



SPEC CPU®2017 Integer Rate Result

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ZTE Corporation

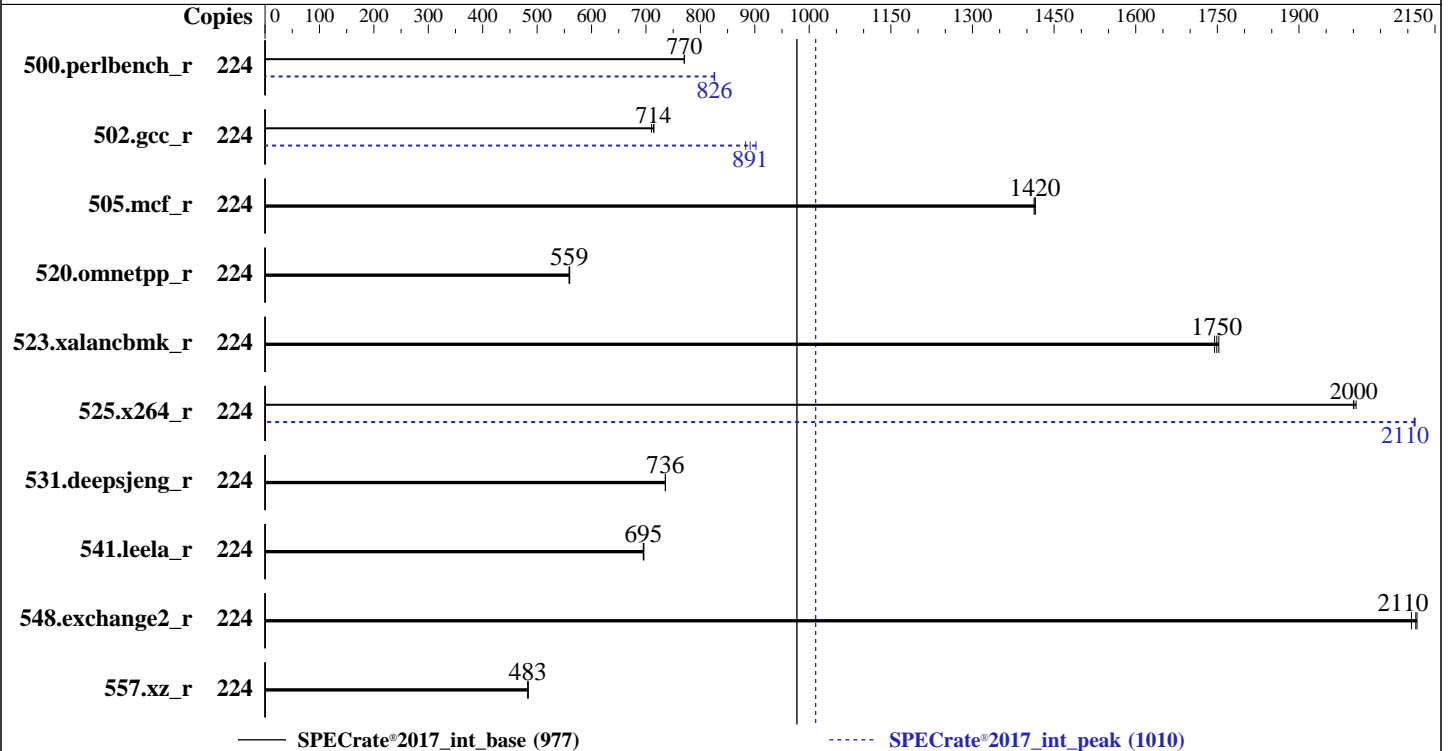
ZTE R5300G5 Server System
(2.00 GHz, Intel Xeon Platinum 8480+)

SPECrate®2017_int_base = 977

SPECrate®2017_int_peak = 1010

CPU2017 License: 9061
Test Sponsor: ZTE Corporation
Tested by: ZTE Corporation

Test Date: Mar-2023
Hardware Availability: Jan-2023
Software Availability: Dec-2022



Hardware

CPU Name: Intel Xeon Platinum 8480+
Max MHz: 3800
Nominal: 2000
Enabled: 112 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: 105 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 960 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 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 01.22.01.03 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	224	463	770	463	771	463	770	224	432	825	432	826	432	826
502.gcc_r	224	444	714	444	715	447	710	224	352	902	356	891	359	883
505.mcf_r	224	256	1420	256	1420	256	1410	224	256	1420	256	1420	256	1410
520.omnetpp_r	224	525	560	526	559	526	559	224	525	560	526	559	526	559
523.xalancbmk_r	224	135	1750	135	1750	136	1740	224	135	1750	135	1750	136	1740
525.x264_r	224	196	2000	196	2000	196	2010	224	186	2110	186	2110	186	2110
531.deepsjeng_r	224	349	736	349	736	349	736	224	349	736	349	736	349	736
541.leela_r	224	534	695	533	695	533	696	224	534	695	533	695	533	696
548.exchange2_r	224	277	2120	278	2110	279	2110	224	277	2120	278	2110	279	2110
557.xz_r	224	500	484	501	483	501	483	224	500	484	501	483	501	483

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

Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/spec/lib/intel64:/home/spec/lib/ia32:/home/spec/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 Configuration:
Intel VT for Directed I/O (VT-d) = Disabled
Patrol Scrub = Disabled
SR-IOV Support = Disabled
SNC = Enable SNC4
LLC dead line alloc = Enabled

Sysinfo program /home/spec/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Wed Mar 22 21:27:48 2023

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

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1. uname -a
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 5. sysinfo process ancestry
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 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
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 20. OS release
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Platform Notes (Continued)

24. 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`
21:27:48 up 1:51, 2 users, load average: 0.08, 0.35, 27.34
USER TTY LOGIN@ IDLE JCPU PCPU WHAT
root pts/0 06Apr22 16:04 2.73s 2.73s -bash
root pts/1 06Apr22 8.00s 1.96s 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) 4124461
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) 4124461
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited

5. `sysinfo process ancestry`
/usr/lib/systemd/systemd rhgb 3 nopti --switched-root --system --deserialize 31
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/1
-bash
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 -c ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --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=224 --configfile ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=112 --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/spec

6. `/proc/cpuinfo`

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Platform Notes (Continued)

```
model name      : Intel(R) Xeon(R) Platinum 8480+
vendor_id       : GenuineIntel
cpu family      : 6
model           : 143
stepping        : 6
microcode       : 0x2b0000a1
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores       : 56
siblings        : 112
2 physical ids (chips)
224 processors (hardware threads)
physical id 0:  core ids 0-55
physical id 1:  core ids 0-55
physical id 0:  apicids 0-111
physical id 1:  apicids 128-239
```

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):                 224
On-line CPU(s) list:   0-223
Vendor ID:              GenuineIntel
BIOS Vendor ID:        Intel(R) Corporation
Model name:             Intel(R) Xeon(R) Platinum 8480+
BIOS Model name:       Intel(R) Xeon(R) Platinum 8480+
CPU family:             6
Model:                  143
Thread(s) per core:    2
Core(s) per socket:    56
Socket(s):              2
Stepping:               6
CPU max MHz:           3800.0000
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 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 bml1 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 hwp hwp_act_window hwp_epp hwp_pkg_req
                        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 amx_tile flush_lld arch_capabilities

Lld cache:             5.3 MiB (112 instances)
L1i cache:             3.5 MiB (112 instances)
```

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Platform Notes (Continued)

```

L2 cache:                224 MiB (112 instances)
L3 cache:                210 MiB (2 instances)
NUMA node(s):            8
NUMA node0 CPU(s):      0-13,112-125
NUMA node1 CPU(s):      14-27,126-139
NUMA node2 CPU(s):      28-41,140-153
NUMA node3 CPU(s):      42-55,154-167
NUMA node4 CPU(s):      56-69,168-181
NUMA node5 CPU(s):      70-83,182-195
NUMA node6 CPU(s):      84-97,196-209
NUMA node7 CPU(s):      98-111,210-223
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:      Not affected
Vulnerability Mds:       Not affected
Vulnerability Meltdown:  Not affected
Vulnerability Spec store bypass: Vulnerable
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Vulnerable, IBPB: disabled, STIBP: disabled
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	5.3M	12	Data	1	64	1	64
L1i	32K	3.5M	8	Instruction	1	64	1	64
L2	2M	224M	16	Unified	2	2048	1	64
L3	105M	210M	15	Unified	3	114688	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: 0-13,112-125
node 0 size: 128107 MB
node 0 free: 127163 MB
node 1 cpus: 14-27,126-139
node 1 size: 128981 MB
node 1 free: 128048 MB
node 2 cpus: 28-41,140-153
node 2 size: 129017 MB
node 2 free: 127324 MB
node 3 cpus: 42-55,154-167
node 3 size: 129017 MB
node 3 free: 128105 MB
node 4 cpus: 56-69,168-181
node 4 size: 129017 MB
node 4 free: 128107 MB
node 5 cpus: 70-83,182-195
node 5 size: 129017 MB
node 5 free: 128096 MB
node 6 cpus: 84-97,196-209
node 6 size: 129017 MB
node 6 free: 127863 MB
node 7 cpus: 98-111,210-223
node 7 size: 128998 MB
node 7 free: 128101 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

```

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Platform Notes (Continued)

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:      1055924668 kB
```

```
10. who -r
     run-level 3 Apr 6 20:01
```

```
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
     * dnf-makecache.service             loaded failed failed dnf makecache
     * 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 atd auditd avahi-daemon bluetooth chrynyd crond cups dbus-broker firewalld
     gdm getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump libstoragemgmt
     low-memory-monitor lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
     nvmefc-boot-connections ostree-remount power-profiles-daemon qemu-guest-agent rhsmcertd
     rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd switcheroo-control
     systemd-network-generator tuned 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 chryny-wait cni-dhcp console-getty cpupower cups-browsed
     dbus-daemon debug-shell dnsmasq iprdump iprint iprupdate iscsid iscsiuiio kpatch kvm_stat
     ledmon man-db-restart-cache-update nftables nvme-autoconnect podman podman-auto-update
     podman-restart powertop psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm rhsm-facts
     rpmdm-rebuild serial-getty@ speech-dispatcherd sshd-keygen@ systemd-boot-check-no-failures
     systemd-pstore systemd-sysextr 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-root
     ro
     crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
     resume=/dev/mapper/rhel-swap
     rd.lvm.lv=rhel/root
     rd.lvm.lv=rhel/swap
     rhgb
     3
     quiet
     processor_speculative_off=nospectre_v1=off
     spectre_v2=off
```

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```
spec_store_bypass_disable=off
pti=off
nopti
mds=off
lltf=off
tsx_async_abort=off
kvm.nx_huge_pages_recovery_ratio=0
```

```
-----
15. cpupower frequency-info
analyzing CPU 0:
  current policy: frequency should be within 800 MHz and 3.80 GHz.
                  The governor "performance" may decide which speed to use
                  within this range.
  boost state support:
    Supported: yes
    Active: yes
```

```
-----
16. tuned-adm active
  Current active profile: throughput-performance
```

```
-----
17. 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           1
```

```
-----
18. /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
```

```
-----
19. /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
```

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Platform Notes (Continued)

20. 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)

21. Disk information
SPEC is set to: /home/spec
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 819G 56G 763G 7% /home

22. /sys/devices/virtual/dmi/id
Vendor: ZTE
Product: N/A
Product Family: Server
Serial: N/A

23. 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 Samsung M321R8GA0BB0-CQKMG 64 GB 2 rank 4800

24. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends Inc.
BIOS Version: 01.22.01.03
BIOS Date: 12/14/2022
BIOS Revision: 1.34

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)

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Compiler Version Notes (Continued)

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.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 2023.0.0 Build 20221201
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=====
Fortran | 548.exchange2_r(base, peak)
=====

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

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SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

ZTE Corporation

ZTE R5300G5 Server System
(2.00 GHz, Intel Xeon Platinum 8480+)

SPECrate®2017_int_base = 977

SPECrate®2017_int_peak = 1010

CPU2017 License: 9061
Test Sponsor: ZTE Corporation
Tested by: ZTE Corporation

Test Date: Mar-2023
Hardware Availability: Jan-2023
Software Availability: Dec-2022

Base Portability Flags (Continued)

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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

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

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SPEC CPU®2017 Integer Rate Result

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SPECrate®2017_int_peak = 1010

CPU2017 License: 9061

Test Sponsor: ZTE Corporation

Tested by: ZTE Corporation

Test Date: Mar-2023

Hardware Availability: Jan-2023

Software Availability: Dec-2022

Peak Portability Flags (Continued)

```
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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

```
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 -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/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

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Peak Optimization Flags (Continued)

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/ZTE-Platform-Settings-SPR-V1.3.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/ZTE-Platform-Settings-SPR-V1.3.xml>

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