SPEC CPU®2017 Integer Speed Result

IEIT Systems Co., Ltd.

$SPECspeed®2017\_int\_base = 14.4$

NF5280M7 (Intel Xeon Silver 4410Y)

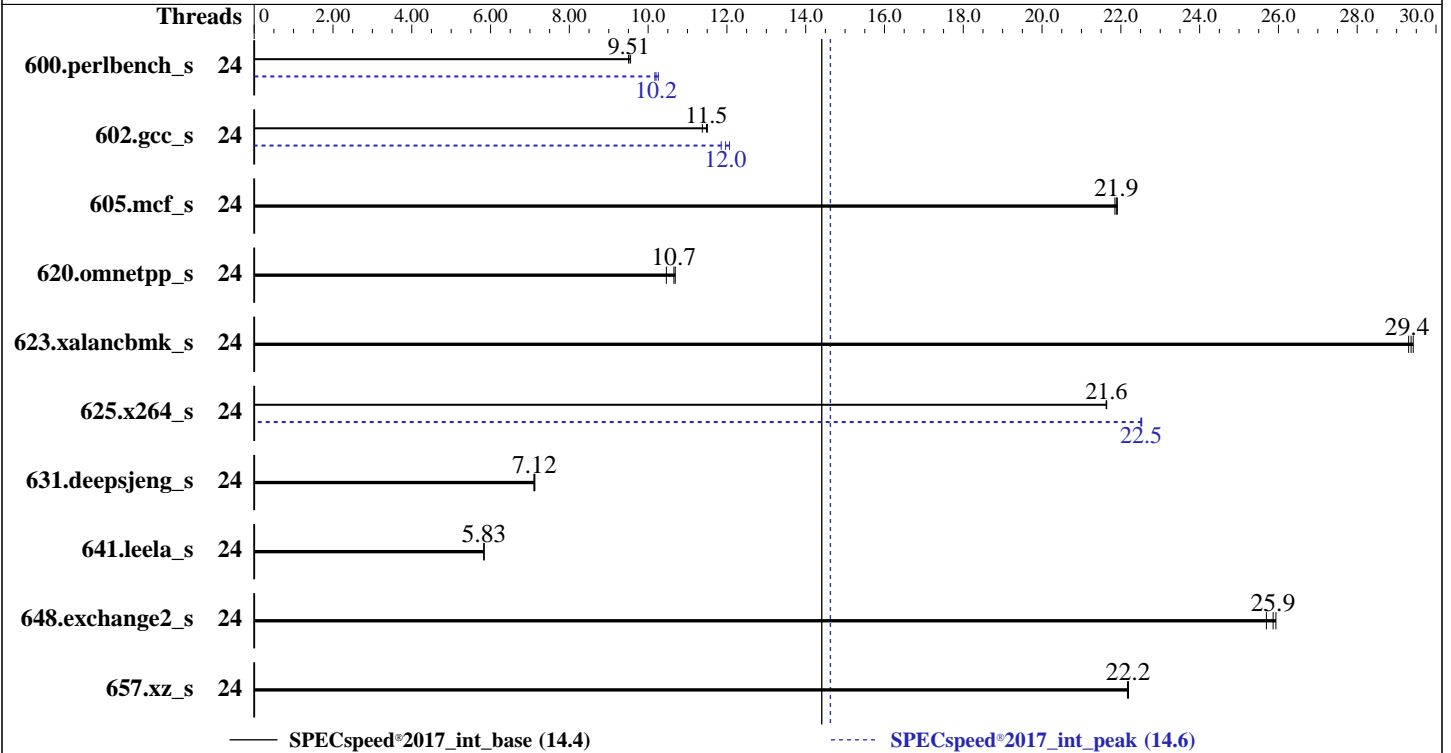$SPECspeed®2017\_int\_peak = 14.6$

CPU2017 License: 3358

Test Sponsor: IEIT Systems Co., Ltd.

Tested by: IEIT Systems Co., Ltd.

Test Date: Oct-2023

Hardware Availability: Apr-2023

Software Availability: Dec-2022

Benchmark	Threads	base	peak
600.perlbench_s	24	9.51	10.2
602.gcc_s	24	11.5	12.0
605.mcf_s	24	21.9	
620.omnetpp_s	24	10.7	
623.xalancbmk_s	24	29.4	
625.x264_s	24	21.6	22.5
631.deepsjeng_s	24	7.12	
641.leela_s	24	5.83	
648.exchange2_s	24	25.9	
657.xz_s	24	22.2	

SPECspeed®2017_int_base (14.4)   SPECspeed®2017_int_peak (14.6)

Hardware

CPU Name: Intel Xeon Silver 4410Y
 Max MHz: 3900
 Nominal: 2000
Enabled: 24 cores, 2 chips
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: 30 MB I+D on chip per chip
 Other: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC5-4800B-R, running at 4000)
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: Yes
Firmware: Version 03.01.00 released Dec-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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

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IEIT Systems Co., Ltd.

NF5280M7 (Intel Xeon Silver 4410Y)

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SPECspeed®2017_int_peak = 14.6

CPU2017 License: 3358	**Test Date:** Oct-2023
Test Sponsor: IEIT Systems Co., Ltd.	**Hardware Availability:** Apr-2023
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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	24	186	9.55	187	9.51	**187**	**9.51**	24	175	10.2	**174**	**10.2**	173	10.3
602.gcc_s	24	346	11.5	350	11.4	**347**	**11.5**	24	330	12.1	**333**	**12.0**	336	11.9
605.mcf_s	24	**216**	**21.9**	215	21.9	216	21.8	24	**216**	**21.9**	215	21.9	216	21.8
620.omnetpp_s	24	156	10.5	153	10.7	**153**	**10.7**	24	156	10.5	153	10.7	**153**	**10.7**
623.xalancbmk_s	24	48.2	29.4	48.4	29.3	**48.2**	**29.4**	24	48.2	29.4	48.4	29.3	**48.2**	**29.4**
625.x264_s	24	81.6	21.6	81.5	21.6	**81.5**	**21.6**	24	**78.4**	**22.5**	78.4	22.5	78.3	22.5
631.deepsjeng_s	24	202	7.10	**201**	**7.12**	201	7.13	24	202	7.10	**201**	**7.12**	201	7.13
641.leela_s	24	292	5.83	**292**	**5.83**	293	5.83	24	292	5.83	**292**	**5.83**	293	5.83
648.exchange2_s	24	114	25.7	**114**	**25.9**	113	25.9	24	114	25.7	**114**	**25.9**	113	25.9
657.xz_s	24	279	22.2	**279**	**22.2**	279	22.2	24	279	22.2	**279**	**22.2**	279	22.2
SPECspeed®2017_int_base =			**14.4**											
SPECspeed®2017_int_peak =			**14.6**											

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.
```

Operating System Notes

```
 Stack size set to unlimited using "ulimit -s unlimited"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/CPU2017/lib/intel64:/home/CPU2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
```

(Continued on next page)

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

IEIT Systems Co., Ltd.

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General Notes (Continued)

```
Filesystem page cache synced and cleared with:
sync; echo 3>        /proc/sys/vm/drop_caches

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
Hyper Threading set to disable

Sysinfo program /home/CPU2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Wed Oct 11 20:15:34 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
------------------------------------------------------------


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

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IEIT Systems Co., Ltd.

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Platform Notes (Continued)

```
    GNU/Linux


   ----------------------------------------------------------
2. w
   20:15:34 up 2 min,  1 user,  load average: 0.42, 0.21, 0.09
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1       20:15    6.00s  0.80s  0.00s sh
   reportable-ic2023.0-lin-sapphirerapids-speed-smt-off-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) 2062287
   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) 2062287
   virtual memory              (kbytes, -v) unlimited
   file locks                          (-x) unlimited


   ----------------------------------------------------------
5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 18
  login -- root
  -bash
  sh reportable-ic2023.0-lin-sapphirerapids-speed-smt-off-20221201.sh
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=24 --tune base,peak -o all --define
    intspeedaffinity --define drop_caches intspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
    ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=24 --tune base,peak --output_format all
    --define intspeedaffinity --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed
    intspeed --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.002/templogs/preenv.intspeed.002.0.log
    --lognum 002.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/CPU2017


   ----------------------------------------------------------
6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) Silver 4410Y
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 7
     microcode       : 0x2b000130
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 12
```

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NF5280M7 (Intel Xeon Silver 4410Y)

SPECspeed®2017_int_peak = 14.6

CPU2017 License: 3358
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Test Date: Oct-2023
Hardware Availability: Apr-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
      siblings        : 12
      2 physical ids (chips)
      24 processors (hardware threads)
      physical id 0: core ids 0-11
      physical id 1: core ids 0-11
      physical id 0: apicids 0,2,4,6,8,10,12,14,16,18,20,22
      physical id 1: apicids 128,130,132,134,136,138,140,142,144,146,148,150
    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):                  24
      On-line CPU(s) list:     0-23
      Vendor ID:               GenuineIntel
      BIOS Vendor ID:          Intel(R) Corporation
      Model name:              Intel(R) Xeon(R) Silver 4410Y
      BIOS Model name:         Intel(R) Xeon(R) Silver 4410Y
      CPU family:              6
      Model:                   143
      Thread(s) per core:      1
      Core(s) per socket:      12
      Socket(s):               2
      Stepping:                7
      CPU max MHz:             3900.0000
      CPU min MHz:             800.0000
      BogoMIPS:                4000.00
      Flags:                   fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                               clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                               lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                               nonstop_tsc cpuid 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:               1.1 MiB (24 instances)
      L1i cache:               768 KiB (24 instances)
      L2 cache:                48 MiB (24 instances)
      L3 cache:                60 MiB (2 instances)
      NUMA node(s):            2
      NUMA node0 CPU(s):       0-11
      NUMA node1 CPU(s):       12-23
      Vulnerability Itlb multihit:    Not affected
```

(Continued on next page)

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Platform Notes (Continued)

```
  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     1.1M   12 Data            1     64        1             64
      L1i       32K     768K    8 Instruction     1     64        1             64
      L2         2M      48M   16 Unified         2   2048        1             64
      L3        30M      60M   15 Unified         3  32768        1             64


    ----------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0-11
  node 0 size: 257577 MB
  node 0 free: 257006 MB
  node 1 cpus: 12-23
  node 1 size: 258034 MB
  node 1 free: 257345 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


    ----------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       527986620 kB


    ----------------------------------------------------------------
10. who -r
   run-level 3 Oct 11 20:13


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

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IEIT Systems Co., Ltd.

SPECspeed®2017_int_base = 14.4

NF5280M7 (Intel Xeon Silver 4410Y)

SPECspeed®2017_int_peak = 14.6

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Platform Notes (Continued)

```
    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 3.90 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
```

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Platform Notes (Continued)

```
  ----------------------------------------------------------------
  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  208G  611G  26% /home


  ----------------------------------------------------------------
  21. /sys/devices/virtual/dmi/id
      Vendor:        IEI
      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.
    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       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
        | 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
        | 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

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SPECspeed®2017_int_base = 14.4

NF5280M7 (Intel Xeon Silver 4410Y)

SPECspeed®2017_int_peak = 14.6

Compiler Version Notes (Continued)

```
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-m64 -std=c++14 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:
-m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4

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SPEC CPU®2017 Integer Speed Result

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IEIT Systems Co., Ltd.

SPECspeed®2017_int_base = 14.4

NF5280M7 (Intel Xeon Silver 4410Y)

SPECspeed®2017_int_peak = 14.6

CPU2017 License: 3358   **Test Date:**   Oct-2023
Test Sponsor: IEIT Systems Co., Ltd.   **Hardware Availability:** Apr-2023
Tested by: IEIT Systems Co., Ltd.   **Software Availability:** Dec-2022

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
```
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

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

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

605.mcf_s: `basepeak = yes`

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IEIT Systems Co., Ltd.

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Peak Optimization Flags (Continued)

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

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s: `basepeak = yes`

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-intel-V3.4.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-V3.4.xml`

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

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