



SPEC CPU®2017 Integer Rate Result

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Fusionstor
(Test Sponsor: Meganet)

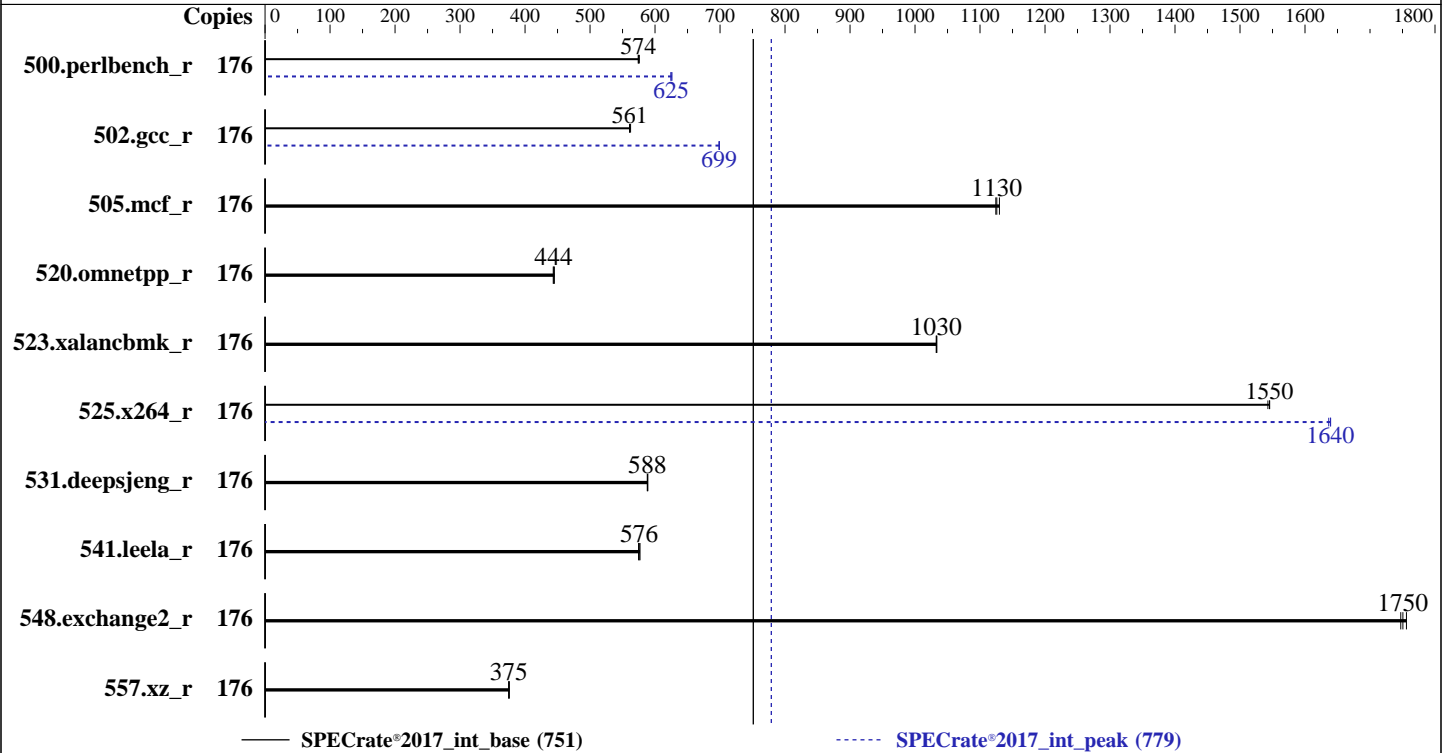
SPECrate®2017_int_base = 751

Invento i6000 (Intel Xeon Platinum 8458P)

SPECrate®2017_int_peak = 779

CPU2017 License: 6221
Test Sponsor: Meganet
Tested by: Fusionstor system

Test Date: Oct-2024
Hardware Availability: Feb-2023
Software Availability: Sep-2024



Hardware

CPU Name: Intel Xeon Platinum 8458P
Max MHz: 3800
Nominal: 2700
Enabled: 88 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: 82.5 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 960 GB SATA SSD
Other: CPU Cooling: Air

Software

OS: Ubuntu 22.04.4 LTS
6.8.0-45-generic
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: No
Firmware: Version EG0.10.01 released Mar-2024
File System: ext4
System State: Run level 5 (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 | 176 | 488 | 574 | 487 | 576 | 488 | 574 | 176 | 449 | 624 | 448 | 625 | 448 | 626 |
| 502.gcc_r | 176 | 444 | 561 | 443 | 562 | 444 | 561 | 176 | 357 | 699 | 357 | 698 | 356 | 699 |
| 505.mcf_r | 176 | 253 | 1120 | 252 | 1130 | 253 | 1130 | 176 | 253 | 1120 | 252 | 1130 | 253 | 1130 |
| 520.omnetpp_r | 176 | 519 | 445 | 520 | 444 | 521 | 443 | 176 | 519 | 445 | 520 | 444 | 521 | 443 |
| 523.xalancbmk_r | 176 | 180 | 1030 | 180 | 1030 | 180 | 1030 | 176 | 180 | 1030 | 180 | 1030 | 180 | 1030 |
| 525.x264_r | 176 | 199 | 1550 | 200 | 1540 | 199 | 1550 | 176 | 188 | 1640 | 188 | 1640 | 188 | 1640 |
| 531.deepsjeng_r | 176 | 343 | 588 | 342 | 589 | 343 | 588 | 176 | 343 | 588 | 342 | 589 | 343 | 588 |
| 541.leela_r | 176 | 506 | 576 | 507 | 575 | 505 | 577 | 176 | 506 | 576 | 507 | 575 | 505 | 577 |
| 548.exchange2_r | 176 | 263 | 1750 | 264 | 1750 | 263 | 1760 | 176 | 263 | 1750 | 264 | 1750 | 263 | 1760 |
| 557.xz_r | 176 | 507 | 375 | 507 | 375 | 506 | 376 | 176 | 507 | 375 | 507 | 375 | 506 | 376 |

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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:

LD_LIBRARY_PATH =

"/home/speccpu/cpu2017/lib/intel64:/home/speccpu/cpu2017/lib/ia32:/home/speccpu/cpu2017/je5.0.1-32"

MALLOC_CONF = "retain:true"

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>

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>



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Platform Notes

BIOS Configuration
SNC (Sub NUMA) set to Enable SNC4 (4-Clusters)

Sysinfo program /home/speccpu/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on intel Wed Oct 16 18:38:07 2024

SUT (System Under Test) info as seen by some common utilities.

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12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
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19. OS release
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22. dmidecode
23. BIOS

```
-----
1. uname -a
Linux intel 6.8.0-45-generic #45~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Wed Sep 11 15:25:05 UTC 2 x86_64 x86_64
x86_64 GNU/Linux
-----
```

```
-----
2. w
 18:38:07 up 18 min,  2 users,  load average: 0.60, 0.60, 0.32
USER   TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
intel  :1      :1               18:34   ?xdm?  15:51  0.00s /usr/libexec/gdm-x-session --run-script env
GNOME_SHELL_SESSION_MODE=ubuntu /usr/bin/gnome-session --session=ubuntu
intel  pts/1    -                18:38   3.00s  1.40s  0.00s sudo
./reportable-ic2023.2.3-lin-sapphirerapids-rate-smt-on-20231121.sh
-----
```

```
-----
3. Username
From environment variable $USER:  root
From the command 'logname':      intel
-----
```

```
-----
4. ulimit -a
time(seconds)      unlimited
file(blocks)       unlimited
-----
```

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Platform Notes (Continued)

| | |
|-----------------------|-----------|
| data(kbytes) | unlimited |
| stack(kbytes) | unlimited |
| coredump(blocks) | 0 |
| memory(kbytes) | unlimited |
| locked memory(kbytes) | 132055920 |
| process | 4126443 |
| nofiles | 1024 |
| vmemory(kbytes) | unlimited |
| locks | unlimited |
| rtprio | 0 |

```

-----
5. sysinfo process ancestry
/sbin/init splash
/lib/systemd/systemd --user
/usr/libexec/gnome-terminal-server
bash
sudo ./reportable-ic2023.2.3-lin-sapphirerapids-rate-smt-on-20231121.sh
sudo ./reportable-ic2023.2.3-lin-sapphirerapids-rate-smt-on-20231121.sh
sh ./reportable-ic2023.2.3-lin-sapphirerapids-rate-smt-on-20231121.sh
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=176 -c
  ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=88 --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=176 --configfile
  ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=88 --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/CPU2017.009/temlogs/preenv.intrate.009.0.log --lognum 009.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/speccpu/cpu2017

```

```

-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Platinum 8458P
vendor_id      : GenuineIntel
cpu family      : 6
model          : 143
stepping       : 8
microcode      : 0x2b0005c0
bugs           : spectre_v1 spectre_v2 spec_store_bypass swapgs eibrs_pbrsb bhi
cpu cores      : 44
siblings       : 88
2 physical ids (chips)
176 processors (hardware threads)
physical id 0: core ids 0-43
physical id 1: core ids 0-43
physical id 0: apicids 0-87
physical id 1: apicids 128-215
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 2.37.2:
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):                 176

```

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Platform Notes (Continued)

```

On-line CPU(s) list:          0-175
Vendor ID:                   GenuineIntel
Model name:                  Intel(R) Xeon(R) Platinum 8458P
CPU family:                  6
Model:                       143
Thread(s) per core:         2
Core(s) per socket:         44
Socket(s):                   2
Stepping:                   8
CPU max MHz:                 3800.0000
CPU min MHz:                 800.0000
BogoMIPS:                   5400.00
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 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 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
                             user_shstk 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_l1d arch_capabilities
Virtualization:              VT-x
L1d cache:                   4.1 MiB (88 instances)
L1i cache:                   2.8 MiB (88 instances)
L2 cache:                    176 MiB (88 instances)
L3 cache:                    165 MiB (2 instances)
NUMA node(s):                8
NUMA node0 CPU(s):          0-10,88-98
NUMA node1 CPU(s):          11-21,99-109
NUMA node2 CPU(s):          22-32,110-120
NUMA node3 CPU(s):          33-43,121-131
NUMA node4 CPU(s):          44-54,132-142
NUMA node5 CPU(s):          55-65,143-153
NUMA node6 CPU(s):          66-76,154-164
NUMA node7 CPU(s):          77-87,165-175
Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit:    Not affected
Vulnerability Lltf:             Not affected
Vulnerability Mds:              Not affected
Vulnerability Meltdown:         Not affected
Vulnerability Mmio stale data:  Not affected
Vulnerability Reg file data sampling: 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/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2:       Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;
                             PBRSE-eIBRS SW sequence; BHI BHI_DIS_S
Vulnerability Srbds:            Not affected
Vulnerability Tsx async abort:  Not affected

```

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Platform Notes (Continued)

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE | LEVEL | SETS | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d | 48K | 4.1M | 12 | Data | 1 | 64 | 1 | 64 |
| L1i | 32K | 2.8M | 8 | Instruction | 1 | 64 | 1 | 64 |
| L2 | 2M | 176M | 16 | Unified | 2 | 2048 | 1 | 64 |
| L3 | 82.5M | 165M | 15 | Unified | 3 | 90112 | 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: 0-10,88-98
node 0 size: 128622 MB
node 0 free: 126497 MB
node 1 cpus: 11-21,99-109
node 1 size: 129016 MB
node 1 free: 128526 MB
node 2 cpus: 22-32,110-120
node 2 size: 129016 MB
node 2 free: 128089 MB
node 3 cpus: 33-43,121-131
node 3 size: 129016 MB
node 3 free: 128174 MB
node 4 cpus: 44-54,132-142
node 4 size: 128973 MB
node 4 free: 128245 MB
node 5 cpus: 55-65,143-153
node 5 size: 129016 MB
node 5 free: 128365 MB
node 6 cpus: 66-76,154-164
node 6 size: 129016 MB
node 6 free: 128310 MB
node 7 cpus: 77-87,165-175
node 7 size: 129008 MB
node 7 free: 128331 MB
node distances:
node  0  1  2  3  4  5  6  7
0:  10 12 12 12 21 21 21 21
1:  12 10 12 12 21 21 21 21
2:  12 12 10 12 21 21 21 21
3:  12 12 12 10 21 21 21 21
4:  21 21 21 21 10 12 12 12
5:  21 21 21 21 12 10 12 12
6:  21 21 21 21 12 12 10 12
7:  21 21 21 21 12 12 12 10

```

9. /proc/meminfo

MemTotal: 1056447380 kB

10. who -r

run-level 5 Oct 16 18:20

11. Systemd service manager version: systemd 249 (249.11-0ubuntu3.12)

Default Target Status
graphical degraded

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Platform Notes (Continued)

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 | ModemManager | NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon anacron anydesk apparmor avahi-daemon bluetooth console-setup cron cups cups-browsed dmesg e2scrub_reap getty@ gpu-manager grub-common grub-initrd-fallback irqbalance kerneloops keyboard-setup networkd-dispatcher openvpn power-profiles-daemon rsyslog secureboot-db setvtrgb snapd ssh switcheroo-control systemd-oomd systemd-pstore systemd-resolved systemd-timesyncd teamviewerd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw unattended-upgrades wpa_supplicant |
| enabled-runtime | netplan-ovs-cleanup | systemd-fsck-root systemd-remount-fs |
| disabled | acpid brltty console-getty debug-shell nftables openvpn-client@ openvpn-server@ openvpn@ rsync rtkit-daemon serial-getty@ speech-dispatcherd systemd-boot-check-no-failures systemd-network-generator systemd-networkd systemd-networkd-wait-online systemd-sysext systemd-time-wait-sync tlp upower wpa_supplicant-nl80211@ wpa_supplicant-wired@ wpa_supplicant@ | |
| generated | apport cpufrequtils loadcpufreq speech-dispatcher | |
| indirect | saned@ spice-vdagentd uidd | |
| masked | alsa-utils cryptdisks cryptdisks-early hwclock pulseaudio-enable-autospawn rc rcS saned screen-cleanup sudo systemd-rfkill x11-common | |

14. Linux kernel boot-time arguments, from `/proc/cmdline`

```
BOOT_IMAGE=/boot/vmlinuz-6.8.0-45-generic
root=UUID=073562bb-1438-42b9-adfa-6a6f7f3d3559
ro
quiet
splash
vt.handoff=7
```

15. `cpupower frequency-info`

```
analyzing CPU 58:
  current policy: frequency should be within 800 MHz and 3.80 GHz.
                   The governor "ondemand" 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 |

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```

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+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 Ubuntu 22.04.4 LTS

```

```

-----
20. Disk information
SPEC is set to: /home/speccpu/cpu2017
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2       ext4      879G  678G  157G  82% /

```

```

-----
21. /sys/devices/virtual/dmi/id
Vendor:         Fusionstor
Product:        Invento_i6000
Product Family: SG_Intel_EagleStream
Serial:         HQ3110001BDA03CD0002

```

```

-----
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 NO DIMM NO DIMM
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:     EG0.10.01
BIOS Date:        03/22/2024
BIOS Revision:    5.32

```




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

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

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
=====

=====
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 2023.2.3 Build x
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=====

=====
Fortran | 548.exchange2_r(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



SPEC CPU®2017 Integer Rate Result

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Fusionstor
(Test Sponsor: Meganet)

SPECrate®2017_int_base = 751

Invento i6000 (Intel Xeon Platinum 8458P)

SPECrate®2017_int_peak = 779

CPU2017 License: 6221
Test Sponsor: Meganet
Tested by: Fusionstor system

Test Date: Oct-2024
Hardware Availability: Feb-2023
Software Availability: Sep-2024

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 -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmallo
```

C++ benchmarks:

```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmallo
```

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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmallo
```

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx



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Hardware Availability: Feb-2023
Software Availability: Sep-2024

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
-fno-strict-overflow
-L/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/home/specdev/new_compilers/ic2023.2.3/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 -ljemalloc

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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: basepeak = yes
```

C++ benchmarks:

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

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Test Date: Oct-2024
Hardware Availability: Feb-2023
Software Availability: Sep-2024

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-ic2023p2-official-linux64.html>
<http://www.spec.org/cpu2017/flags/Fusionstor-Platform-Flags-Intel-ICX-rev6.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/Fusionstor-Platform-Flags-Intel-ICX-rev6.xml>

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