



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## New H3C Technologies Co., Ltd.

**SPECrate®2017\_int\_base = 464**

**SPECrate®2017\_int\_peak = 480**

CPU2017 License: 9066

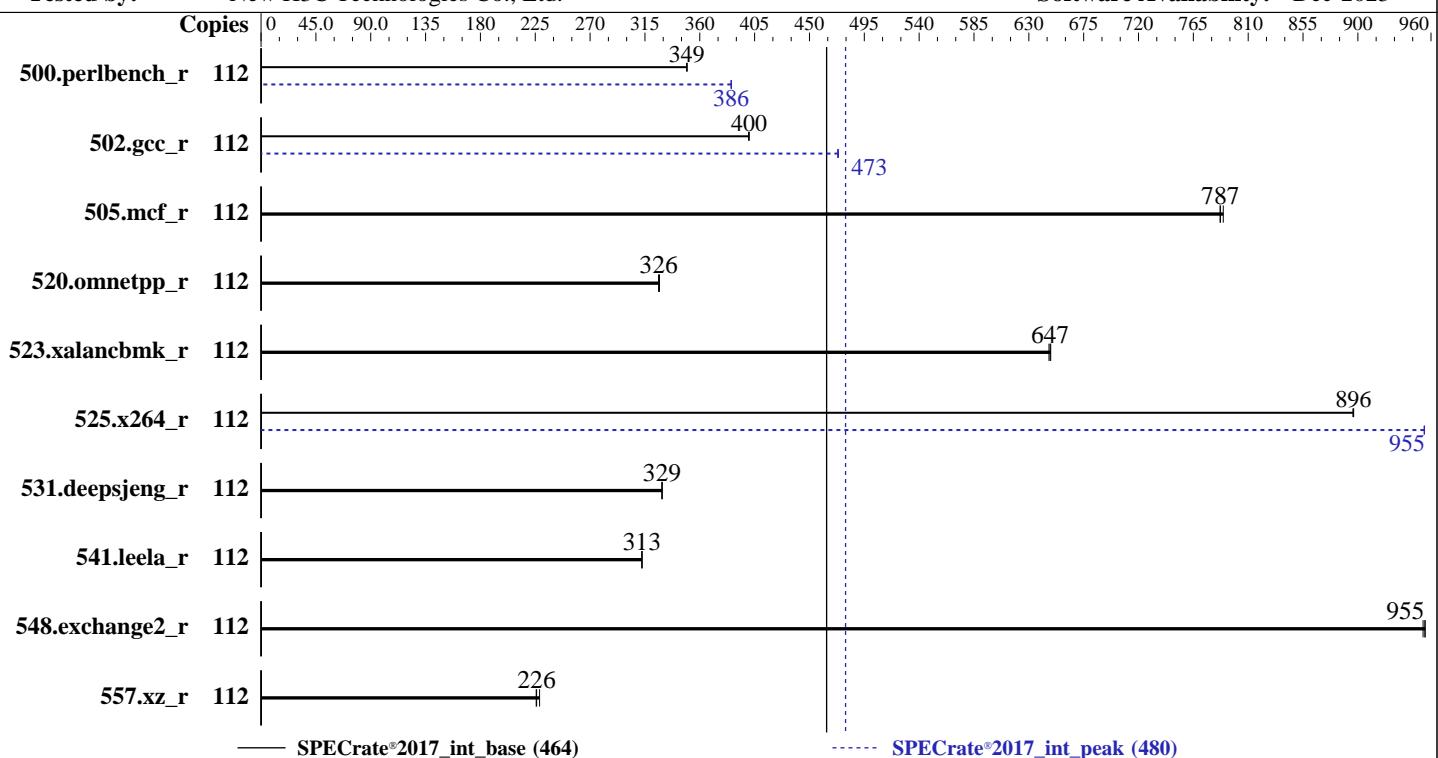
Test Date: May-2024

Test Sponsor: New H3C Technologies Co., Ltd.

Hardware Availability: Oct-2023

Tested by: New H3C Technologies Co., Ltd.

Software Availability: Dec-2023



### Hardware

CPU Name: Intel Xeon Gold 5420+  
 Max MHz: 4100  
 Nominal: 2000  
 Enabled: 56 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: 52.5 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R, running at 4400)  
 Storage: 1 x 1.92 TB SSD  
 Other: CPU Cooling: Air

### Software

OS: SUSE Linux Enterprise Server 15 SP5 5.14.21-150500.53-default  
 Compiler: C/C++: Version 2024.0.2 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2024.0.2 of Intel Fortran Compiler for Linux;  
 Parallel: No  
 Firmware: Version 6.00.34 released Dec-2023 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.



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## Results Table

| Benchmark       | Base   |            |            |            |            |            |            |        | Peak       |            |            |            |            |            |            |            |
|-----------------|--------|------------|------------|------------|------------|------------|------------|--------|------------|------------|------------|------------|------------|------------|------------|------------|
|                 | Copies | Seconds    | Ratio      | Seconds    | Ratio      | Seconds    | Ratio      | Copies | Seconds    | Ratio      | Seconds    | Ratio      | Seconds    | Ratio      | Seconds    | Ratio      |
| 500.perlbench_r | 112    | 510        | 349        | 510        | 350        | <b>510</b> | <b>349</b> | 112    | 462        | 386        | <b>462</b> | <b>386</b> | 462        | 386        | 462        | 386        |
| 502.gcc_r       | 112    | 396        | 400        | 396        | 400        | <b>396</b> | <b>400</b> | 112    | 335        | 474        | <b>335</b> | <b>473</b> | 335        | 473        | 335        | 473        |
| 505.mcf_r       | 112    | <b>230</b> | <b>787</b> | 230        | 787        | 229        | 790        | 112    | <b>230</b> | <b>787</b> | 230        | 787        | 229        | 790        | 229        | 790        |
| 520.omnetpp_r   | 112    | <b>450</b> | <b>326</b> | 449        | 327        | 450        | 326        | 112    | <b>450</b> | <b>326</b> | 449        | 327        | 450        | 326        | 450        | 326        |
| 523.xalancbmk_r | 112    | <b>183</b> | <b>647</b> | 183        | 648        | 183        | 647        | 112    | <b>183</b> | <b>647</b> | 183        | 648        | 183        | 647        | 183        | 647        |
| 525.x264_r      | 112    | 219        | 897        | 219        | 896        | <b>219</b> | <b>896</b> | 112    | 205        | 954        | <b>205</b> | <b>955</b> | 205        | 955        | 205        | 955        |
| 531.deepsjeng_r | 112    | 390        | 329        | 390        | 329        | <b>390</b> | <b>329</b> | 112    | 390        | 329        | 390        | 329        | 390        | 329        | <b>390</b> | <b>329</b> |
| 541.leela_r     | 112    | 594        | 312        | 593        | 313        | <b>593</b> | <b>313</b> | 112    | 594        | 312        | 593        | 313        | <b>593</b> | <b>313</b> | <b>593</b> | <b>313</b> |
| 548.exchange2_r | 112    | <b>307</b> | <b>955</b> | 307        | 955        | 308        | 953        | 112    | <b>307</b> | <b>955</b> | 307        | 955        | 308        | 953        | 308        | 953        |
| 557.xz_r        | 112    | 529        | 229        | <b>535</b> | <b>226</b> | 536        | 226        | 112    | 529        | 229        | <b>535</b> | <b>226</b> | 536        | 226        | 536        | 226        |

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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"  
MALLOC\_CONF = "retain:true"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM  
memory using Red Hat Enterprise Linux 8.4

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.

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## General Notes (Continued)

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>

## Platform Notes

BIOS Settings:

SNC = Enable SNC2 (2-clusters)  
Power Performance Tuning = BIOS Controls EFB  
ENERGY\_PERF\_BIAS\_CFG mode = Performance

Sysinfo program /home/speccpu/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost.localdomain Thu May 9 10:55:55 2024

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.localdomain 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  
10:55:55 up 19 min, 1 user, load average: 0.00, 0.00, 0.00  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root ttym1 - 10:49 11.00s 0.83s 0.01s /bin/sh  
. /reportable-ic2024.0.2-lin-sapphirerapids-rate-smt-on-20231213.sh

-----  
3. Username

(Continued on next page)



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## Platform Notes (Continued)

From environment variable \$USER: root

```
-----  
4. ulimit -a  
core file size          (blocks, -c) unlimited  
data seg size           (kbytes, -d) unlimited  
scheduling priority     (-e) 0  
file size               (blocks, -f) unlimited  
pending signals          (-i) 4125088  
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) 4125088  
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  
/bin/sh ./reportable-ic2024.0.2-lin-sapphirerapids-rate-smt-on-20231213.sh  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=112 -c  
  ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=56 --define physicalfirst  
  --define invoke_with_interleave --define drop_caches --tune base,peak -o all intrate  
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=112 --configfile  
  ic2024.0.2-lin-sapphirerapids-rate-20231213.cfg --define smt-on --define cores=56 --define physicalfirst  
  --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower  
  --runmode rate --tune base:peak --size reframe intrate --nopreenv --note-preenv --logfile  
  $SPEC/tmp/CPU2017.058/templogs/preenv.intrate.058.0.log --lognum 058.0 --from_runcpu 2  
specperl $SPEC/bin/sysinfo  
$SPEC = /home/specpu  
  
-----  
6. /proc/cpuinfo  
model name      : Intel(R) Xeon(R) Gold 5420+  
vendor_id       : GenuineIntel  
cpu family     : 6  
model          : 143  
stepping        : 8  
microcode       : 0x2b0004d0  
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb  
cpu cores       : 28  
siblings        : 56  
2 physical ids (chips)  
112 processors (hardware threads)  
physical id 0: core ids 0-27  
physical id 1: core ids 0-27  
physical id 0: apicids 0-55  
physical id 1: apicids 128-183  
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for  
virtualized systems. Use the above data carefully.  
  
-----  
7. lscpu
```

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## Platform Notes (Continued)

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): 112
On-line CPU(s) list: 0-111
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Gold 5420+
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
Stepping: 8
CPU max MHz: 4100.0000
CPU min MHz: 800.0000
BogoMIPS: 4000.00
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 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_13 cat_12 cdp_13
      invpcid_single intel_ppin cdp_12 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
      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 split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
      arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku
      ospk waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
      tme avx512_vpocntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
      enqcmd fsrm md_clear serialize tsxlptrk pconfig arch_lbr avx512_fp16
      amx_tile flush_lll arch_capabilities
Virtualization: VT-x
L1d cache: 2.6 MiB (56 instances)
L1i cache: 1.8 MiB (56 instances)
L2 cache: 112 MiB (56 instances)
L3 cache: 105 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-13,56-69
NUMA node1 CPU(s): 14-27,70-83
NUMA node2 CPU(s): 28-41,84-97
NUMA node3 CPU(s): 42-55,98-111
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/swaps 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 async abort: Not affected
```

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## Platform Notes (Continued)

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS  | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d  | 48K      | 2.6M     | 12   | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 1.8M     | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 2M       | 112M     | 16   | Unified     | 2     | 2048  | 1        | 64             |
| L3   | 52.5M    | 105M     | 15   | Unified     | 3     | 57344 | 1        | 64             |

-----  
8. numactl --hardware

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

available: 4 nodes (0-3)

node 0 cpus: 0-13,56-69

node 0 size: 257601 MB

node 0 free: 256815 MB

node 1 cpus: 14-27,70-83

node 1 size: 258006 MB

node 1 free: 257386 MB

node 2 cpus: 28-41,84-97

node 2 size: 258040 MB

node 2 free: 257305 MB

node 3 cpus: 42-55,98-111

node 3 size: 257646 MB

node 3 free: 256860 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: 1056046836 kB

-----  
10. who -r  
run-level 3 May 9 10:36

-----  
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         | ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online apparmor<br>audited cron firewalld getty@ irqbalance issue-generator kbdsettings kdump kdump-early<br>postfix purge-kernels rollback sshd systemd-pstore wicked wickedd-auto4 wickedd-dhcp4<br>wickedd-dhcp6 wickedd-nanny wpa_supplicant  |
| enabled-runtime | systemd-remount-fs  |
| disabled        | boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell dnsmasq ebttables<br>grub2-once haveged haveged-switch-root issue-add-ssh-keys kexec-load lunmask nfs<br>nfs-blkmap rpcbind rpmconfigcheck serial-getty@ systemd-boot-check-no-failures<br>systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned<br>wpa_supplicant@ |
| indirect        | wickedd   |

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

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```
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
root=UUID=8941a345-b7dd-4a3e-98f3-0af9eb97f32e
splash=silent
resume=/dev/disk/by-uuid/06a94d0a-0f9e-4e93-848f-045322d8f16d
mitigations=auto
quiet
security=apparmor
crashkernel=373M,high
crashkernel=72M,low
transparent_hugepage=always
```

```
-----  
14. cpupower frequency-info  
analyzing CPU 0:  
    current policy: frequency should be within 800 MHz and 4.10 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.  
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                 1  
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
```

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## Platform Notes (Continued)

```
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/sda3 xfs 1.5T 79G 1.4T 6% /home

---

21. /sys/devices/virtual/dmi/id  
Vendor: H3C  
Product: H3C UniServer R4900 G6  
Product Family: Rack  
Serial: N/A

---

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:  
1x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800, configured at 4400  
1x Samsung M321R8GA0BB0-CQKEG 64 GB 2 rank 4800, configured at 4400  
14x Samsung M321R8GA0BB0-CQKMG 64 GB 2 rank 4800, configured at 4400

---

23. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: American Megatrends International, LLC.  
BIOS Version: 6.00.34  
BIOS Date: 12/19/2023  
BIOS Revision: 5.31

## Compiler Version Notes

---

```
=====| 502.gcc_r(peak)
```

---

```
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
```

---

```
=====| 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) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
```

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Test Sponsor: New H3C Technologies Co., Ltd.

Hardware Availability: Oct-2023

Tested by: New H3C Technologies Co., Ltd.

Software Availability: Dec-2023

## Compiler Version Notes (Continued)

=====

C | 502.gcc\_r(peak)

-----  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.0.2 Build 20231213  
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=====

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) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213  
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=====

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 2024.0.2 Build 20231213  
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=====

Fortran | 548.exchange2\_r(base, peak)

-----  
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.0.2 Build 20231213  
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## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Base Portability Flags

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

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

New H3C Technologies Co., Ltd.

SPECrate®2017\_int\_base = 464

H3C UniServer R4900 G6 (Intel Xeon Gold 5420+)

SPECrate®2017\_int\_peak = 480

CPU2017 License: 9066

Test Date: May-2024

Test Sponsor: New H3C Technologies Co., Ltd.

Hardware Availability: Oct-2023

Tested by: New H3C Technologies Co., Ltd.

Software Availability: Dec-2023

## Base Portability Flags (Continued)

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 -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc
```

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/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc
```

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 -auto  
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc
```

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Peak Portability Flags

500.perlbench\_r: -DSPEC\_LP64 -DSPEC\_LINUX\_X64  
502.gcc\_r: -D\_FILE\_OFFSET\_BITS=64

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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H3C UniServer R4900 G6 (Intel Xeon Gold 5420+)

SPECrate®2017\_int\_peak = 480

CPU2017 License: 9066

Test Date: May-2024

Test Sponsor: New H3C Technologies Co., Ltd.

Hardware Availability: Oct-2023

Tested by: New H3C Technologies Co., Ltd.

Software Availability: Dec-2023

## Peak Portability Flags (Continued)

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: -w -std=c11 -m64 -Wl,-z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse  
-funroll-loops -qopt-mem-layout-trans=4  
-fno-strict-overflow  
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc  
  
502.gcc\_r: -m32 -L/opt/intel/oneapi/compiler/2024.0/lib32 -std=gnu89  
-Wl,-z,muldefs -fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)  
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse  
-funroll-loops -qopt-mem-layout-trans=4  
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf\_r: basepeak = yes

525.x264\_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -fno-alias  
-L/opt/intel/oneapi/compiler/2024.0/lib -lqkmalloc

557.xz\_r: basepeak = yes

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

523.xalancbmk\_r: basepeak = yes

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# SPEC CPU®2017 Integer Rate Result

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## Peak Optimization Flags (Continued)

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

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

[http://www.spec.org/cpu2017/flags/New\\_H3C-Platform-Settings-V1.0-SPR-RevD.html](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevD.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-V1.0-SPR-RevD.xml](http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevD.xml)

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