



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## IEIT Systems Co., Ltd.

SPECrate®2017\_int\_base = 667

## NF8260M7 (Intel Xeon Gold 6416H)

SPECrate®2017\_int\_peak = 684

CPU2017 License: 3358

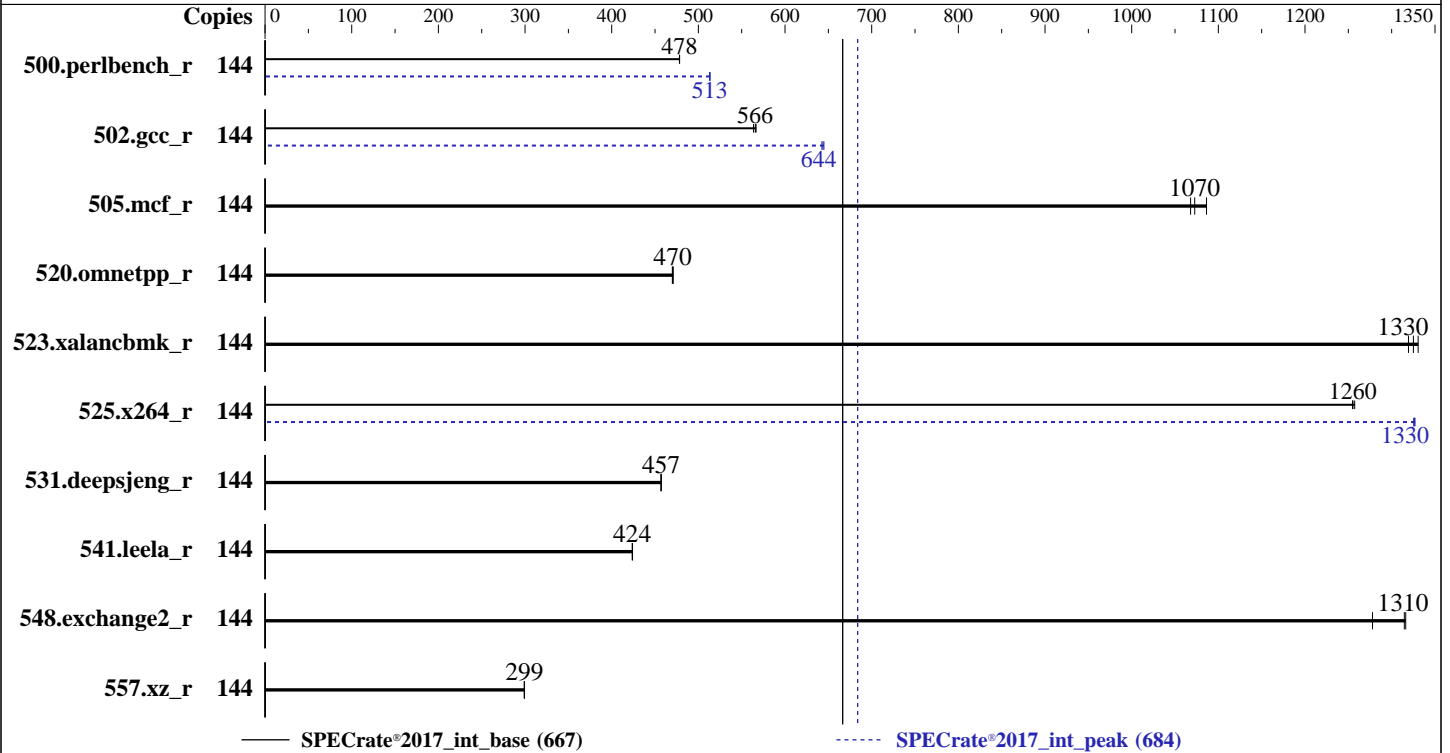
Test Date: Sep-2023

Test Sponsor: IEIT Systems Co., Ltd.

Hardware Availability: Apr-2023

Tested by: IEIT Systems Co., Ltd.

Software Availability: Dec-2022



### Hardware

CPU Name: Intel Xeon Gold 6416H  
 Max MHz: 4200  
 Nominal: 2200  
 Enabled: 72 cores, 4 chips, 2 threads/core  
 Orderable: 2,4 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 45 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (32 x 32 GB 2Rx4 PC5-4800B-R)  
 Storage: 1 x 1 TB NVME SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux 9.0 (Plow)  
 5.14.0-70.13.1.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 03.00.00 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							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	144	479	478	479	478	<b>479</b>	<b>478</b>	144	<b>447</b>	<b>513</b>	447	513	447	513
502.gcc_r	144	362	564	<b>360</b>	<b>566</b>	360	567	144	316	645	<b>317</b>	<b>644</b>	317	642
505.mcf_r	144	214	1090	<b>217</b>	<b>1070</b>	218	1070	144	214	1090	<b>217</b>	<b>1070</b>	218	1070
520.omnetpp_r	144	401	471	402	470	<b>402</b>	<b>470</b>	144	401	471	402	470	<b>402</b>	<b>470</b>
523.xalancbmk_r	144	114	1330	<b>115</b>	<b>1330</b>	115	1320	144	114	1330	<b>115</b>	<b>1330</b>	115	1320
525.x264_r	144	201	1250	201	1260	<b>201</b>	<b>1260</b>	144	190	1330	<b>190</b>	<b>1330</b>	190	1330
531.deepsjeng_r	144	361	457	<b>361</b>	<b>457</b>	361	457	144	361	457	<b>361</b>	<b>457</b>	361	457
541.leela_r	144	<b>563</b>	<b>424</b>	563	424	562	424	144	<b>563</b>	<b>424</b>	563	424	562	424
548.exchange2_r	144	287	1320	<b>287</b>	<b>1310</b>	295	1280	144	287	1320	<b>287</b>	<b>1310</b>	295	1280
557.xz_r	144	520	299	519	299	<b>519</b>	<b>299</b>	144	520	299	519	299	<b>519</b>	<b>299</b>

SPECrate®2017\_int\_base = **667**

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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](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"  
MALLOCONF = "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 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.localdomain Fri Sep 15 06:57:40 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`
19. OS release
20. Disk information
21. `/sys/devices/virtual/dmi/id`
22. `dmidecode`

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### Platform Notes (Continued)

23. BIOS

```
1. uname -a
Linux localhost.localdomain 5.14.0-70.13.1.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
06:57:40 up 2 min, 1 user, load average: 0.61, 0.29, 0.12
USER      TTY      LOGIN@  IDLE   JCPU   PCPU   WHAT
root      tty1    06:57   12.00s  1.19s  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) 4126531
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) 4126531
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=144 -c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=72 --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=144 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=72 --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/CPU2017.003/temlogs/preenv.intrate.003.0.log --lognum 003.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

```
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Gold 6416H
vendor_id      : GenuineIntel
```

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## Platform Notes (Continued)

```

cpu family      : 6
model           : 143
stepping        : 8
microcode       : 0x2b000130
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores       : 18
siblings        : 36
4 physical ids (chips)
144 processors (hardware threads)
physical id 0: core ids 0-17
physical id 1: core ids 0-17
physical id 2: core ids 0-17
physical id 3: core ids 0-17
physical id 0: apicids 0-35
physical id 1: apicids 128-163
physical id 2: apicids 256-291
physical id 3: apicids 384-419

```

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):                 144
On-line CPU(s) list:   0-143
Vendor ID:              GenuineIntel
BIOS Vendor ID:        Intel(R) Corporation
Model name:             Intel(R) Xeon(R) Gold 6416H
BIOS Model name:       Intel(R) Xeon(R) Gold 6416H
CPU family:            6
Model:                  143
Thread(s) per core:    2
Core(s) per socket:    18
Socket(s):              4
Stepping:               8
Frequency boost:       enabled
CPU max MHz:           2201.0000
CPU min MHz:           800.0000
BogoMIPS:              4400.00
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 aperfperf tsc_known_freq pni pclmulqdq dtes64 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 avx512vbmi umip pku ospke waitpkg
                        avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                        avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                        enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr avx512_fp16

```

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## Platform Notes (Continued)

```

                                amx_tile flush_lld arch_capabilities
Lld cache:                      3.4 MiB (72 instances)
Lli cache:                      2.3 MiB (72 instances)
L2 cache:                       144 MiB (72 instances)
L3 cache:                       180 MiB (4 instances)
NUMA node(s):                   8
NUMA node0 CPU(s):              0-8,72-80
NUMA node1 CPU(s):              9-17,81-89
NUMA node2 CPU(s):              18-26,90-98
NUMA node3 CPU(s):              27-35,99-107
NUMA node4 CPU(s):              36-44,108-116
NUMA node5 CPU(s):              45-53,117-125
NUMA node6 CPU(s):              54-62,126-134
NUMA node7 CPU(s):              63-71,135-143
Vulnerability Itlb multihit:    Not affected
Vulnerability Lltf:             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/swaps 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
Lld	48K	3.4M	12	Data	1	64	1	64
Lli	32K	2.3M	8	Instruction	1	64	1	64
L2	2M	144M	16	Unified	2	2048	1	64
L3	45M	180M	15	Unified	3	49152	1	64

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

```

available: 8 nodes (0-7)
node 0 cpus: 0-8,72-80
node 0 size: 128589 MB
node 0 free: 127107 MB
node 1 cpus: 9-17,81-89
node 1 size: 128983 MB
node 1 free: 128586 MB
node 2 cpus: 18-26,90-98
node 2 size: 129020 MB
node 2 free: 128541 MB
node 3 cpus: 27-35,99-107
node 3 size: 129020 MB
node 3 free: 128587 MB
node 4 cpus: 36-44,108-116
node 4 size: 129020 MB
node 4 free: 128238 MB
node 5 cpus: 45-53,117-125
node 5 size: 129020 MB
node 5 free: 128765 MB
node 6 cpus: 54-62,126-134
node 6 size: 129020 MB
node 6 free: 128806 MB
node 7 cpus: 63-71,135-143
node 7 size: 129000 MB
node 7 free: 128749 MB
node distances:

```

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### Platform Notes (Continued)

node	0	1	2	3	4	5	6	7
0:	10	12	21	21	21	21	21	21
1:	12	10	21	21	21	21	21	21
2:	21	21	10	12	21	21	21	21
3:	21	21	12	10	21	21	21	21
4:	21	21	21	21	10	12	21	21
5:	21	21	21	21	12	10	21	21
6:	21	21	21	21	21	21	10	12
7:	21	21	21	21	21	21	12	10

9. /proc/meminfo  
 MemTotal: 1056433160 kB

10. who -r  
 run-level 3 Sep 15 06:55

11. Systemd service manager version: systemd 250 (250-6.el9\_0)  
 Default Target Status  
 multi-user degraded

12. Failed units, from systemctl list-units --state=failed  
 UNIT LOAD ACTIVE SUB DESCRIPTION  
 \* NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online

13. Services, from systemctl list-unit-files  
 STATE UNIT FILES  
 enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond  
 dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor microcode nis-domainname  
 rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator upower  
 enabled-runtime systemd-remount-fs  
 disabled blk-availability canberra-system-bootup canberra-system-shutdown  
 canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell kvm\_stat  
 man-db-restart-cache-update nftables rdisc rhsm rhsm-facts rpmdm-rebuild serial-getty@  
 sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysex  
 indirect 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,msdos1)/vmlinuz-5.14.0-70.13.1.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

15. cpupower frequency-info  
 analyzing CPU 0:  
 current policy: frequency should be within 800 MHz and 2.20 GHz.  
 The governor "performance" may decide which speed to use  
 within this range.  
 boost state support:  
 Supported: yes  
 Active: yes

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## Platform Notes (Continued)

```

-----
16. sysctl
kernel.numa_balancing          1
kernel.randomize_va_space     2
vm.compaction_proactiveness   20
vm.dirty_background_bytes      0
vm.dirty_background_ratio     10
vm.dirty_bytes                 0
vm.dirty_expire_centisecs     3000
vm.dirty_ratio                 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
-----
17. /sys/kernel/mm/transparent_hugepage
defrag          always defer defer+madvice [madvice] never
enabled         [always] madvice 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     157G   663G   20% /home
-----
21. /sys/devices/virtual/dmi/id
Vendor:         IEI
Product:        NF8260-M7-A0-R0-00
Product Family: Not specified
Serial:         21B545466
-----

```

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## Platform Notes (Continued)

### 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:

32x Micron MTC20F2085S1RC48BA1 32 GB 2 rank 4800

### 23. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: American Megatrends International, LLC.

BIOS Version: 03.00.00

BIOS Date: 12/16/2022

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

C | 502.gcc\_r(peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201  
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C | 500.perlbench\_r(base, peak) 502.gcc\_r(base) 505.mcf\_r(base, peak) 525.x264\_r(base, peak)  
557.xz\_r(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
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C++ | 520.omnetpp\_r(base, peak) 523.xalanbmk\_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)

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# SPEC CPU®2017 Integer Rate Result

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IEIT Systems Co., Ltd.

SPECrate®2017\_int\_base = 667

NF8260M7 (Intel Xeon Gold 6416H)

SPECrate®2017\_int\_peak = 684

CPU2017 License: 3358

Test Sponsor: IEIT Systems Co., Ltd.

Tested by: IEIT Systems Co., Ltd.

Test Date: Sep-2023

Hardware Availability: Apr-2023

Software Availability: Dec-2022

## Compiler Version Notes (Continued)

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
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## 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 -xsaphirerapids -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 -xsaphirerapids -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

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## Base Optimization Flags (Continued)

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

## Peak Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
```

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## Peak Optimization Flags (Continued)

500.perlbench\_r (continued):

```
-fno-strict-overflow  
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin  
-lqkmallo
```

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.profddata(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 -ljemallo
```

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  
-lqkmallo
```

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-V3.3.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-V3.3.xml>



# SPEC CPU<sup>®</sup>2017 Integer Rate Result

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**CPU2017 License:** 3358

**Test Sponsor:** IEIT Systems Co., Ltd.

**Tested by:** IEIT Systems Co., Ltd.

**Test Date:** Sep-2023

**Hardware Availability:** Apr-2023

**Software Availability:** Dec-2022

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