SPEC CPU®2017 Integer Rate Result

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Supermicro
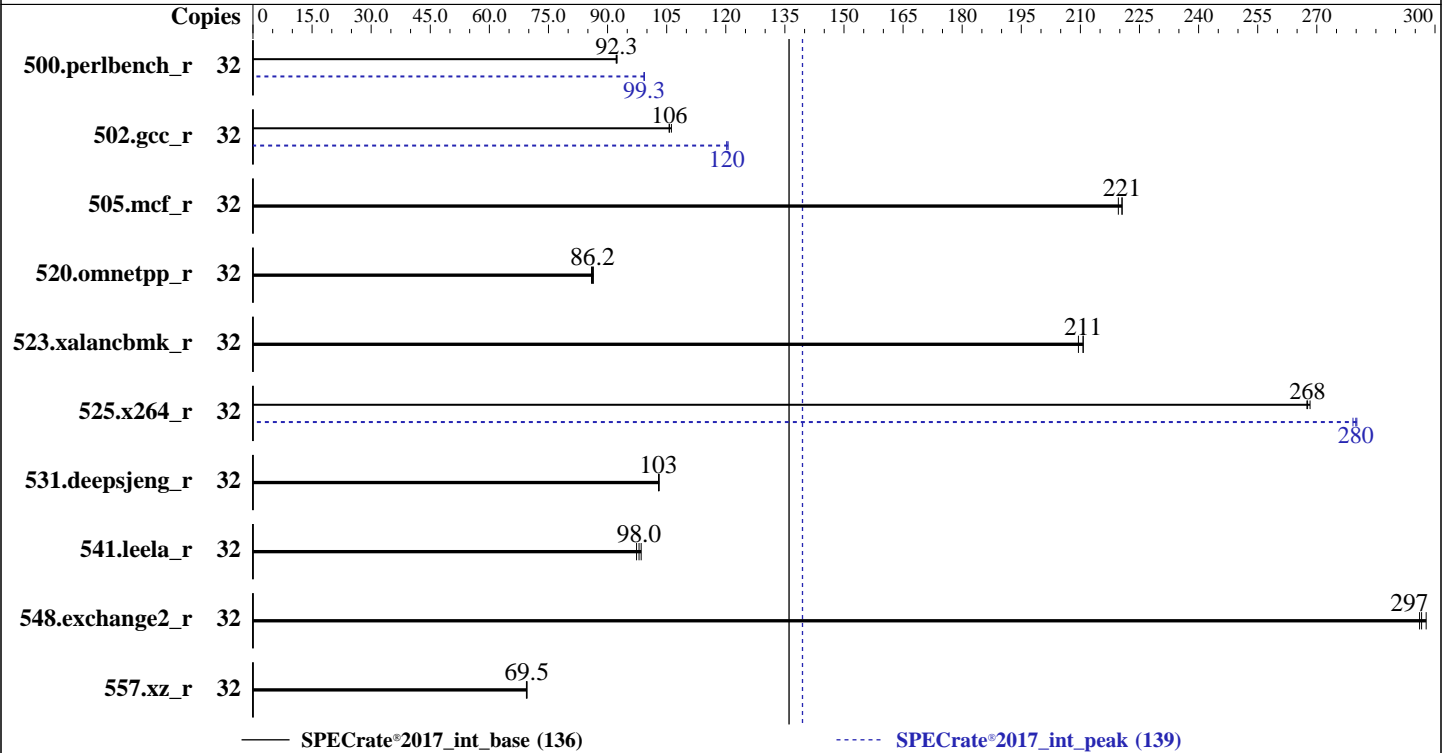
SuperServer SYS-620P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

$SPECrate^{®}2017\_int\_base = 136$

$SPECrate^{®}2017\_int\_peak = 139$

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jan-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

Benchmark	Copies	Base	Peak
500.perlbench_r	32	92.3	99.3
502.gcc_r	32	106	120
505.mcf_r	32	221	
520.omnetpp_r	32	86.2	
523.xalancbmk_r	32	211	
525.x264_r	32	268	280
531.deepsjeng_r	32	103	
541.leela_r	32	98.0	
548.exchange2_r	32	297	
557.xz_r	32	69.5	

SPECrate®2017_int_base (136)   SPECrate®2017_int_peak (139)

Hardware

CPU Name: Intel Xeon Silver 4309Y
 Max MHz: 3600
 Nominal: 2800
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1.25 MB I+D on chip per core
 L3: 12 MB I+D on chip per chip
 Other: None
Memory: 256 GB (16 x 16 GB 2Rx8 PC4-3200AA-R, running at 2666)
Storage: 1 x 2.7 TB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.0 (Plow)
 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 1.4b released Jan-2023
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 set to prefer performance at the cost of additional power usage.

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	32	553	92.2	**552**	**92.3**	551	92.4	32	**513**	**99.3**	513	99.3	513	99.3
502.gcc_r	32	**429**	**106**	429	106	427	106	32	376	121	**377**	**120**	377	120
505.mcf_r	32	**234**	**221**	235	220	234	221	32	**234**	**221**	235	220	234	221
520.omnetpp_r	32	489	85.9	486	86.4	**487**	**86.2**	32	489	85.9	486	86.4	**487**	**86.2**
523.xalancbmk_r	32	**160**	**211**	161	210	160	211	32	**160**	**211**	161	210	160	211
525.x264_r	32	**209**	**268**	209	268	209	267	32	200	280	201	279	**200**	**280**
531.deepsjeng_r	32	**356**	**103**	356	103	356	103	32	**356**	**103**	356	103	356	103
541.leela_r	32	538	98.5	544	97.4	**541**	**98.0**	32	538	98.5	544	97.4	**541**	**98.0**
548.exchange2_r	32	282	298	**283**	**297**	283	296	32	282	298	**283**	**297**	283	296
557.xz_r	32	498	69.4	497	69.5	**497**	**69.5**	32	498	69.4	497	69.5	**497**	**69.5**
SPECrate®2017_int_base =	**136**													
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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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CPU2017 License:	001176	**Test Date:**	Jan-2023
Test Sponsor:	Supermicro	**Hardware Availability:**	Jan-2023
Tested by:	Supermicro	**Software Availability:**	May-2022

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:
     Hyper-Threading = Enable
     Power Technology = Custom
     Power Performance Tuning = BIOS Controls EPB
     ENERGY_PERF_BIAS_CFG mode = Performance
     DCU Streamer Prefetcher = Disable
     Extened APIC = Enable
     KTI Prefetch = Enable
     SNC = Enable SNC2 (2-clusters)
     LLC Dead Line Alloc = Disable
     LLC Prefetch = Disable
     Link L0p Enable = Auto
     Link L1 Enable = Auto

   Sysinfo program /home/cpu2017/bin/sysinfo
   Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
   running on 129-108.pnet Wed Jan 25 23:55:01 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. Failed units, from systemctl list-units --state=failed
   13. Services, from systemctl list-unit-files
   14. Linux kernel boot-time arguments, from /proc/cmdline
   15. cpupower frequency-info
```

(Continued on next page)

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Platform Notes (Continued)

```
  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 129-108.pnet 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64 x86_64
    x86_64 GNU/Linux


    -------------------------------------------------------------
  2. w
      23:55:01 up 2 min,  2 users,  load average: 0.66, 0.41, 0.17
    USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1       23:54    5.00s  1.09s  0.00s -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) 1028040
    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) 1028040
    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=32 -c
     ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=16 --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=32 --configfile
     ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=16 --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/CPU2017.008/templogs/preenv.intrate.008.0.log --lognum 008.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
```

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Platform Notes (Continued)

```
  $SPEC = /home/cpu2017


  --------------------------------------------------------------
  6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) Silver 4309Y CPU @ 2.80GHz
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 106
     stepping        : 6
     microcode       : 0xd000389
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 8
     siblings        : 16
     2 physical ids (chips)
     32 processors (hardware threads)
     physical id 0: core ids 0-7
     physical id 1: core ids 0-7
     physical id 0: apicids 0-15
     physical id 1: apicids 64-79
   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):                32
   On-line CPU(s) list:   0-31
   Vendor ID:             GenuineIntel
   BIOS Vendor ID:        Intel(R) Corporation
   Model name:            Intel(R) Xeon(R) Silver 4309Y CPU @ 2.80GHz
   BIOS Model name:       Intel(R) Xeon(R) Silver 4309Y CPU @ 2.80GHz
   CPU family:            6
   Model:                 106
   Thread(s) per core:    2
   Core(s) per socket:    8
   Socket(s):             2
   Stepping:              6
   CPU max MHz:           3600.0000
   CPU min MHz:           800.0000
   BogoMIPS:              5600.00
   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 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 invpcid_single 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 wbnoinvd dtherm ida arat pln
                          pts avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                          avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrm md_clear
                          pconfig flush_l1d arch_capabilities
```

(Continued on next page)

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Platform Notes (Continued)

```
  Virtualization:             VT-x
  L1d cache:                  768 KiB (16 instances)
  L1i cache:                  512 KiB (16 instances)
  L2 cache:                   20 MiB (16 instances)
  L3 cache:                   24 MiB (2 instances)
  NUMA node(s):               2
  NUMA node0 CPU(s):          0-7,16-23
  NUMA node1 CPU(s):          8-15,24-31
  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     768K  12 Data            1    64        1             64
     L1i       32K     512K   8 Instruction     1    64        1             64
     L2       1.3M      20M  20 Unified         2  1024        1             64
     L3        12M      24M  12 Unified         3 16384        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: 0-7,16-23
  node 0 size: 128098 MB
  node 0 free: 127070 MB
  node 1 cpus: 8-15,24-31
  node 1 size: 128973 MB
  node 1 free: 128190 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       263240988 kB

------------------------------------------------------------
10. who -r
   run-level 3 Jan 25 23:54 last=5

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

------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
     UNIT              LOAD   ACTIVE SUB    DESCRIPTION
   * firewalld.service loaded failed failed firewalld - dynamic firewall daemon

------------------------------------------------------------
13. Services, from systemctl list-unit-files
```

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Platform Notes (Continued)

```
   STATE              UNIT FILES
   enabled            ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                      accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker firewalld
                      gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt
                      low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
                      nvmefc-boot-connections ostree-remount power-profiles-daemon qemu-guest-agent rhsmcertd
                      rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd switcheroo-control
                      systemd-network-generator udisks2 upower vgauthd vmtoolsd
   enabled-runtime    systemd-remount-fs
   disabled           arp-ethers 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 iprdump iprinit iprupdate iscsid iscsiuio kpatch kvm_stat
                      ledmon man-db-restart-cache-update nftables nvmf-autoconnect podman podman-auto-update
                      podman-restart psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts rpmdb-rebuild
                      serial-getty@ speech-dispatcherd sshd-keygen@ systemd-boot-check-no-failures
                      systemd-pstore systemd-sysext wpa_supplicant
   indirect           spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

   ----------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
   root=/dev/mapper/rhel_163--112-root
   ro
   crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
   resume=/dev/mapper/rhel_163--112-swap
   rd.lvm.lv=rhel_163-112/root
   rd.lvm.lv=rhel_163-112/swap
   rhgb
   quiet

   ----------------------------------------------------------------
15. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 800 MHz and 3.60 GHz.
                     The governor "performance" may decide which speed to use
                     within this range.
     boost state support:
       Supported: yes
       Active: yes

   ----------------------------------------------------------------
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                   20
   vm.dirty_writeback_centisecs     500
   vm.dirtytime_expire_seconds      43200
   vm.extfrag_threshold             500
   vm.min_unmapped_ratio            1
   vm.nr_hugepages                  0
   vm.nr_hugepages_mempolicy        0
   vm.nr_overcommit_hugepages       0
   vm.swappiness                    60
   vm.watermark_boost_factor        15000
   vm.watermark_scale_factor        10
```

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Platform Notes (Continued)

```
   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_163--112-home xfs   2.4T   81G  2.4T   4% /home


   ----------------------------------------------------------------
   21. /sys/devices/virtual/dmi/id
      Vendor:        FruPM17
      Product:       FruPPM17
      Product Family: SMC X12
      Serial:        FruPS17


   ----------------------------------------------------------------
   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 Hynix HMA82GR7DJR8N-XN 16 GB 2 rank 3200, configured at 2666


   ----------------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
      BIOS Vendor:      American Megatrends International, LLC.
      BIOS Version:     1.4b
      BIOS Date:        01/12/2023
      BIOS Revision:    5.22
```

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Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2022.1.0 Build 20220316
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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
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------------------------------------------------------------------------------
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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 2022.1.0 Build 20220316
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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 2022.1.0 Build 20220316
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------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
icx
```

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

Fortran benchmarks:
```
ifx
```

SPEC CPU®2017 Integer Rate Result

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Supermicro

SuperServer SYS-620P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

SPECrate®2017_int_base = 136

SPECrate®2017_int_peak = 139

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jan-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

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 -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2022.1.0/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/2022.1.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

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

Fortran benchmarks:
```
ifx
```

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

SPEC CPU®2017 Integer Rate Result

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Supermicro

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(X12DPI-N6 , Intel Xeon Silver 4309Y)

SPECrate®2017_int_base = 136

SPECrate®2017_int_peak = 139

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Jan-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

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-AVX512`
`-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-strict-overflow`
`-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/ia32_lin`
`-std=gnu89 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX512`
`-Ofast -ffast-math -flto -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/2022.1.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: basepeak = yes

C++ benchmarks:

(Continued on next page)

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Test Sponsor: Supermicro
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Test Date: Jan-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

Peak Optimization Flags (Continued)

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-ic2022-official-linux64_revA.2023-03-29.html`
`http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-ICX-revC.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2023-03-29.xml`
`http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-ICX-revC.xml`

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

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