SPEC CPU®2017 Integer Rate Result

Supermicro

SuperServer SYS-740P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

$SPECrate^{®}2017\_int\_base = 133$

$SPECrate^{®}2017\_int\_peak = 137$

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	89.7	96.6
502.gcc_r	32	103	118
505.mcf_r	32	214	
520.omnetpp_r	32	84.7	
523.xalancbmk_r	32	205	
525.x264_r	32	261	272
531.deepsjeng_r	32	102	
541.leela_r	32	97.1	
548.exchange2_r	32	297	
557.xz_r	32	67.8	

SPECrate®2017_int_base (133)   SPECrate®2017_int_peak (137)

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 600 GB 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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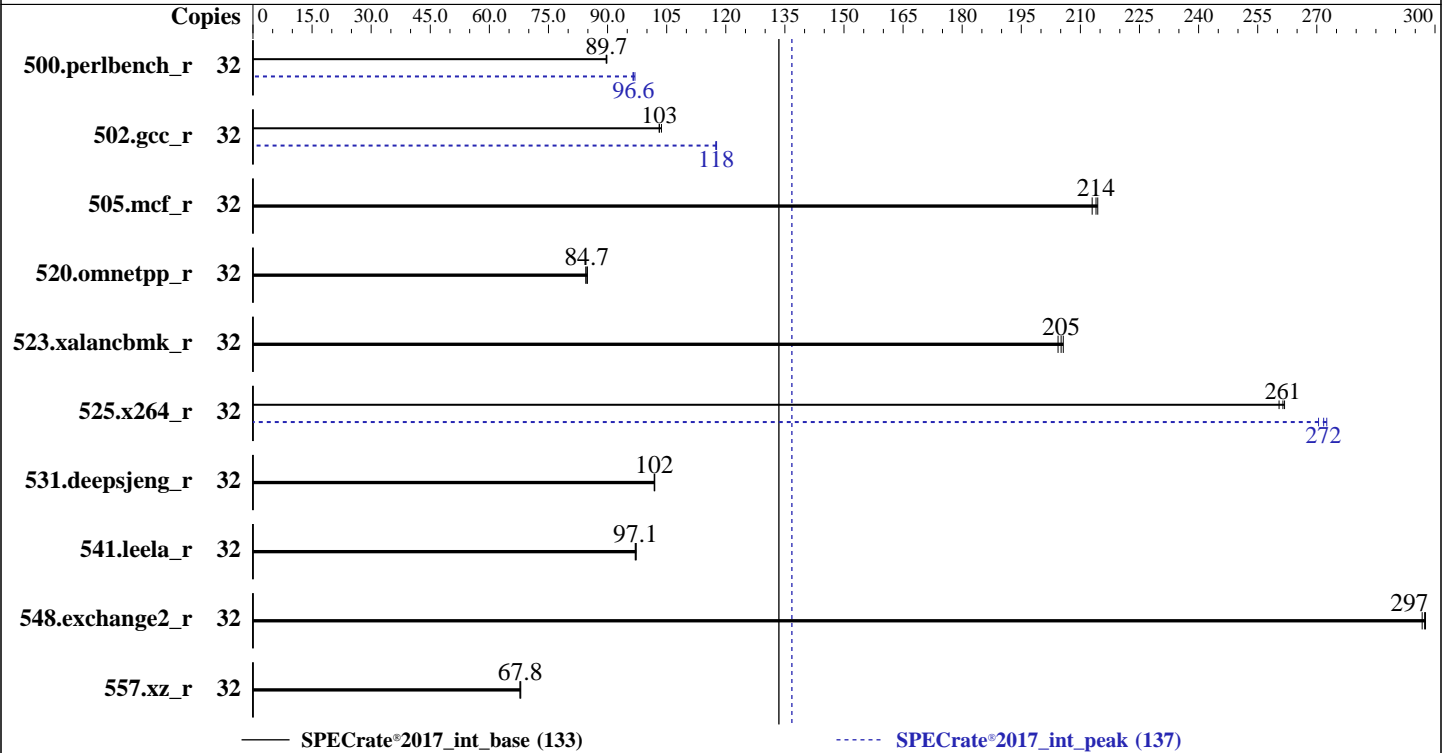
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Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	32	568	89.7	**568**	**89.7**	567	89.8	32	525	96.9	**527**	**96.6**	528	96.5
502.gcc_r	32	437	104	439	103	**439**	**103**	32	**385**	**118**	386	117	385	118
505.mcf_r	32	**242**	**214**	241	214	243	213	32	**242**	**214**	241	214	243	213
520.omnetpp_r	32	495	84.9	497	84.5	**495**	**84.7**	32	495	84.9	497	84.5	**495**	**84.7**
523.xalancbmk_r	32	164	206	165	204	**165**	**205**	32	164	206	165	204	**165**	**205**
525.x264_r	32	**214**	**261**	214	262	215	260	32	206	273	**206**	**272**	207	270
531.deepsjeng_r	32	360	102	360	102	**360**	**102**	32	360	102	360	102	**360**	**102**
541.leela_r	32	546	97.0	**546**	**97.1**	545	97.3	32	546	97.0	**546**	**97.1**	545	97.3
548.exchange2_r	32	282	298	**282**	**297**	283	297	32	282	298	**282**	**297**	283	297
557.xz_r	32	510	67.8	**509**	**67.8**	508	68.0	32	510	67.8	**509**	**67.8**	508	68.0
SPECrate®2017_int_base =	**133**												
SPECrate®2017_int_peak =	**137**												

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"
```

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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:
   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
   LLC Prefetcher = Disable
   Link L0p Enable = Auto
   Link L1 Enable = Auto

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on 140-89.pnet Sat Jan 28 13:23:07 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
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
```

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Platform Notes (Continued)

```
   19. OS release
   20. Disk information
   21. /sys/devices/virtual/dmi/id
   22. dmidecode
   23. BIOS
   --------------------------------------------------------------

   --------------------------------------------------------------
   1. uname -a
     Linux 140-89.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
      13:23:07 up 6 min,  2 users,  load average: 0.43, 0.49, 0.25
     USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1       13:22    3.00s  1.10s  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) 1028039
     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) 1028039
     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/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
    $SPEC = /home/cpu2017

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

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Platform Notes (Continued)

```
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
   Virtualization:           VT-x
   L1d cache:                768 KiB (16 instances)
   L1i cache:                512 KiB (16 instances)
```

(Continued on next page)

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Platform Notes (Continued)

```
  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: 128061 MB
  node 0 free: 125635 MB
  node 1 cpus: 8-15,24-31
  node 1 size: 129009 MB
  node 1 free: 127918 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10

------------------------------------------------------------
9. /proc/meminfo
  MemTotal:       263240596 kB

------------------------------------------------------------
10. who -r
  run-level 3 Jan 28 13:22 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
  STATE            UNIT FILES
  enabled          ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                   accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker firewalld
```

(Continued on next page)

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Platform Notes (Continued)

```
                        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_140--89-root
  ro
  crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
  resume=/dev/mapper/rhel_140--89-swap
  rd.lvm.lv=rhel_140-89/root
  rd.lvm.lv=rhel_140-89/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
  vm.zone_reclaim_mode              0

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

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Platform Notes (Continued)

```
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_140--89-home xfs   390G  6.8G  384G   2% /home

   --------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:        PM_1637691985
    Product:       PPM_1637691985
    Product Family: SMC X12
    Serial:        PS_1637691985

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

Compiler Version Notes

```
==============================================================================================
C      | 502.gcc_r(peak)
----------------------------------------------------------------------------------------------
```

(Continued on next page)

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Compiler Version Notes (Continued)

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

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

==============================================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 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-740P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

$SPECrate^{®}2017\_int\_base = 133$

$SPECrate^{®}2017\_int\_peak = 137$

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/

Supermicro

SuperServer SYS-740P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

SPECrate®2017_int_base = 133

SPECrate®2017_int_peak = 137

CPU2017 License:	001176	**Test Date:**	Jan-2023
Test Sponsor:	Supermicro	**Hardware Availability:**	Jan-2023
Tested by:	Supermicro	**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)

Supermicro

SuperServer SYS-740P-TR
(X12DPI-N6 , Intel Xeon Silver 4309Y)

SPECrate®2017_int_base = 133

SPECrate®2017_int_peak = 137

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

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`

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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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