SPEC CPU®2017 Integer Rate Result

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New H3C Technologies Co., Ltd.

H3C UniServer R6700 G6 (Intel Xeon Platinum 8444H)

$SPECrate^{®}2017\_int\_base = 655$

$SPECrate^{®}2017\_int\_peak = 671$

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

Test Date: Aug-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Copies		Value (base)	Value (peak)
500.perlbench_r	128	489	534
502.gcc_r	128	603	670
505.mcf_r	128	1050	
520.omnetpp_r	128	409	
523.xalancbmk_r	128	1320	
525.x264_r	128	1230	1300
531.deepsjeng_r	128	445	
541.leela_r	128	420	
548.exchange2_r	128	1280	
557.xz_r	128	296	

—— SPECrate®2017_int_base (655)   ------ SPECrate®2017_int_peak (671)

Hardware

CPU Name: Intel Xeon Platinum 8444H
 Max MHz: 4000
 Nominal: 2900
Enabled: 64 cores, 4 chips, 2 threads/core
Orderable: 1,2,3,4 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 45 MB I+D on chip per chip
 Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 7.68 TB NVME 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 Jun-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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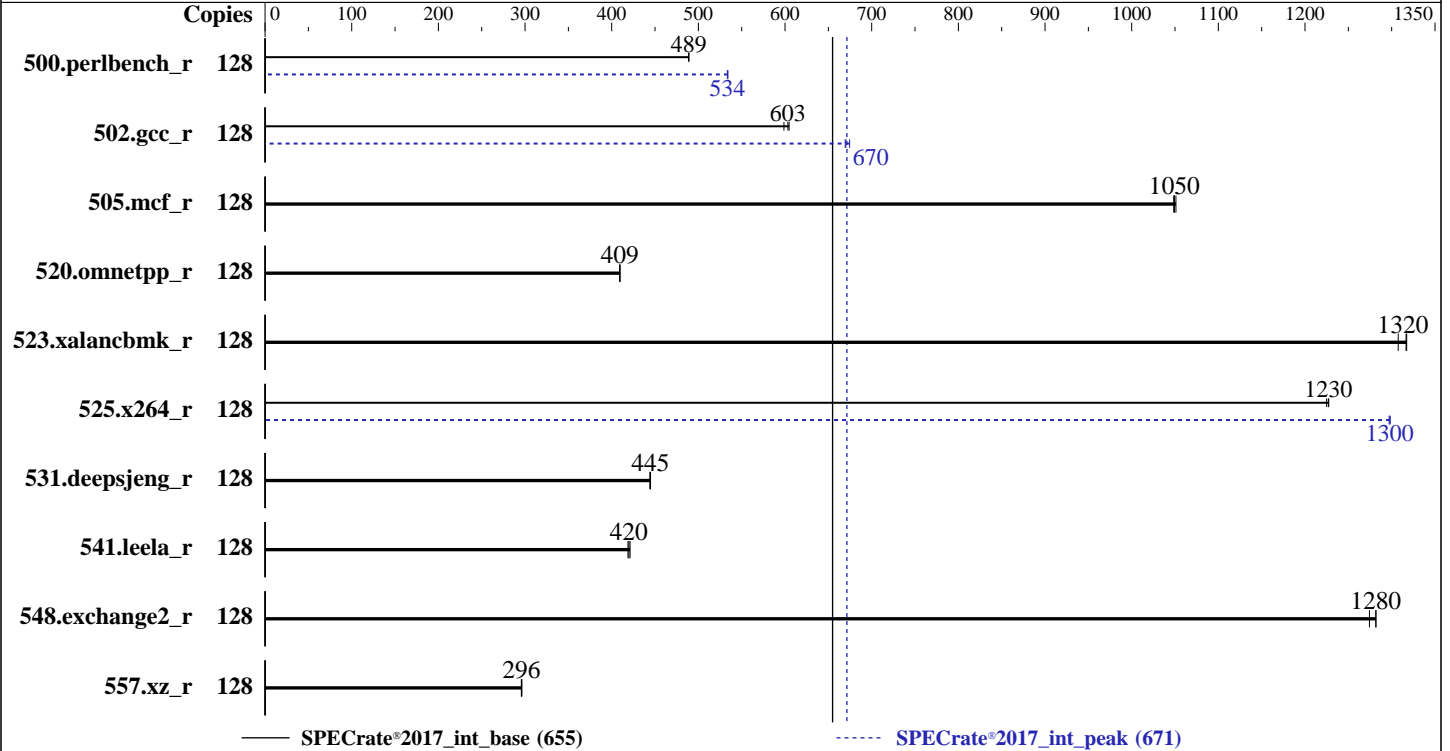**CPU2017 License:** 9066   **Test Date:** Aug-2023
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Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	417	489	**417**	**489**	417	489	128	382	534	**382**	**534**	382	533
502.gcc_r	128	303	599	300	605	**300**	**603**	128	**270**	**670**	269	675	271	669
505.mcf_r	128	197	1050	**197**	**1050**	197	1050	128	197	1050	**197**	**1050**	197	1050
520.omnetpp_r	128	410	409	**410**	**409**	410	410	128	410	409	**410**	**409**	410	410
523.xalancbmk_r	128	**103**	**1320**	103	1320	103	1310	128	**103**	**1320**	103	1320	103	1310
525.x264_r	128	183	1220	**183**	**1230**	183	1230	128	173	1300	**173**	**1300**	173	1300
531.deepsjeng_r	128	330	445	**330**	**445**	330	444	128	330	445	**330**	**445**	330	444
541.leela_r	128	506	419	**505**	**420**	503	421	128	506	419	**505**	**420**	503	421
548.exchange2_r	128	**262**	**1280**	262	1280	263	1270	128	**262**	**1280**	262	1280	263	1270
557.xz_r	128	466	296	**467**	**296**	467	296	128	466	296	**467**	**296**	467	296

SPECrate®2017_int_base =   **655**

SPECrate®2017_int_peak =   **671**

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"
```

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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 Patrol Scrub to Disabled
Set Power Performance Tuning to BIOS Controls EFB
Set ENERGY_PERF_BIAS_CFG mode to Performance
Set XPT Prefetch to Enabled
Set FB Thread Slicing to Enabled

Sysinfo program /home/speccpu/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Wed Aug 23 09:04:06 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. Systemd service manager version: systemd 250 (250-6.el9_0)
11. Failed units, from systemctl list-units --state=failed
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
```

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Platform Notes (Continued)

```
  23. BIOS
  ------------------------------------------------------------

  ------------------------------------------------------------
  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
     09:04:06 up 15:54,  2 users,  load average: 0.02, 0.03, 0.00
    USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1       Tue17   14.00s  0.91s  0.03s -bash
    root     pts/0      09:02    1:50   0.02s  0.02s -bash

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

  ------------------------------------------------------------
  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) 4124438
    max locked memory           (kbytes, -l) unlimited
    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) 4124438
    virtual memory              (kbytes, -v) unlimited
    file locks                        (-x) unlimited

  ------------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd rhgb --switched-root --system --deserialize 31
   login -- root
   -bash
   -bash
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
     ic2023.0-lin-sapphirerapids-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-sapphirerapids-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/CPU2017.024/templogs/preenv.intrate.024.0.log --lognum 024.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
  $SPEC = /home/speccpu

  ------------------------------------------------------------
  6. /proc/cpuinfo
      model name       : Intel(R) Xeon(R) Platinum 8444H
      vendor_id        : GenuineIntel
```

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Platform Notes (Continued)

```
     cpu family     : 6
     model          : 143
     stepping       : 8
     microcode      : 0x2b000181
     bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores      : 16
     siblings       : 32
     4 physical ids (chips)
     128 processors (hardware threads)
     physical id 0: core ids 0-15
     physical id 1: core ids 0-15
     physical id 2: core ids 0-15
     physical id 3: core ids 0-15
     physical id 0: apicids 0-31
     physical id 1: apicids 128-159
     physical id 2: apicids 256-287
     physical id 3: apicids 384-415
   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) Platinum 8444H
     BIOS Model name:              Intel(R) Xeon(R) Platinum 8444H
     CPU family:                   6
     Model:                        143
     Thread(s) per core:           2
     Core(s) per socket:           16
     Socket(s):                    4
     Stepping:                     8
     CPU max MHz:                  4000.0000
     CPU min MHz:                  800.0000
     BogoMIPS:                     5800.00
     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
```

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Platform Notes (Continued)

```
                             amx_tile flush_l1d arch_capabilities
  Virtualization:            VT-x
  L1d cache:                 3 MiB (64 instances)
  L1i cache:                 2 MiB (64 instances)
  L2 cache:                  128 MiB (64 instances)
  L3 cache:                  180 MiB (4 instances)
  NUMA node(s):              16
  NUMA node0 CPU(s):         0-3,64-67
  NUMA node1 CPU(s):         4-7,68-71
  NUMA node2 CPU(s):         8-11,72-75
  NUMA node3 CPU(s):         12-15,76-79
  NUMA node4 CPU(s):         16-19,80-83
  NUMA node5 CPU(s):         20-23,84-87
  NUMA node6 CPU(s):         24-27,88-91
  NUMA node7 CPU(s):         28-31,92-95
  NUMA node8 CPU(s):         32-35,96-99
  NUMA node9 CPU(s):         36-39,100-103
  NUMA node10 CPU(s):        40-43,104-107
  NUMA node11 CPU(s):        44-47,108-111
  NUMA node12 CPU(s):        48-51,112-115
  NUMA node13 CPU(s):        52-55,116-119
  NUMA node14 CPU(s):        56-59,120-123
  NUMA node15 CPU(s):        60-63,124-127
  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        45M     180M  15 Unified          3 49152       1              64

    -----------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 16 nodes (0-15)
  node 0 cpus: 0-3,64-67
  node 0 size: 63566 MB
  node 0 free: 58506 MB
  node 1 cpus: 4-7,68-71
  node 1 size: 64510 MB
  node 1 free: 61996 MB
  node 2 cpus: 8-11,72-75
  node 2 size: 64510 MB
  node 2 free: 62023 MB
  node 3 cpus: 12-15,76-79
  node 3 size: 64510 MB
  node 3 free: 62033 MB
  node 4 cpus: 16-19,80-83
  node 4 size: 64510 MB
  node 4 free: 61974 MB
  node 5 cpus: 20-23,84-87
```

(Continued on next page)

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Platform Notes (Continued)

```
   node 5 size: 64510 MB
   node 5 free: 62002 MB
   node 6 cpus: 24-27,88-91
   node 6 size: 64510 MB
   node 6 free: 62027 MB
   node 7 cpus: 28-31,92-95
   node 7 size: 64510 MB
   node 7 free: 61997 MB
   node 8 cpus: 32-35,96-99
   node 8 size: 64510 MB
   node 8 free: 62020 MB
   node 9 cpus: 36-39,100-103
   node 9 size: 64510 MB
   node 9 free: 61517 MB
   node 10 cpus: 40-43,104-107
   node 10 size: 64473 MB
   node 10 free: 61988 MB
   node 11 cpus: 44-47,108-111
   node 11 size: 64510 MB
   node 11 free: 62017 MB
   node 12 cpus: 48-51,112-115
   node 12 size: 64510 MB
   node 12 free: 61939 MB
   node 13 cpus: 52-55,116-119
   node 13 size: 64510 MB
   node 13 free: 61791 MB
   node 14 cpus: 56-59,120-123
   node 14 size: 64510 MB
   node 14 free: 61948 MB
   node 15 cpus: 60-63,124-127
   node 15 size: 64499 MB
   node 15 free: 61819 MB
   node distances:
   node   0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15
     0:  10   12   12   12   21   21   21   21   21   21   21   21   21   21   21   21
     1:  12   10   12   12   21   21   21   21   21   21   21   21   21   21   21   21
     2:  12   12   10   12   21   21   21   21   21   21   21   21   21   21   21   21
     3:  12   12   12   10   21   21   21   21   21   21   21   21   21   21   21   21
     4:  21   21   21   21   10   12   12   12   21   21   21   21   21   21   21   21
     5:  21   21   21   21   12   10   12   12   21   21   21   21   21   21   21   21
     6:  21   21   21   21   12   12   10   12   21   21   21   21   21   21   21   21
     7:  21   21   21   21   12   12   12   10   21   21   21   21   21   21   21   21
     8:  21   21   21   21   21   21   21   21   10   12   12   12   21   21   21   21
     9:  21   21   21   21   21   21   21   21   12   10   12   12   21   21   21   21
    10:  21   21   21   21   21   21   21   21   12   12   10   12   21   21   21   21
    11:  21   21   21   21   21   21   21   21   12   12   12   10   21   21   21   21
    12:  21   21   21   21   21   21   21   21   21   21   21   21   10   12   12   12
    13:  21   21   21   21   21   21   21   21   21   21   21   21   12   10   12   12
    14:  21   21   21   21   21   21   21   21   21   21   21   21   12   12   10   12
    15:  21   21   21   21   21   21   21   21   21   21   21   21   12   12   12   10


  ------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       1055919336 kB


  'who -r' did not return a run level


  ------------------------------------------------------------
  10. Systemd service manager version: systemd 250 (250-6.el9_0)
    Default Target  Status
```

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Platform Notes (Continued)

```
  multi-user      starting


   ----------------------------------------------------------
 11. Failed units, from systemctl list-units --state=failed
    UNIT                   LOAD   ACTIVE SUB    DESCRIPTION
  * pmlogger_daily.service loaded failed failed Process archive logs


   ----------------------------------------------------------
 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 openibd ostree-remount pmcd pmie pmlogger power-profiles-daemon
                      qemu-guest-agent rhsmcertd rpcbind rshim rsyslog rtkit-daemon selinux-autorelabel-mark
                      sep5 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
    bad               mst
    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


   ----------------------------------------------------------
 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
    Current active profile: throughput-performance
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

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New H3C Technologies Co., Ltd.

H3C UniServer R6700 G6 (Intel Xeon Platinum 8444H)

SPECrate®2017_int_base = 655
SPECrate®2017_int_peak = 671

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

Test Date: Aug-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
  ----------------------------------------------------------
  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)


  ----------------------------------------------------------
  20. Disk information
  SPEC is set to: /home/speccpu
    Filesystem            Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs   7.0T  276G  6.7T   4% /home


  ----------------------------------------------------------
  21. /sys/devices/virtual/dmi/id
      Product Family: Rack


  ----------------------------------------------------------
  22. dmidecode
    Additional information from dmidecode 3.3 follows.  WARNING: Use caution when you interpret this section.
```

(Continued on next page)

New H3C Technologies Co., Ltd.

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Platform Notes (Continued)

```
   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:
      30x Micron MTC20F2085S1RC48BA1 32 GB 2 rank 4800
      1x Samsung M321R4GA3BB6-CQKMG 32 GB 2 rank 4800
      1x Samsung M321R4GA3BB6-CQKVG 32 GB 2 rank 4800


  ------------------------------------------------------------
 23. BIOS
 (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       American Megatrends International, LLC.
   BIOS Version:      6.00.23
   BIOS Date:         06/20/2023
   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)
----------------------------------------------------------------------------------------------
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
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----------------------------------------------------------------------------------------------


==============================================================================================
Fortran | 548.exchange2_r(base, peak)
```

(Continued on next page)

New H3C Technologies Co., Ltd.

SPECrate®2017_int_base = 655

H3C UniServer R6700 G6 (Intel Xeon Platinum 8444H)

SPECrate®2017_int_peak = 671

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Test Date: Aug-2023
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Software Availability: Dec-2022

Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------------
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`

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

(Continued on next page)

New H3C Technologies Co., Ltd.

H3C UniServer R6700 G6 (Intel Xeon Platinum 8444H)

SPECrate®2017_int_base = 655

SPECrate®2017_int_peak = 671

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

Base Optimization Flags (Continued)

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/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`
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)

(Continued on next page)

New H3C Technologies Co., Ltd.

H3C UniServer R6700 G6 (Intel Xeon Platinum 8444H)

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CPU2017 License: 9066
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Software Availability: Dec-2022

Peak Optimization Flags (Continued)

500.perlbench_r (continued):
```
-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 -xsapphirerapids -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

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

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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