



# SPEC CPU®2017 Integer Speed Result

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**Tyrone Systems**  
(Test Sponsor: Netweb Pte Ltd)  
**Tyrone Camarero SDI200C2G-48**  
(2.00 GHz, Intel Xeon Gold 6438Y+)

**SPECspeed®2017\_int\_base = 14.5**

**SPECspeed®2017\_int\_peak = 14.8**

**CPU2017 License:** 006042

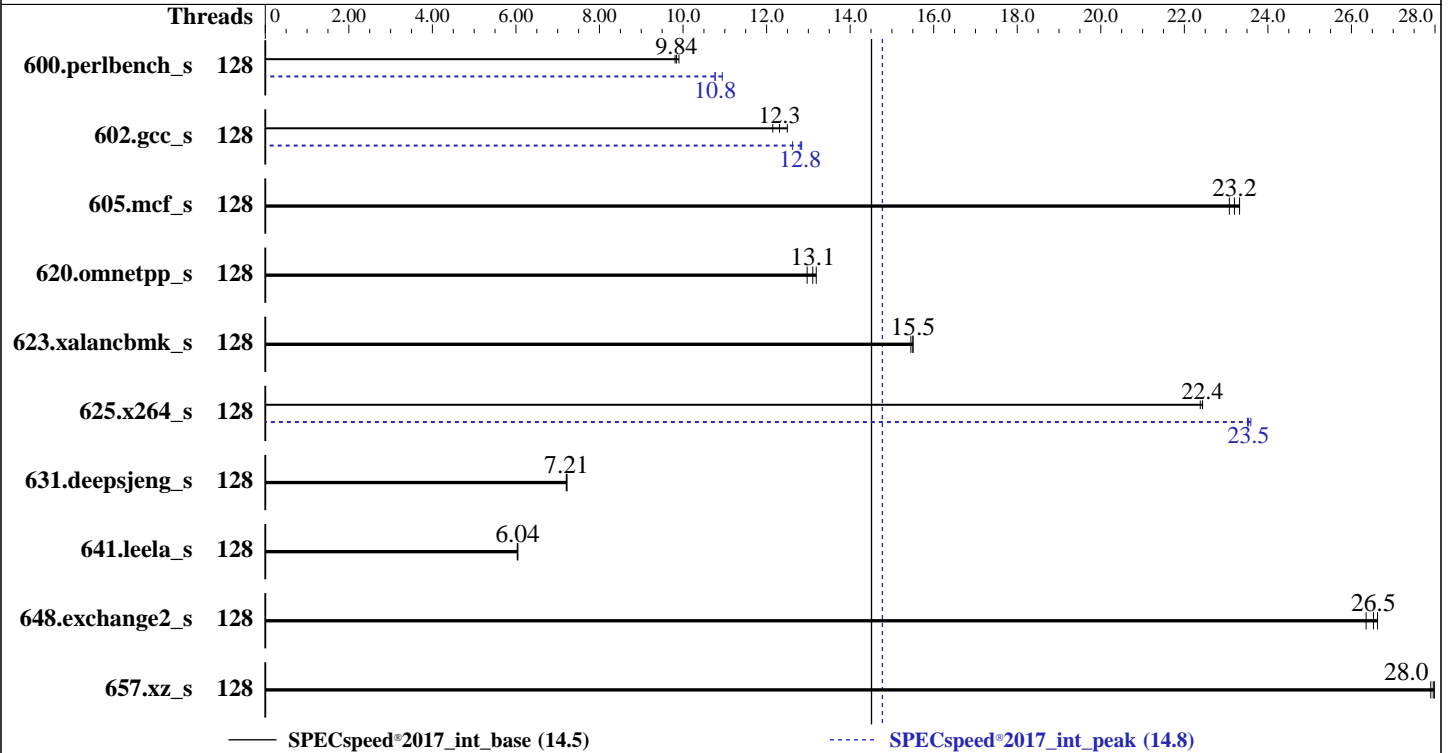
**Test Sponsor:** Netweb Pte Ltd

**Tested by:** Tyrone Systems

**Test Date:** Feb-2024

**Hardware Availability:** Jan-2023

**Software Availability:** Dec-2023



## Hardware

CPU Name: Intel Xeon Gold 6438Y+  
 Max MHz: 4000  
 Nominal: 2000  
 Enabled: 64 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 60 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800AA-R)  
 Storage: 1 x 960 GB NVMe  
 Other: CPU Cooling: Air

## Software

OS: Red Hat Enterprise Linux 9.3 (Plow)  
 5.14.0-362.13.1.el9\_3.x86\_64  
 Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;  
 Parallel: Yes  
 Firmware: Version 2.1 released Dec-2023  
 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.



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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	128	179	9.90	181	9.81	<b>180</b>	<b>9.84</b>	128	162	10.9	<b>165</b>	<b>10.8</b>	165	10.8
602.gcc_s	128	328	12.1	319	12.5	<b>323</b>	<b>12.3</b>	128	310	12.8	<b>311</b>	<b>12.8</b>	315	12.6
605.mcf_s	128	<b>203</b>	<b>23.2</b>	205	23.1	202	23.3	128	<b>203</b>	<b>23.2</b>	205	23.1	202	23.3
620.omnetpp_s	128	124	13.2	<b>124</b>	<b>13.1</b>	126	13.0	128	124	13.2	<b>124</b>	<b>13.1</b>	126	13.0
623.xalancbmk_s	128	<b>91.4</b>	<b>15.5</b>	91.4	15.5	91.7	15.5	128	<b>91.4</b>	<b>15.5</b>	91.4	15.5	91.7	15.5
625.x264_s	128	78.6	22.4	78.8	22.4	<b>78.6</b>	<b>22.4</b>	128	<b>74.9</b>	<b>23.5</b>	74.8	23.6	75.0	23.5
631.deepsjeng_s	128	198	7.22	199	7.20	<b>199</b>	<b>7.21</b>	128	198	7.22	199	7.20	<b>199</b>	<b>7.21</b>
641.leela_s	128	283	6.03	<b>282</b>	<b>6.04</b>	282	6.04	128	283	6.03	<b>282</b>	<b>6.04</b>	282	6.04
648.exchange2_s	128	112	26.4	110	26.6	<b>111</b>	<b>26.5</b>	128	112	26.4	110	26.6	<b>111</b>	<b>26.5</b>
657.xz_s	128	221	28.0	<b>221</b>	<b>28.0</b>	222	27.9	128	221	28.0	<b>221</b>	<b>28.0</b>	222	27.9

SPECspeed®2017\_int\_base = **14.5**

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## 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:  
KMP\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/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 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>  
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.  
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.  
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the

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## General Notes (Continued)

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:

Power Technology = Custom

ENERGY\_PERF\_BIAS\_CFG mode = Maximum Performance

KTI Prefetch = Enable

LLC Dead Line Alloc = Disable

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost.localdomain Fri Mar 1 12:44:22 2024

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 252 (252-18.e19)
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.localdomain 5.14.0-362.13.1.el9\_3.x86\_64 #1 SMP PREEMPT\_DYNAMIC Fri Nov 24 01:57:57 EST 2023 x86\_64 x86\_64 x86\_64 GNU/Linux

-----

2. w  
12:44:22 up 2 days, 2:26, 1 user, load average: 0.00, 0.00, 0.00

USER	TTY	LOGIN@	IDLE	JCPU	PCPU	WHAT
root	ttyl	Wed10	6.00s	0.79s	0.00s	-bash

-----

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## Platform Notes (Continued)

### 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) 4126690
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) 4126690
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 -c
ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=64 --tune base,peak -o all --define
intspeedaffinity --define smt-on --define drop_caches intspeed
runcpu --nobuild --action validate --define default-platform-flags --configfile
ic2023.2.3-lin-sapphirerapids-speed-20231121.cfg --define cores=64 --tune base,peak --output_format all
--define intspeedaffinity --define smt-on --define drop_caches --nopower --runmode speed --tune base:peak
--size refspeed intspeed --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.003/templogs/preenv.intspeed.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 6438Y+
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping      : 8
microcode     : 0x2b000571
bugs          : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb
cpu cores     : 32
siblings      : 64
2 physical ids (chips)
128 processors (hardware threads)
physical id 0: core ids 0-31
physical id 1: core ids 0-31
physical id 0: apicids 0-63
physical id 1: apicids 128-191
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.

```

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## Platform Notes (Continued)

### 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):                       128
On-line CPU(s) list:         0-127
Vendor ID:                    GenuineIntel
BIOS Vendor ID:              Intel(R) Corporation
Model name:                   Intel(R) Xeon(R) Gold 6438Y+
BIOS Model name:             Intel(R) Xeon(R) Gold 6438Y+
CPU family:                   6
Model:                        143
Thread(s) per core:          2
Core(s) per socket:          32
Socket(s):                    2
Stepping:                     8
CPU max MHz:                  4000.0000
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 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 hfi vnmi 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 ibt amx_bf16
                                avx512_fp16 amx_tile amx_int8 flush_lld arch_capabilities

Virtualization:              VT-x
L1d cache:                   3 MiB (64 instances)
L1i cache:                   2 MiB (64 instances)
L2 cache:                    128 MiB (64 instances)
L3 cache:                    120 MiB (2 instances)
NUMA node(s):                2
NUMA node0 CPU(s):           0-31,64-95
NUMA node1 CPU(s):           32-63,96-127
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:          Not affected
Vulnerability Mds:           Not affected
Vulnerability Meltdown:      Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed:      Not affected
Vulnerability Spec rstack overflow: 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 / Automatic IBRS, IBPB conditional, RSB filling,

```

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## Platform Notes (Continued)

PBRSE-eIBRS SW sequence

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	3M	12	Data	1	64	1	64
L1i	32K	2M	8	Instruction	1	64	1	64
L2	2M	128M	16	Unified	2	2048	1	64
L3	60M	120M	15	Unified	3	65536	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: 0-31,64-95
node 0 size: 515717 MB
node 0 free: 475861 MB
node 1 cpus: 32-63,96-127
node 1 size: 516020 MB
node 1 free: 480162 MB
node distances:
node 0 1
0: 10 21
1: 21 10

```

9. /proc/meminfo

MemTotal: 1056500052 kB

10. who -r

run-level 3 Feb 28 10:18

11. Systemd service manager version: systemd 252 (252-18.el9)

Default Target	Status
multi-user	running

12. 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 gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt lm_sensors low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname nvme-fc-boot-connections ostree-remount pmcd pmie pmlogger power-profiles-daemon qemu-guest-agent rhsmcertd rpcbind rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd switcheroo-control sysstat systemd-boot-update systemd-network-generator tuned udisks2 upower vgauthd virtqemud vmtoolsd
enabled-runtime	systemd-remount-fs
disabled	arp-ethers autofs blk-availability brltyt canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed dbus-daemon debug-shell dnf-system-upgrade dnsmasq dovecot fancontrol fcoe grafana-server gssproxy httpd httpd@ ibacm iprdump iprinit ipupdate ipsec iscsid iscsiui kpatch kvm_stat ledmon libvirt-guests libvirtd lldpad man-db-restart-cache-update named named-chroot netavark-dhcp-proxy nfs-blkmap nfs-server nftables nmb numad nvmmf-autoconnect ostree-readonly-sysroot-migration pesign pmfind pmie_farm pmlogger_farm pmproxy podman podman-auto-update podman-clean-transient podman-kube@ podman-restart postfix powertop psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts rpmbd-rebuild rrdcached saslauthd

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## Platform Notes (Continued)

```

indirect
selinux-check-proper-disable serial-getty@ smb snmpd snmptrapd spamassassin
speech-dispatcherd srp_daemon srp_daemon_port@ sshd-keygen@ systemd-boot-check-no-failures
systemd-nspawn@ systemd-pstore systemd-sysext target targetclid tog-pegasus trace-cmd
virtinterfaced virtnetworkd virtnodevdev virtnwfilterd virtproxyd virtsecret d virtstorage d
vsftpd wpa_supplicant
pcscd spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
systemd-sysupdate systemd-sysupdate-reboot virtlockd virtlogd vsftpd@

```

```

-----
13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=(hd1,gpt2)/vmlinuz-5.14.0-362.13.1.el9_3.x86_64
root=/dev/mapper/rhel-root
ro
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
rhgb
quiet

```

```

-----
14. cpupower frequency-info
analyzing CPU 0:
  current policy: frequency should be within 4.00 GHz and 4.00 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

```

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## Platform Notes (Continued)

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 9.3 (Plow)
redhat-release Red Hat Enterprise Linux release 9.3 (Plow)
system-release Red Hat Enterprise Linux release 9.3 (Plow)

```

### 20. Disk information

```

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 856G 398G 459G 47% /home

```

### 21. /sys/devices/virtual/dmi/id

```

Vendor: Tyrone Systems
Product: Tyrone Camarero SDI200C2G-48
Product Family: Family
Serial: 2X21292023D

```

### 22. dmidecode

Additional information from dmidecode 3.5 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 M321R8GA0BB0-CQKZJ 64 GB 2 rank 4800

```

### 23. BIOS

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

```

BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 2.1
BIOS Date: 12/07/2023
BIOS Revision: 5.32

```

## 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 2023.2.3 Build x  
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.

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SPECspeed®2017\_int\_base = 14.5

SPECspeed®2017\_int\_peak = 14.8

**CPU2017 License:** 006042

**Test Sponsor:** Netweb Pte Ltd

**Tested by:** Tyrone Systems

**Test Date:** Feb-2024

**Hardware Availability:** Jan-2023

**Software Availability:** Dec-2023

## Compiler Version Notes (Continued)

=====  
C++ | 620.omnetpp\_s(base, peak) 623.xalancbnk\_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 2023.2.3 Build x  
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.  
=====

=====  
Fortran | 648.exchange2\_s(base, peak)  
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x  
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=====

## 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.xalancbnk\_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:

-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math  
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp

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# SPEC CPU®2017 Integer Speed Result

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## Base Optimization Flags (Continued)

C benchmarks (continued):

```
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

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/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xsaphirerapids -O3 -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-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: -w -m64 -std=c11 -Wl,-z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profddata(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
```

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**Hardware Availability:** Jan-2023

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## Peak Optimization Flags (Continued)

```
602.gcc_s: -w -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

```
625.x264_s: -w -std=c11 -m64 -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-ic2023p2-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-SPR-revC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-SPR-revC.xml>



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