SPEC CPU®2017 Integer Rate Result

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New H3C Technologies Co., Ltd.

H3C UniServer R4700 G6 (Intel Xeon Gold 6430)

$SPECrate^{®}2017\_int\_base = 496$

$SPECrate^{®}2017\_int\_peak = 514$

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

Test Date: Nov-2023
Hardware Availability: Oct-2023
Software Availability: Dec-2022

Benchmark	Copies	base	peak
500.perlbench_r	128	368	406
502.gcc_r	128	418	497
505.mcf_r	128	794	
520.omnetpp_r	128	343	
523.xalancbmk_r	128	918	
525.x264_r	128	958	1030
531.deepsjeng_r	128	355	
541.leela_r	128	338	
548.exchange2_r	128	849	
557.xz_r	128	243	

——— SPECrate®2017_int_base (496)   ------- SPECrate®2017_int_peak (514)

Hardware

CPU Name: Intel Xeon Gold 6430
 Max MHz: 3400
 Nominal: 2100
Enabled: 64 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: 60 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R, running at 4400)
Storage: 1 x 480 GB SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.0 (Plow) 5.14.0-70.22.1.el9_0.x86_64
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 5.29 released Feb-2023 BIOS
File System: xfs
System State: Run level 5 (graphical)
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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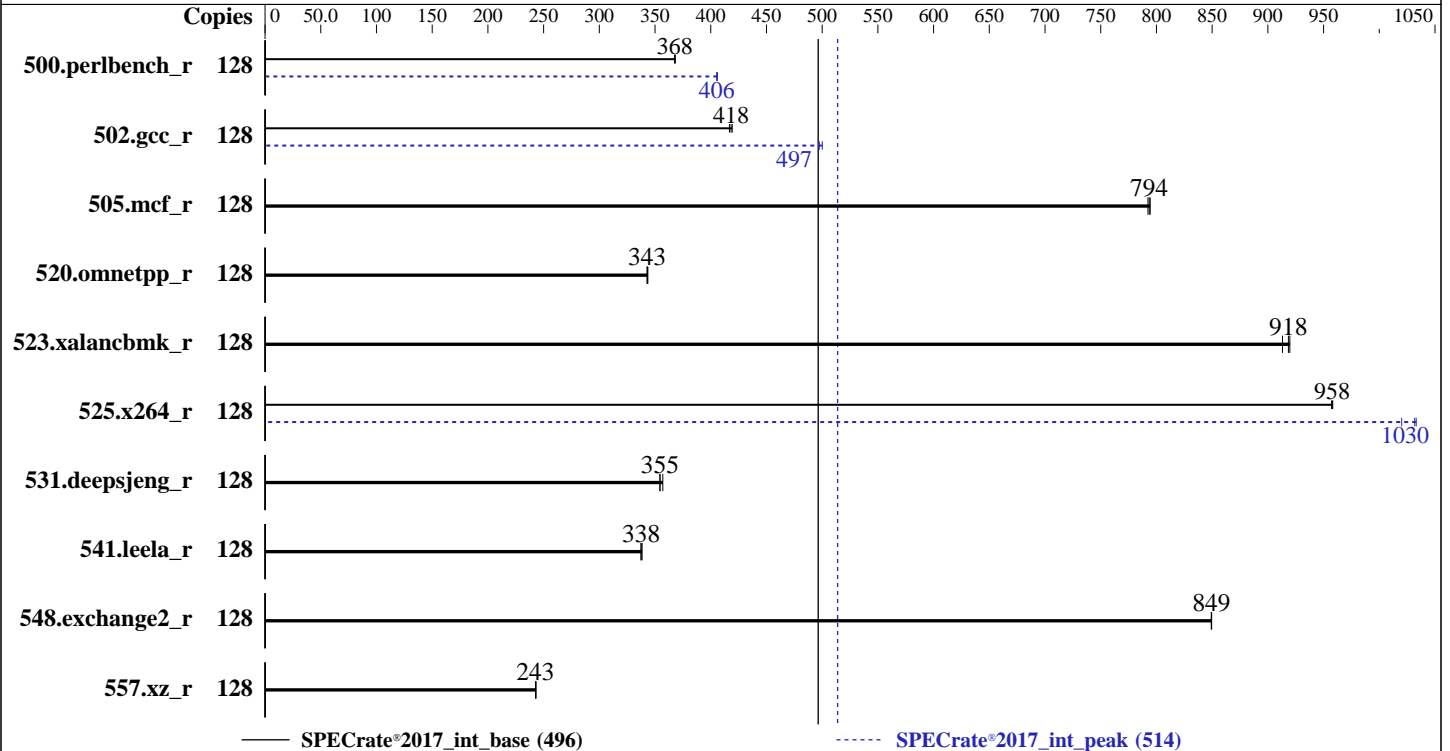|	
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	554	368	**554**	**368**	555	367	128	503	406	**502**	**406**	502	406
502.gcc_r	128	**433**	**418**	432	419	435	417	128	**364**	**497**	365	497	362	500
505.mcf_r	128	260	794	**261**	**794**	261	792	128	260	794	**261**	**794**	261	792
520.omnetpp_r	128	490	343	**490**	**343**	489	344	128	490	343	**490**	**343**	489	344
523.xalancbmk_r	128	**147**	**918**	147	920	148	913	128	**147**	**918**	147	920	148	913
525.x264_r	128	234	958	**234**	**958**	234	957	128	220	1020	217	1030	**217**	**1030**
531.deepsjeng_r	128	**414**	**355**	411	357	414	354	128	**414**	**355**	411	357	414	354
541.leela_r	128	628	337	**628**	**338**	626	338	128	628	337	**628**	**338**	626	338
548.exchange2_r	128	395	849	**395**	**849**	395	850	128	395	849	**395**	**849**	395	850
557.xz_r	128	568	243	**569**	**243**	570	243	128	568	243	**569**	**243**	570	243
SPECrate®2017_int_base =	**496**													
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

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"
```

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

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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.
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:
Set SNC to Enable SNC4 (4-clusters)
Set Power Performance Tuning to BIOS Controls EFB
Set ENERGY_PERF_BIAS_CFG mode to Performance

Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Sat Nov  4 07:35:54 2023

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 250 (250-6.el9_0)
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
----------------------------------------------------------
```

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Platform Notes (Continued)

```
     ----------------------------------------------------------
     1. uname -a
       Linux localhost.localdomain 5.14.0-70.22.1.el9_0.x86_64 #1 SMP PREEMPT Tue Aug 2 10:02:12 EDT 2022 x86_64
       x86_64 x86_64 GNU/Linux

     ----------------------------------------------------------
     2. w
        07:35:54 up 7 min,  2 users,  load average: 0.16, 0.17, 0.08
       USER     TTY          LOGIN@   IDLE   JCPU   PCPU WHAT
       aaa      :1           07:32   ?xdm?   3:04   0.00s /usr/libexec/gdm-x-session --register-session --run-script
       gnome-session
       root     pts/0        07:32    1:54   0.17s  0.17s -bash

     ----------------------------------------------------------
     3. Username
       From environment variable $USER:  aaa

     ----------------------------------------------------------
     4. ulimit -a
       real-time non-blocking time  (microseconds, -R) unlimited
       core file size              (blocks, -c) 0
       data seg size               (kbytes, -d) unlimited
       scheduling priority              (-e) 0
       file size                   (blocks, -f) unlimited
       pending signals                  (-i) 2060227
       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) 2060227
       virtual memory              (kbytes, -v) unlimited
       file locks                       (-x) unlimited

     ----------------------------------------------------------
     5. sysinfo process ancestry
      /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
      /usr/lib/systemd/systemd --user
      /usr/libexec/gnome-terminal-server
      bash
      su
      bash
      sh reportable-ic2023.0-lin-core-avx512-rate-smt-on-20221201.sh
      runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
        ic2023.0-lin-core-avx512-rate-20221201.cfg --define smt-on --define cores=64 --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=128 --configfile
        ic2023.0-lin-core-avx512-rate-20221201.cfg --define smt-on --define cores=64 --define physicalfirst
        --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower
        --runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
        $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
      specperl $SPEC/bin/sysinfo
      $SPEC = /home/speccpu

     ----------------------------------------------------------
     6. /proc/cpuinfo
         model name       : Intel(R) Xeon(R) Gold 6430
```

(Continued on next page)

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Platform Notes (Continued)

```
      vendor_id       : GenuineIntel
      cpu family      : 6
      model           : 143
      stepping        : 8
      microcode       : 0x2b000181
      bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
      cpu cores       : 32
      siblings        : 64
      2 physical ids (chips)
      128 processors (hardware threads)
      physical id 0: core ids 0-31
      physical id 1: core ids 0-31
      physical id 0: apicids 0-63
      physical id 1: apicids 128-191
   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):                    128
     On-line CPU(s) list:       0-127
     Vendor ID:                 GenuineIntel
     BIOS Vendor ID:            Intel(R) Corporation
     Model name:                Intel(R) Xeon(R) Gold 6430
     BIOS Model name:           Intel(R) Xeon(R) Gold 6430
     CPU family:                6
     Model:                     143
     Thread(s) per core:        2
     Core(s) per socket:        32
     Socket(s):                 2
     Stepping:                  8
     CPU max MHz:               3400.0000
     CPU min MHz:               800.0000
     BogoMIPS:                  4200.00
     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 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 intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced
                                tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2
                                smep bmi2 erms invpcid 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 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
                                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:                 3 MiB (64 instances)
```

(Continued on next page)

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Platform Notes (Continued)

```
  L1i cache:                    2 MiB (64 instances)
  L2 cache:                     128 MiB (64 instances)
  L3 cache:                     120 MiB (2 instances)
  NUMA node(s):                 8
  NUMA node0 CPU(s):            0-7,64-71
  NUMA node1 CPU(s):            8-15,72-79
  NUMA node2 CPU(s):            16-23,80-87
  NUMA node3 CPU(s):            24-31,88-95
  NUMA node4 CPU(s):            32-39,96-103
  NUMA node5 CPU(s):            40-47,104-111
  NUMA node6 CPU(s):            48-55,112-119
  NUMA node7 CPU(s):            56-63,120-127
  Vulnerability Itlb multihit:  Not affected
  Vulnerability L1tf:           Not affected
  Vulnerability Mds:            Not affected
  Vulnerability Meltdown:       Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:     Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:     Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
  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       3M  12 Data            1    64       1              64
    L1i      32K       2M   8 Instruction     1    64       1              64
    L2        2M     128M  16 Unified         2  2048       1              64
    L3       60M     120M  15 Unified         3 65536       1              64

-----------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0-7,64-71
  node 0 size: 63606 MB
  node 0 free: 62371 MB
  node 1 cpus: 8-15,72-79
  node 1 size: 64508 MB
  node 1 free: 64190 MB
  node 2 cpus: 16-23,80-87
  node 2 size: 64508 MB
  node 2 free: 64267 MB
  node 3 cpus: 24-31,88-95
  node 3 size: 64508 MB
  node 3 free: 64258 MB
  node 4 cpus: 32-39,96-103
  node 4 size: 64508 MB
  node 4 free: 64117 MB
  node 5 cpus: 40-47,104-111
  node 5 size: 64508 MB
  node 5 free: 63523 MB
  node 6 cpus: 48-55,112-119
  node 6 size: 64508 MB
  node 6 free: 63857 MB
  node 7 cpus: 56-63,120-127
  node 7 size: 64461 MB
  node 7 free: 64187 MB
  node distances:
  node   0   1   2   3   4   5   6   7
    0:  10  12  12  12  21  21  21  21
```

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Platform Notes (Continued)

```
    1:  12  10  12  12  21  21  21  21
    2:  12  12  10  12  21  21  21  21
    3:  12  12  12  10  21  21  21  21
    4:  21  21  21  21  10  12  12  12
    5:  21  21  21  21  12  10  12  12
    6:  21  21  21  21  12  12  10  12
    7:  21  21  21  21  12  12  12  10


  -----------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       527481708 kB


  -----------------------------------------------------------
  10. who -r
     run-level 5 Nov 4 07:29


  -----------------------------------------------------------
  11. Systemd service manager version: systemd 250 (250-6.el9_0)
     Default Target  Status
     graphical       running


  -----------------------------------------------------------
  12. Services, from systemctl list-unit-files
     STATE             UNIT FILES
     enabled           ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                       accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker gdm
                       getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors
                       low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
                       nvmefc-boot-connections ostree-remount pmcd pmie pmlogger power-profiles-daemon
                       qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon selinux-autorelabel-mark smartd
                       sshd sssd switcheroo-control sysstat systemd-network-generator tuned udisks2 upower
                       vgauthd virtqemud vmtoolsd
     enabled-runtime   systemd-remount-fs
     disabled          arp-ethers autofs blk-availability brltty canberra-system-bootup canberra-system-shutdown
                       canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
                       dbus-daemon debug-shell dnsmasq dovecot fancontrol fcoe firewalld grafana-server gssproxy
                       httpd httpd@ ibacm iprdump iprinit iprupdate ipsec iscsid iscsiuio kpatch kvm_stat ledmon
                       libvirt-guests libvirtd lldpad man-db-restart-cache-update named named-chroot nfs-blkmap
                       nfs-server nftables nmb numad nvmf-autoconnect pmfind pmie_farm pmlogger_farm pmproxy
                       podman podman-auto-update podman-restart postfix powertop psacct ras-mc-ctl rasdaemon
                       rdisc rhcd rhsm rhsm-facts rpmdb-rebuild rrdcached saslauthd serial-getty@ smb snmpd
                       snmptrapd spamassassin speech-dispatcherd srp_daemon srp_daemon_port@ sshd-keygen@
                       systemd-boot-check-no-failures systemd-nspawn@ systemd-pstore systemd-sysext target
                       targetclid tog-pegasus trace-cmd virtinterfaced virtnetworkd virtnodedevd virtnwfilterd
                       virtproxyd virtsecretd virtstoraged vsftpd wpa_supplicant
     indirect          pcscd spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
                       virtlockd virtlogd vsftpd@

  -----------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.22.1.el9_0.x86_64
     root=/dev/mapper/rhel-root
     ro
     crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
     resume=/dev/mapper/rhel-swap
     rd.lvm.lv=rhel/root
     rd.lvm.lv=rhel/swap
     rhgb
     quiet
```

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Platform Notes (Continued)

```
        ----------------------------------------------------------
        14. cpupower frequency-info
          analyzing CPU 0:
            current policy: frequency should be within 800 MHz and 3.40 GHz.
                            The governor "performance" may decide which speed to use
                            within this range.
            boost state support:
              Supported: yes
              Active: yes


        ----------------------------------------------------------
        15. tuned-adm active
          Current active 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                  40
          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                   10
          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     Red Hat Enterprise Linux 9.0 (Plow)
          redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
          system-release Red Hat Enterprise Linux release 9.0 (Plow)
```

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$SPECrate^{®}2017\_int\_base = 496$

$SPECrate^{®}2017\_int\_peak = 514$

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

Test Date: Nov-2023
Hardware Availability: Oct-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
             ------------------------------------------------------------
 20. Disk information
 SPEC is set to: /home/speccpu
   Filesystem            Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs   372G   11G  362G   3% /home

             ------------------------------------------------------------
 21. /sys/devices/virtual/dmi/id
     Vendor:         New H3C Technologies Co., Ltd.
     Product:        H3C UniServer R4700 G6
     Product Family: Rack
     Serial:         210235A4FY5233C00004

             ------------------------------------------------------------
 22. dmidecode
   Additional information from dmidecode 3.3 follows.  WARNING: Use caution when you interpret this section.
   The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
   "DMTF SMBIOS" standard.
   Memory:
     15x Micron MTC20F2085S1RC48BA1 32 GB 2 rank 4800, configured at 4400
     1x Samsung M321R4GA3BB6-CQKVG 32 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:     6.00.09
   BIOS Date:        02/13/2023
   BIOS Revision:    5.29
```

Compiler Version Notes

```
==============================================================================
C      | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C      | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
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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)
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

New H3C Technologies Co., Ltd.

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Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------


================================================================================
C++    | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
       | 541.leela_r(base, peak)
--------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------


================================================================================
Fortran | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------
```

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`
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`

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CPU2017 License: 9066	**Test Date:** Nov-2023
Test Sponsor: New H3C Technologies Co., Ltd.	**Hardware Availability:** Oct-2023
Tested by: New H3C Technologies Co., Ltd.	**Software Availability:** Dec-2022

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-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`
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`

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SPEC CPU®2017 Integer Rate Result

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New H3C Technologies Co., Ltd.

H3C UniServer R4700 G6 (Intel Xeon Gold 6430)

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CPU2017 License: 9066   **Test Date:** Nov-2023
Test Sponsor: New H3C Technologies Co., Ltd.   **Hardware Availability:** Oct-2023
Tested by: New H3C Technologies Co., Ltd.   **Software Availability:** Dec-2022

Peak Portability Flags (Continued)

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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin`
`-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 -xCORE-AVX512 -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-alias`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

531.deepsjeng_r: basepeak = yes

541.leela_r: basepeak = yes

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Peak Optimization Flags (Continued)

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-ic2023-official-linux64_revB.html
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevC.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64_revB.xml
http://www.spec.org/cpu2017/flags/New_H3C-Platform-Settings-V1.0-SPR-RevC.xml

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

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