



SPEC CPU®2017 Integer Speed Result

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New H3C Technologies Co., Ltd.
H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8571N)

SPECspeed®2017_int_base = 14.8

SPECspeed®2017_int_peak = 15.1

CPU2017 License: 9066

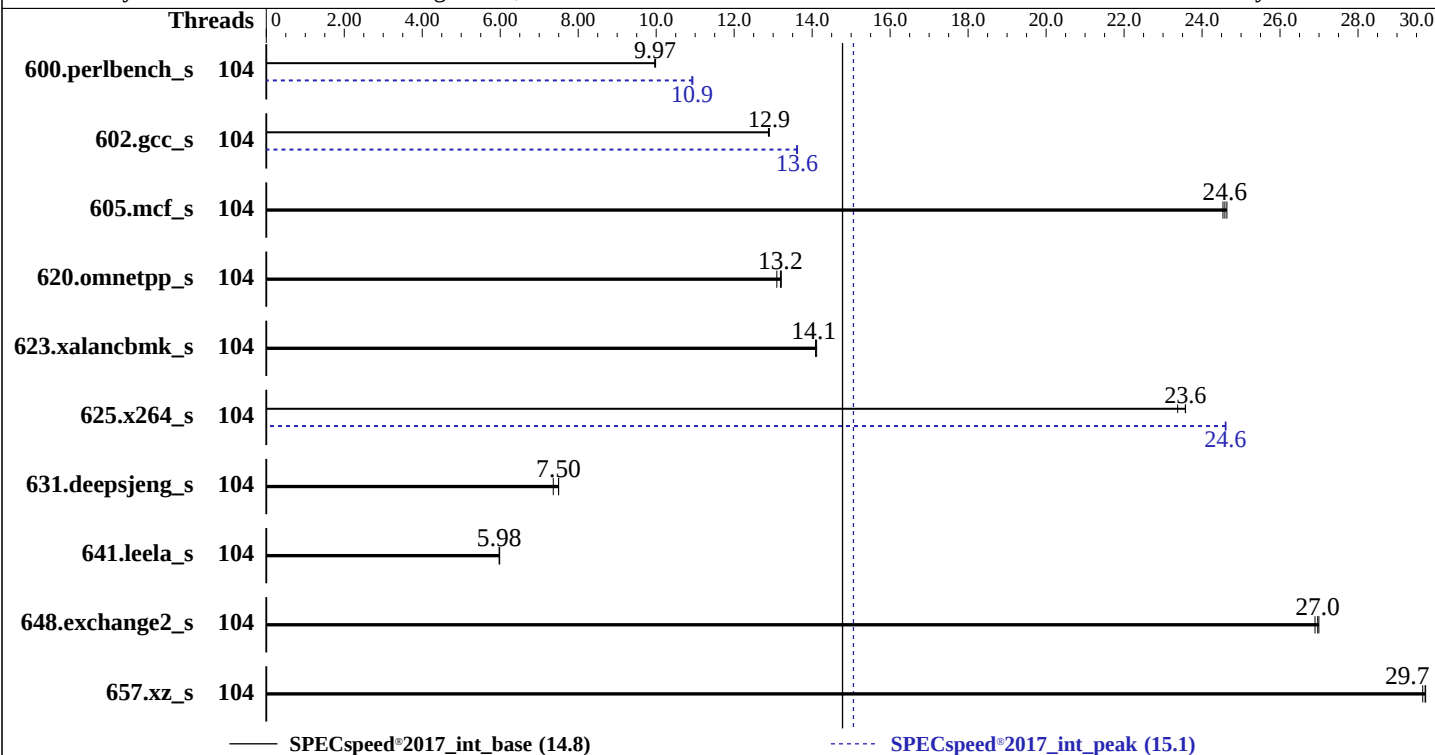
Test Sponsor: New H3C Technologies Co., Ltd.

Tested by: New H3C Technologies Co., Ltd.

Test Date: Jul-2025

Hardware Availability: Oct-2023

Software Availability: Mar-2024



Hardware

CPU Name: Intel Xeon Platinum 8571N
Max MHz: 4000
Nominal: 2400
Enabled: 52 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 300 MB I+D on chip per chip
Other: None
Memory: 512 GB (8 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)
Storage: 1 x 960 GB SATA 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 6.10.52 released May-2025 BIOS
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 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.



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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	104	178	9.96	<u>178</u>	<u>9.97</u>	178	9.98	104	163	10.9	162	10.9	<u>163</u>	<u>10.9</u>
602.gcc_s	104	<u>309</u>	<u>12.9</u>	309	12.9	309	12.9	104	<u>293</u>	<u>13.6</u>	293	13.6	292	13.6
605.mcf_s	104	192	24.5	<u>192</u>	<u>24.6</u>	192	24.6	104	192	24.5	<u>192</u>	<u>24.6</u>	192	24.6
620.omnetpp_s	104	123	13.2	<u>124</u>	<u>13.2</u>	125	13.1	104	123	13.2	<u>124</u>	<u>13.2</u>	125	13.1
623.xalancbmk_s	104	<u>101</u>	<u>14.1</u>	100	14.1	101	14.1	104	<u>101</u>	<u>14.1</u>	100	14.1	101	14.1
625.x264_s	104	75.5	23.4	74.8	23.6	<u>74.8</u>	<u>23.6</u>	104	71.7	24.6	<u>71.7</u>	<u>24.6</u>	71.7	24.6
631.deepsjeng_s	104	195	7.36	191	7.50	<u>191</u>	<u>7.50</u>	104	195	7.36	191	7.50	<u>191</u>	<u>7.50</u>
641.leela_s	104	<u>285</u>	<u>5.98</u>	285	5.99	286	5.98	104	<u>285</u>	<u>5.98</u>	285	5.99	286	5.98
648.exchange2_s	104	<u>109</u>	<u>27.0</u>	109	26.9	109	27.0	104	<u>109</u>	<u>27.0</u>	109	26.9	109	27.0
657.xz_s	104	208	29.7	208	29.7	<u>208</u>	<u>29.7</u>	104	208	29.7	208	29.7	<u>208</u>	<u>29.7</u>

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SPECspeed®2017_int_peak = **15.1**

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

runcpu command invoked through numactl i.e.:

numactl --interleave=all runcpu <etc>

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:

Intel VT for Directed I/O = Disabled

CPU C6 report = Enabled

SNC = Enable SNC2 (2-clusters)

BMC Settings:

Fan mode = powerful mode

Sysinfo program /home/speccpu/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost Fri Jul 11 13:28:31 2025

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

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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
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18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
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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
13:28:31 up 3:33, 1 user, load average: 0.00, 0.04, 0.72
USER  TTY      FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
root  tty1      -             09:55   7.00s  8.65s  0.02s -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) 2062279
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) 2062279
virtual memory           (kbytes, -v) unlimited
file locks               (-x) unlimited
```

```
-----
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 29
login -- root
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags -c
  ic2024.1-lin-sapphirerapids-speed-20240308.cfg --define cores=104 --tune base,peak -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=104 --tune base,peak --output_format all
  --define intspeedaffinity --define drop_caches --nopower --runmode speed --tune base:peak --size refspped
  intspeed --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.075/temlogs/preenv.intspeed.075.0.log
  --lognum 075.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/speccpu
```

```
-----
6. /proc/cpuinfo
model name      : INTEL(R) XEON(R) PLATINUM 8571N
vendor_id      : GenuineIntel
cpu family     : 6
model          : 207
stepping       : 2
microcode      : 0x21000160
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores      : 52
siblings       : 104
1 physical ids (chips)
104 processors (hardware threads)
physical id 0: core ids 0-51
physical id 0: apicids 0-103
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:      52 bits physical, 57 bits virtual
Byte Order:         Little Endian
CPU(s):             104
On-line CPU(s) list: 0-103
```

(Continued on next page)



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Platform Notes (Continued)

Vendor ID: GenuineIntel
Model name: INTEL(R) XEON(R) PLATINUM 8571N
CPU family: 6
Model: 207
Thread(s) per core: 2
Core(s) per socket: 52
Socket(s): 1
Stepping: 2
CPU max MHz: 4000.0000
CPU min MHz: 800.0000
BogoMIPS: 4800.00
Flags: fpv 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 aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor 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 epb cat_l3 cat_l2 cdp_l3 invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase 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 xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req hfi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq 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

Virtualization: VT-x
L1d cache: 2.4 MiB (52 instances)
L1i cache: 1.6 MiB (52 instances)
L2 cache: 104 MiB (52 instances)
L3 cache: 300 MiB (1 instance)
NUMA node(s): 2
NUMA node0 CPU(s): 0-25,52-77
NUMA node1 CPU(s): 26-51,78-103
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: 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, PBRSE-eIBRS SW sequence
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	2.4M	12	Data	1	64	1	64
L1i	32K	1.6M	8	Instruction	1	64	1	64
L2	2M	104M	16	Unified	2	2048	1	64
L3	300M	300M	20	Unified	3	245760	1	64

8. numactl --hardware

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

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Platform Notes (Continued)

```
available: 2 nodes (0-1)
node 0 cpus: 0-25,52-77
node 0 size: 257612 MB
node 0 free: 255810 MB
node 1 cpus: 26-51,78-103
node 1 size: 257979 MB
node 1 free: 250261 MB
node distances:
node  0  1
 0:  10 12
 1:  12 10
```

```
-----
9. /proc/meminfo
MemTotal:      527966560 kB
```

```
-----
10. who -r
run-level 3 Jul 11 09:55
```

```
-----
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    apparmor auditd cron firewalld getty@ irqbalance issue-generator kbdsettings postfix
           purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4
           wickedd-dhcp6 wickedd-nanny
enabled-runtime  systemd-remount-fs
disabled         boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed
                 debug-shell ebttables grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load
                 lunmask rpmconfigcheck serial-getty@ systemd-boot-check-no-failures
                 systemd-network-generator systemd-sysexit systemd-time-wait-sync systemd-timesyncd tuned
indirect      pcsd wickedd
```

```
-----
13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
root=UUID=5b1bbac0-75ae-47d9-95db-594b94b8ab43
splash=silent
mitigations=auto
quiet
security=apparmor
```

```
-----
14. cpupower frequency-info
analyzing CPU 0:
current policy: frequency should be within 800 MHz and 4.00 GHz.
                 The governor "performance" 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.
```

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Platform Notes (Continued)

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
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/sda2	btrfs	892G	167G	724G	19%	/home

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

Vendor:	New H3C Technologies Co., Ltd.
Product:	H3C UniServer R4900 G6 Ultra
Product Family:	Rack
Serial:	210235A4CHH244000015

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Platform Notes (Continued)

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:

8x Hynix HMC94AGBRA179N 64 GB 2 rank 5600, configured at 4800

23. BIOS

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

BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 6.10.52
BIOS Date: 05/26/2025
BIOS Revision: 5.32

Compiler Version Notes

```
=====
C      | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
      | 657.xz_s(base, peak)
=====
```

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, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
      | 641.leela_s(base, peak)
=====
```

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, peak)
=====
```

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

Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx



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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 -fiopenmp
-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

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx



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Hardware Availability: Oct-2023

Software Availability: Mar-2024

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -w -m64 -std=c11 -Wl, -z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-fiopenmp -DSPEC_OPENMP -fno-strict-overflow  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
602.gcc_s: -w -m64 -std=c11 -Wl, -z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -Ofast(pass 1) -xCORE-AVX512 -O3 -ffast-math  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-fiopenmp -DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib  
-ljemalloc
```

605.mcf_s: basepeak = yes

```
625.x264_s: -w -std=c11 -m64 -Wl, -z,muldefs -xsapphirerapids -O3  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP  
-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

(Continued on next page)



SPEC CPU®2017 Integer Speed Result

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New H3C Technologies Co., Ltd.
H3C UniServer R4900 G6 Ultra (Intel Xeon Platinum 8571N)

SPECspeed®2017_int_base = 14.8

SPECspeed®2017_int_peak = 15.1

CPU2017 License: 9066

Test Sponsor: New H3C Technologies Co., Ltd.

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Peak Optimization Flags (Continued)

648.exchange2_s: basepeak = yes

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

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

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Tested with SPEC CPU®2017 v1.1.9 on 2025-07-11 01:28:30-0400.

Report generated on 2025-07-30 15:13:41 by CPU2017 PDF formatter v6716.

Originally published on 2025-07-29.