SPEC CPU®2017 Integer Rate Result

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Inspur Electronic Information Industry Co., Ltd.

NF5280M7 (Intel Xeon Platinum 8468V)

$SPECrate^{®}2017\_int\_base = 848$

$SPECrate^{®}2017\_int\_peak = 876$
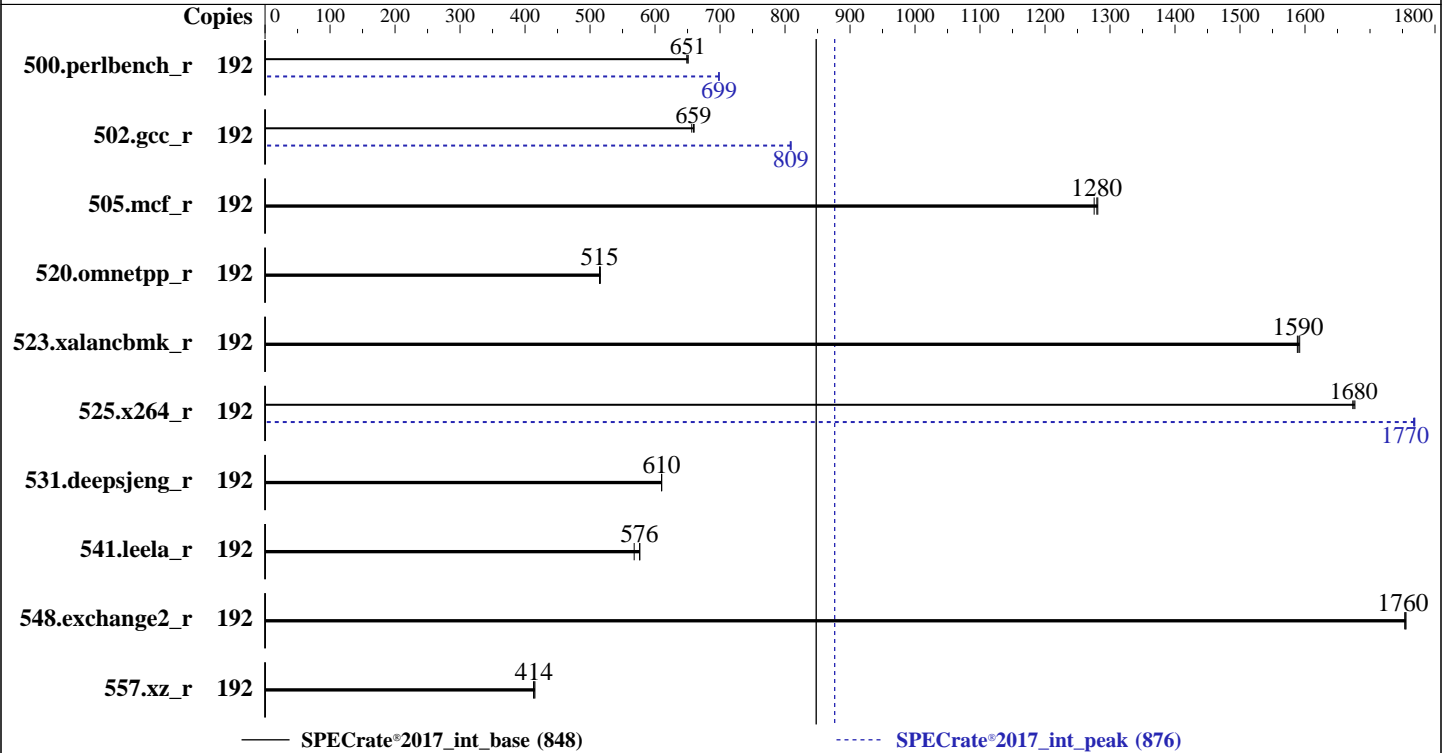
CPU2017 License: 3358

Test Sponsor: Inspur Electronic Information Industry Co., Ltd.

Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Jun-2023

Hardware Availability: Apr-2023

Software Availability: Dec-2022

Benchmark	Copies	base	peak
500.perlbench_r	192	651	699
502.gcc_r	192	659	809
505.mcf_r	192	1280	
520.omnetpp_r	192	515	
523.xalancbmk_r	192	1590	
525.x264_r	192	1680	1770
531.deepsjeng_r	192	610	
541.leela_r	192	576	
548.exchange2_r	192	1760	
557.xz_r	192	414	

SPECrate®2017_int_base (848)   SPECrate®2017_int_peak (876)

Hardware

CPU Name: Intel Xeon Platinum 8468V
Max MHz: 3800
Nominal: 2400
Enabled: 96 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: 97.5 MB I+D on chip per chip
  Other: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 1 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 03.01.00 released Dec-2022
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 Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
500.perlbench_r	192	470	651	**470**	**651**	471	649	192	438	698	438	699	**438**	**699**
502.gcc_r	192	414	656	412	660	**412**	**659**	192	336	809	**336**	**809**	336	808
505.mcf_r	192	243	1280	**242**	**1280**	242	1280	192	243	1280	**242**	**1280**	242	1280
520.omnetpp_r	192	**489**	**515**	489	515	488	516	192	**489**	**515**	489	515	488	516
523.xalancbmk_r	192	127	1590	**128**	**1590**	128	1590	192	127	1590	**128**	**1590**	128	1590
525.x264_r	192	200	1680	**201**	**1680**	201	1670	192	190	1770	190	1770	**190**	**1770**
531.deepsjeng_r	192	361	610	**361**	**610**	361	610	192	361	610	**361**	**610**	361	610
541.leela_r	192	560	568	551	577	**552**	**576**	192	560	568	551	577	**552**	**576**
548.exchange2_r	192	287	1760	**287**	**1760**	287	1750	192	287	1760	**287**	**1760**	287	1750
557.xz_r	192	499	415	**501**	**414**	502	413	192	499	415	**501**	**414**	502	413

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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/CPU2017/lib/intel64:/home/CPU2017/lib/ia32:/home/CPU2017/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 configuration:
ENERGY_PERF_BIAS_CFG mode set to Performance
Hardware Prefetch set to Disable
VT Support set to Disable
Sub NUMA Cluster (SNC) set to SNC4

Sysinfo program /home/CPU2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Thu Jun 29 14:20:23 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
```

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Platform Notes (Continued)

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

   ------------------------------------------------------------
1. uname -a
   Linux localhost 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
    14:20:23 up 0 min,  1 user,  load average: 0.67, 0.22, 0.08
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       14:20    7.00s  0.90s  0.01s sh
   reportable-ic2023.0-lin-sapphirerapids-rate-smt-on-20221201.sh

   ------------------------------------------------------------
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) 2062101
   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) 2062101
   virtual memory              (kbytes, -v) unlimited
   file locks                          (-x) unlimited

   ------------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 30
 login -- root
 -bash
 sh reportable-ic2023.0-lin-sapphirerapids-rate-smt-on-20221201.sh
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=192 -c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --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=192 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=96 --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/CPU2017

   ------------------------------------------------------------
6. /proc/cpuinfo
    model name       : Intel(R) Xeon(R) Platinum 8468V
    vendor_id        : GenuineIntel
```

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Platform Notes (Continued)

```
      cpu family     : 6
      model          : 143
      stepping       : 6
      microcode      : 0x2b000130
      bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs
      cpu cores      : 48
      siblings       : 96
      2 physical ids (chips)
      192 processors (hardware threads)
      physical id 0: core ids 0-47
      physical id 1: core ids 0-47
      physical id 0: apicids 0-95
      physical id 1: apicids 128-223
    Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
    virtualized systems.  Use the above data carefully.


    -----------------------------------------------------------
    7. lscpu

    From lscpu from util-linux 2.37.4:
      Architecture:            x86_64
      CPU op-mode(s):          32-bit, 64-bit
      Address sizes:           46 bits physical, 57 bits virtual
      Byte Order:              Little Endian
      CPU(s):                  192
      On-line CPU(s) list:     0-191
      Vendor ID:               GenuineIntel
      BIOS Vendor ID:          Intel(R) Corporation
      Model name:              Intel(R) Xeon(R) Platinum 8468V
      BIOS Model name:         Intel(R) Xeon(R) Platinum 8468V
      CPU family:              6
      Model:                   143
      Thread(s) per core:      2
      Core(s) per socket:      48
      Socket(s):               2
      Stepping:                6
      CPU max MHz:             3800.0000
      CPU min MHz:             800.0000
      BogoMIPS:                4800.00
      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 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 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
      L1d cache:               4.5 MiB (96 instances)
      L1i cache:               3 MiB (96 instances)
      L2 cache:                192 MiB (96 instances)
      L3 cache:                195 MiB (2 instances)
```

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Platform Notes (Continued)

```
   NUMA node(s):                8
   NUMA node0 CPU(s):           0-11,96-107
   NUMA node1 CPU(s):           12-23,108-119
   NUMA node2 CPU(s):           24-35,120-131
   NUMA node3 CPU(s):           36-47,132-143
   NUMA node4 CPU(s):           48-59,144-155
   NUMA node5 CPU(s):           60-71,156-167
   NUMA node6 CPU(s):           72-83,168-179
   NUMA node7 CPU(s):           84-95,180-191
   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     4.5M   12 Data            1      64       1             64
      L1i      32K       3M    8 Instruction     1      64       1             64
      L2        2M     192M   16 Unified         2    2048       1             64
      L3     97.5M     195M   15 Unified         3  106496       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: 0-11,96-107
    node 0 size: 64073 MB
    node 0 free: 63771 MB
    node 1 cpus: 12-23,108-119
    node 1 size: 64506 MB
    node 1 free: 64285 MB
    node 2 cpus: 24-35,120-131
    node 2 size: 64470 MB
    node 2 free: 64234 MB
    node 3 cpus: 36-47,132-143
    node 3 size: 64506 MB
    node 3 free: 64225 MB
    node 4 cpus: 48-59,144-155
    node 4 size: 64506 MB
    node 4 free: 64148 MB
    node 5 cpus: 60-71,156-167
    node 5 size: 64506 MB
    node 5 free: 64268 MB
    node 6 cpus: 72-83,168-179
    node 6 size: 64506 MB
    node 6 free: 64238 MB
    node 7 cpus: 84-95,180-191
    node 7 size: 64486 MB
    node 7 free: 63635 MB
    node distances:
    node   0   1   2   3   4   5   6   7
      0:  10  12  12  12  21  21  21  21
      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
```

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Platform Notes (Continued)

```
   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:       527938928 kB


  ------------------------------------------------------------
10. who -r
   run-level 3 Jun 29 14:19


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


  ------------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE               UNIT FILES
   enabled             dbus-broker getty@ tuned udisks2 upower
   enabled-runtime     systemd-remount-fs
   disabled            NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd
                       blk-availability canberra-system-bootup canberra-system-shutdown
                       canberra-system-shutdown-reboot chrony-wait chronyd console-getty cpupower crond
                       debug-shell firewalld irqbalance kdump kvm_stat lvm2-monitor man-db-restart-cache-update
                       mdmonitor microcode nftables nis-domainname rdisc rhsm rhsm-facts rhsmcertd rpmdb-rebuild
                       rsyslog selinux-autorelabel-mark sep5 serial-getty@ sshd sshd-keygen@ sssd
                       systemd-boot-check-no-failures systemd-network-generator systemd-pstore systemd-sysext
   indirect            sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo


  ------------------------------------------------------------
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
   resume=/dev/mapper/rhel-swap
   rd.lvm.lv=rhel/root
   rd.lvm.lv=rhel/swap


  ------------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 800 MHz and 3.80 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
```

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Platform Notes (Continued)

```
   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/CPU2017
   Filesystem            Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs   819G  197G  623G  24% /home


   ---------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
   Vendor:         IEIT
   Product:        NF5280M7
   Product Family: Not specified
   Serial:         000000000


   ---------------------------------------------------------------
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.
```

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Platform Notes (Continued)

```
   Memory:
     16x 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:       03.01.00
     BIOS Date:          12/29/2022
```

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
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------------------------------------------------------------------------------


==============================================================================
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
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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 2023.0.0 Build 20221201
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------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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------------------------------------------------------------------------------
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd.

NF5280M7 (Intel Xeon Platinum 8468V)

SPECrate®2017_int_base = 848

SPECrate®2017_int_peak = 876

CPU2017 License: 3358
Test Sponsor: Inspur Electronic Information Industry Co., Ltd.
Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

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
```

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
```

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

SPEC CPU®2017 Integer Rate Result

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CPU2017 License: 3358

Test Sponsor: Inspur Electronic Information Industry Co., Ltd.

Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Jun-2023

Hardware Availability: Apr-2023

Software Availability: Dec-2022

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)
-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
```

(Continued on next page)

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NF5280M7 (Intel Xeon Platinum 8468V)

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Test Date: Jun-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Peak Optimization Flags (Continued)

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.html
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-intel-V3.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-intel-V3.xml

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

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