated.  
Preset profile: throughput-performance
```

```
-----  
16. sysctl  
kernel.numa_balancing          1  
kernel.randomize_va_space       2  
vm.compaction_proactiveness   20  
vm.dirty_background_bytes      0  
vm.dirty_background_ratio     10  
vm.dirty_bytes                 0  
vm.dirty_expire_centisecs     3000  
vm.dirty_ratio                 20  
vm.dirty_writeback_centisecs  500  
vm.dirtytime_expire_seconds   43200  
vm.extfrag_threshold          500  
vm.min_unmapped_ratio         1  
vm.nr_hugepages                0  
vm.nr_hugepages_mempolicy     0  
vm.nr_overcommit_hugepages    0  
vm.swappiness                  60  
vm.watermark_boost_factor     15000  
vm.watermark_scale_factor      10  
vm.zone_reclaim_mode          0
```

```
-----  
17. /sys/kernel/mm/transparent_hugepage  
defrag           always defer defer+madvise [madvise] never  
enabled          [always] madvise never  
hpage_pmd_size  2097152  
shmem_enabled    always within_size advise [never] deny force
```

```
-----  
18. /sys/kernel/mm/transparent_hugepage/khugepaged  
alloc_sleep_millisecs  60000  
defrag               1  
max_ptes_none        511  
max_ptes_shared      256  
max_ptes_swap        64  
pages_to_scan        4096  
scan_sleep_millisecs 10000
```

```
-----  
19. OS release  
From /etc/*-release /etc/*-version
```

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## Platform Notes (Continued)

os-release SUSE Linux Enterprise Server 15 SP5

-----  
20. Disk information

SPEC is set to: /home/speccpu

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/nvme0n1p5	xfs	522G	235G	288G	45%	/home

-----  
21. /sys/devices/virtual/dmi/id

Vendor:	H3C
Product:	H3C UniServer R4900 G6 Ultra
Product Family:	Rack
Serial:	210235A4CHH244000023

-----  
22. dmidecode

Additional information from dmidecode 3.4 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 HMCG94AGBRA181N 64 GB 2 rank 5600

-----  
23. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor:	American Megatrends International, LLC.
BIOS Version:	6.10.38
BIOS Date:	03/23/2024
BIOS Revision:	5.32

## Compiler Version Notes

=====

C | 600.perlbench\_s(base) 602.gcc\_s(base) 605.mcf\_s(base) 625.x264\_s(base) 657.xz\_s(base)

=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

=====

=====

C++ | 620.omnetpp\_s(base) 623.xalancbmk\_s(base) 631.deepsjeng\_s(base) 641.leela\_s(base)

=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.

=====

=====

Fortran | 648.exchange2\_s(base)

=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308  
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=====



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## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Base Portability Flags

600.perlbench\_s: -DSPEC\_LP64 -DSPEC\_LINUX\_X64  
602.gcc\_s: -DSPEC\_LP64  
605.mcf\_s: -DSPEC\_LP64  
620.omnetpp\_s: -DSPEC\_LP64  
623.xalancbmk\_s: -DSPEC\_LP64 -DSPEC\_LINUX  
625.x264\_s: -DSPEC\_LP64  
631.deepsjeng\_s: -DSPEC\_LP64  
641.leela\_s: -DSPEC\_LP64  
648.exchange2\_s: -DSPEC\_LP64  
657.xz\_s: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fopenmp  
-DSPEC\_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:

-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:

-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc



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H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8592+)

SPECspeed®2017\_int\_base = 14.6

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9066

Test Date: Jun-2025

Test Sponsor: New H3C Technologies Co., Ltd.

Hardware Availability: Oct-2023

Tested by: New H3C Technologies Co., Ltd.

Software Availability: Mar-2024

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

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html>

[http://www.spec.org/cpu2017/flags/New\\_H3C-Platform-Settings-intel-RevB.html](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-intel-RevB.html)

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

<http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml>

[http://www.spec.org/cpu2017/flags/New\\_H3C-Platform-Settings-intel-RevB.xml](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-intel-RevB.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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