



# SPEC CPU®2017 Integer Rate Result

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## Supermicro

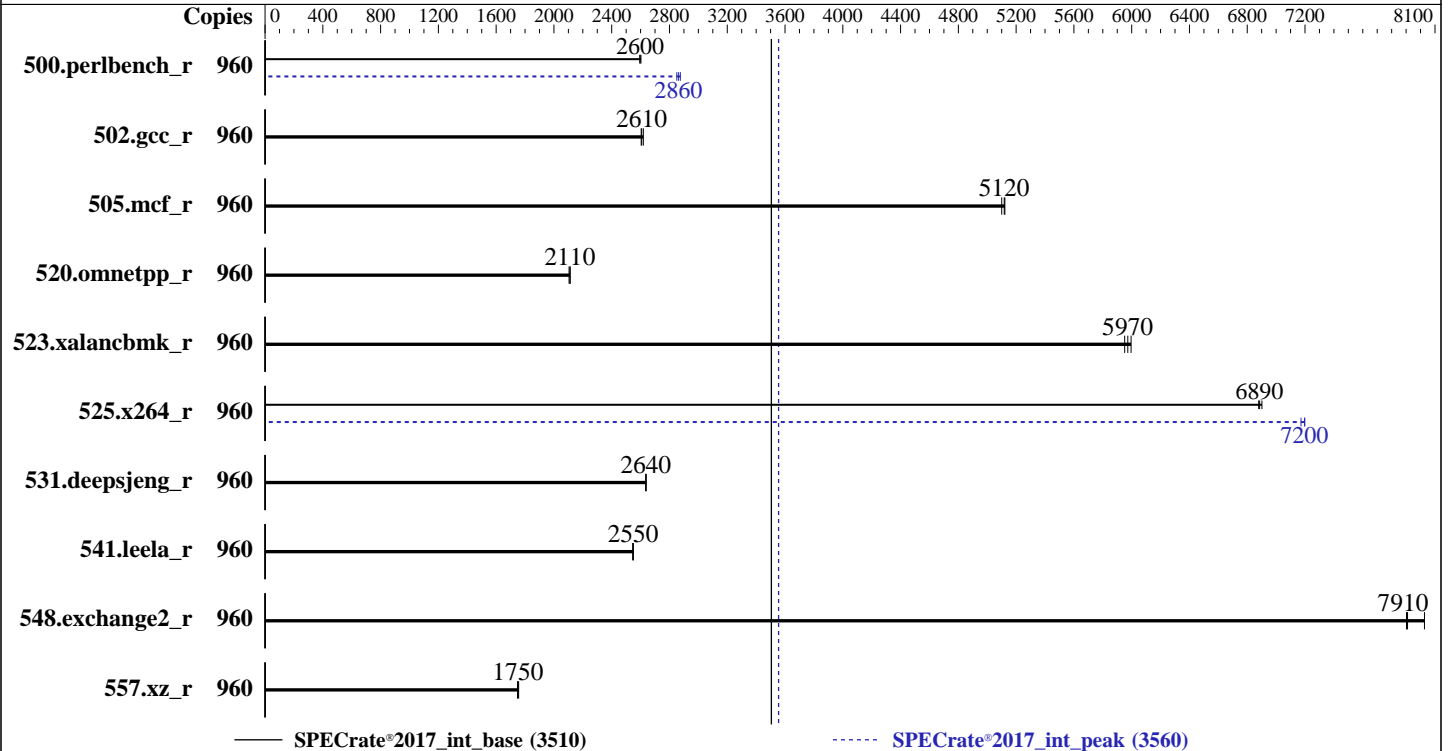
SuperServer SYS-681E-TR  
(X13OEI, Intel Xeon Platinum 8490H)

SPECrate®2017\_int\_base = 3510

SPECrate®2017\_int\_peak = 3560

CPU2017 License: 001176  
Test Sponsor: Supermicro  
Tested by: Supermicro

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



### Hardware

CPU Name: Intel Xeon Platinum 8490H  
Max MHz: 3500  
Nominal: 1900  
Enabled: 480 cores, 8 chips, 2 threads/core  
Orderable: 1,2,4,8 chips  
Cache L1: 32 KB I + 48 KB D on chip per core  
L2: 2 MB I+D on chip per core  
L3: 112.5 MB I+D on chip per chip  
Other: None  
Memory: 4 TB  
(64 x 64 GB 2Rx4 PC5-4800B-R)  
Storage: 1 x 800 GB NVMe SSD  
Other: None

### Software

OS: SUSE Linux Enterprise Server 15 SP4  
5.14.21-150400.22-default  
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 1.0a released May-2023 tested as Mar-2023  
File System: ext4  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 64-bit  
Other: None  
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	960	<b>588</b>	<b>2600</b>	589	2590	587	2600	960	536	2850	532	2880	<b>534</b>	<b>2860</b>
502.gcc_r	960	522	2600	519	2620	<b>521</b>	<b>2610</b>	960	522	2600	519	2620	<b>521</b>	<b>2610</b>
505.mcf_r	960	304	5100	303	5120	<b>303</b>	<b>5120</b>	960	304	5100	303	5120	<b>303</b>	<b>5120</b>
520.omnetpp_r	960	598	2100	596	2110	<b>597</b>	<b>2110</b>	960	598	2100	596	2110	<b>597</b>	<b>2110</b>
523.xalancbmk_r	960	170	5950	169	6000	<b>170</b>	<b>5970</b>	960	170	5950	169	6000	<b>170</b>	<b>5970</b>
525.x264_r	960	244	6900	<b>244</b>	<b>6890</b>	244	6880	960	<b>234</b>	<b>7200</b>	234	7200	234	7170
531.deepsjeng_r	960	417	2640	417	2640	<b>417</b>	<b>2640</b>	960	417	2640	417	2640	<b>417</b>	<b>2640</b>
541.leela_r	960	<b>624</b>	<b>2550</b>	625	2550	624	2550	960	<b>624</b>	<b>2550</b>	625	2550	624	2550
548.exchange2_r	960	<b>318</b>	<b>7910</b>	313	8030	318	7900	960	<b>318</b>	<b>7910</b>	313	8030	318	7900
557.xz_r	960	593	1750	591	1760	<b>592</b>	<b>1750</b>	960	593	1750	591	1760	<b>592</b>	<b>1750</b>

SPECrate®2017\_int\_base = **3510**

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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 =
"/root/cpu2017-1.1.9/lib/intel64:/root/cpu2017-1.1.9/lib/ia32:/root/cpu2017-1.1.9/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>

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 system as tested and documented.

## Platform Notes

BIOS Settings:  
Power Technology = Custom  
Power Performance Tuning = BIOS Controls EPB  
ENERGY\_PERF\_BIAS\_CFG mode = Max Performance  
SNC = Enable SNC4 (4-Clusters)  
KTI Prefetch = Enable  
LLC Dead Line Alloc = Disable  
DCU Streamer Prefetcher = Disable  
Hyper-Threading [ALL] = Enable

Sysinfo program /root/cpu2017-1.1.9/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on localhost Mon Mar 20 19:30:41 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 249 (249.11+suse.124.g2bc0b2c447)
  12. Services, from systemctl list-unit-files
  13. Linux kernel boot-time arguments, from /proc/cmdline
  14. cpupower frequency-info
  15. sysctl
  16. /sys/kernel/mm/transparent\_hugepage
  17. /sys/kernel/mm/transparent\_hugepage/khugepaged
  18. OS release
  19. Disk information
  20. /sys/devices/virtual/dmi/id
  21. dmidecode
  22. BIOS
- 

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## Platform Notes (Continued)

```

-----
1. uname -a
Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
x86_64 x86_64 x86_64 GNU/Linux

-----
2. w
19:30:41 up 12 min, 1 user, load average: 0.11, 1.91, 2.86
USER      TTY      FROM             LOGIN@   IDLE   JCPU   PCPU   WHAT
root     tty1      -                19:30   17.00s  1.42s  0.05s  -bash

-----
3. Username
From environment variable $USER:  root

-----
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size               (blocks, -f) unlimited
pending signals         (-i) 16511755
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) 16511755
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
-bash
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=960 -c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=480 --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=960 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=480 --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 = /root/cpu2017-1.1.9

-----
6. /proc/cpuinfo
model name      : Intel(R) Xeon(R) Platinum 8490H
vendor_id      : GenuineIntel
cpu family     : 6
model          : 143
stepping       : 6
microcode      : 0x2b0001b0

```

(Continued on next page)



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### Platform Notes (Continued)

```

bugs          : spectre_v1 spectre_v2 spec_store_bypass swappg
cpu cores     : 60
siblings      : 120
8 physical ids (chips)
960 processors (hardware threads)
physical id 0: core ids 0-59
physical id 1: core ids 0-59
physical id 2: core ids 0-59
physical id 3: core ids 0-59
physical id 4: core ids 0-59
physical id 5: core ids 0-59
physical id 6: core ids 0-59
physical id 7: core ids 0-59
physical id 0: apicids 0-119
physical id 1: apicids 128-247
physical id 2: apicids 256-375
physical id 3: apicids 384-503
physical id 4: apicids 512-631
physical id 5: apicids 640-759
physical id 6: apicids 768-887
physical id 7: apicids 896-1015

```

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):                960
On-line CPU(s) list:   0-959
Vendor ID:             GenuineIntel
Model name:            Intel(R) Xeon(R) Platinum 8490H
CPU family:            6
Model:                143
Thread(s) per core:    2
Core(s) per socket:    60
Socket(s):             8
Stepping:              6
Frequency boost:       enabled
CPU max MHz:           1901.0000
CPU min MHz:           800.0000
BogoMIPS:              3800.00
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 cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
                        vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep
                        bmi2 erms invpcid rtm 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

```

(Continued on next page)



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### Platform Notes (Continued)

```
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
VT-x
```

**Virtualization:**

L1d cache: 22.5 MiB (480 instances)  
L1i cache: 15 MiB (480 instances)  
L2 cache: 960 MiB (480 instances)  
L3 cache: 900 MiB (8 instances)

**NUMA node(s):**

32  
NUMA node0 CPU(s): 0-14,480-494  
NUMA node1 CPU(s): 15-29,495-509  
NUMA node2 CPU(s): 30-44,510-524  
NUMA node3 CPU(s): 45-59,525-539  
NUMA node4 CPU(s): 60-74,540-554  
NUMA node5 CPU(s): 75-89,555-569  
NUMA node6 CPU(s): 90-104,570-584  
NUMA node7 CPU(s): 105-119,585-599  
NUMA node8 CPU(s): 120-134,600-614  
NUMA node9 CPU(s): 135-149,615-629  
NUMA node10 CPU(s): 150-164,630-644  
NUMA node11 CPU(s): 165-179,645-659  
NUMA node12 CPU(s): 180-194,660-674  
NUMA node13 CPU(s): 195-209,675-689  
NUMA node14 CPU(s): 210-224,690-704  
NUMA node15 CPU(s): 225-239,705-719  
NUMA node16 CPU(s): 240-254,720-734  
NUMA node17 CPU(s): 255-269,735-749  
NUMA node18 CPU(s): 270-284,750-764  
NUMA node19 CPU(s): 285-299,765-779  
NUMA node20 CPU(s): 300-314,780-794  
NUMA node21 CPU(s): 315-329,795-809  
NUMA node22 CPU(s): 330-344,810-824  
NUMA node23 CPU(s): 345-359,825-839  
NUMA node24 CPU(s): 360-374,840-854  
NUMA node25 CPU(s): 375-389,855-869  
NUMA node26 CPU(s): 390-404,870-884  
NUMA node27 CPU(s): 405-419,885-899  
NUMA node28 CPU(s): 420-434,900-914  
NUMA node29 CPU(s): 435-449,915-929  
NUMA node30 CPU(s): 450-464,930-944  
NUMA node31 CPU(s): 465-479,945-959

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 and seccomp

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
L1d	48K	22.5M	12	Data	1	64	1	64
L1i	32K	15M	8	Instruction	1	64	1	64
L2	2M	960M	16	Unified	2	2048	1	64
L3	112.5M	900M	15	Unified	3	122880	1	64

8. numactl --hardware

(Continued on next page)



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### Platform Notes (Continued)

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

```

available: 32 nodes (0-31)
node 0 cpus: 0-14,480-494
node 0 size: 128644 MB
node 0 free: 125946 MB
node 1 cpus: 15-29,495-509
node 1 size: 129016 MB
node 1 free: 128289 MB
node 2 cpus: 30-44,510-524
node 2 size: 129016 MB
node 2 free: 128511 MB
node 3 cpus: 45-59,525-539
node 3 size: 129016 MB
node 3 free: 128397 MB
node 4 cpus: 60-74,540-554
node 4 size: 129016 MB
node 4 free: 128812 MB
node 5 cpus: 75-89,555-569
node 5 size: 129016 MB
node 5 free: 128834 MB
node 6 cpus: 90-104,570-584
node 6 size: 129016 MB
node 6 free: 128814 MB
node 7 cpus: 105-119,585-599
node 7 size: 129016 MB
node 7 free: 128831 MB
node 8 cpus: 120-134,600-614
node 8 size: 129016 MB
node 8 free: 128805 MB
node 9 cpus: 135-149,615-629
node 9 size: 128981 MB
node 9 free: 128775 MB
node 10 cpus: 150-164,630-644
node 10 size: 129016 MB
node 10 free: 128801 MB
node 11 cpus: 165-179,645-659
node 11 size: 129016 MB
node 11 free: 128818 MB
node 12 cpus: 180-194,660-674
node 12 size: 129016 MB
node 12 free: 128704 MB
node 13 cpus: 195-209,675-689
node 13 size: 129016 MB
node 13 free: 128656 MB
node 14 cpus: 210-224,690-704
node 14 size: 129016 MB
node 14 free: 128732 MB
node 15 cpus: 225-239,705-719
node 15 size: 129016 MB
node 15 free: 128751 MB
node 16 cpus: 240-254,720-734
node 16 size: 129016 MB
node 16 free: 128635 MB
node 17 cpus: 255-269,735-749
node 17 size: 129016 MB
node 17 free: 128717 MB
node 18 cpus: 270-284,750-764
node 18 size: 129016 MB
node 18 free: 128784 MB
node 19 cpus: 285-299,765-779

```

(Continued on next page)



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### Platform Notes (Continued)

```

node 19 size: 129016 MB
node 19 free: 128592 MB
node 20 cpus: 300-314,780-794
node 20 size: 129016 MB
node 20 free: 128809 MB
node 21 cpus: 315-329,795-809
node 21 size: 129016 MB
node 21 free: 128857 MB
node 22 cpus: 330-344,810-824
node 22 size: 129016 MB
node 22 free: 128835 MB
node 23 cpus: 345-359,825-839
node 23 size: 129016 MB
node 23 free: 128827 MB
node 24 cpus: 360-374,840-854
node 24 size: 129016 MB
node 24 free: 128151 MB
node 25 cpus: 375-389,855-869
node 25 size: 129016 MB
node 25 free: 128199 MB
node 26 cpus: 390-404,870-884
node 26 size: 129016 MB
node 26 free: 128235 MB
node 27 cpus: 405-419,885-899
node 27 size: 129016 MB
node 27 free: 128230 MB
node 28 cpus: 420-434,900-914
node 28 size: 129016 MB
node 28 free: 128493 MB
node 29 cpus: 435-449,915-929
node 29 size: 129016 MB
node 29 free: 128708 MB
node 30 cpus: 450-464,930-944
node 30 size: 129016 MB
node 30 free: 128685 MB
node 31 cpus: 465-479,945-959
node 31 size: 128861 MB
node 31 free: 128608 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31
0: 10 12 12 12 21 21 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
1: 12 10 12 12 21 21 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
2: 12 12 10 12 21 21 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
3: 12 12 12 10 21 21 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
4: 21 21 21 21 10 12 12 12 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
5: 21 21 21 21 12 10 12 12 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
6: 21 21 21 21 12 12 10 12 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
7: 21 21 21 21 12 12 12 10 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
8: 21 21 21 21 31 31 31 31 10 12 12 12 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
9: 21 21 21 21 31 31 31 31 12 10 12 12 21 21 21 21 21 21 21 21 31 31 31 31 31

```

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### Platform Notes (Continued)

```

 31 31 31 21 21 21 21
10: 21 21 21 21 21 31 31 31 31 12 12 10 12 21 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
11: 21 21 21 21 31 31 31 31 12 12 12 10 21 21 21 21 21 21 21 31 31 31 31 31
31 31 31 21 21 21 21
12: 31 31 31 31 21 21 21 21 21 21 21 21 10 12 12 12 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
13: 31 31 31 31 21 21 21 21 21 21 21 21 12 10 12 12 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
14: 31 31 31 31 31 21 21 21 21 21 21 12 12 10 12 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
15: 31 31 31 31 21 21 21 21 21 21 21 12 12 12 10 31 31 31 31 21 21 21 21 21
21 21 21 31 31 31 31
16: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 10 12 12 12 21 21 21 21 21
21 21 21 31 31 31 31
17: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 12 10 12 12 21 21 21 21 21
21 21 21 31 31 31 31
18: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 12 12 10 12 21 21 21 21 21
21 21 21 31 31 31 31
19: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 12 12 12 10 21 21 21 21 21
21 21 21 31 31 31 31
20: 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21 21 21 10 12 12 12 31
31 31 31 21 21 21 21
21: 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21 21 21 12 10 12 12 31
31 31 31 21 21 21 21
22: 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21 21 21 12 12 10 12 31
31 31 31 21 21 21 21
23: 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21 21 21 12 12 12 10 31
31 31 31 21 21 21 21
24: 21 21 21 21 31 31 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 10
12 12 12 21 21 21 21
25: 21 21 21 21 31 31 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 12
10 12 12 21 21 21 21
26: 21 21 21 21 31 31 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 12
12 10 12 21 21 21 21
27: 21 21 21 21 31 31 31 31 31 31 21 21 21 21 21 21 21 21 31 31 31 31 12
12 12 10 21 21 21 21
28: 31 31 31 31 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 10 12 12 12
29: 31 31 31 31 21 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 12 10 12 12
30: 31 31 31 31 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 12 12 10 12
31: 31 31 31 31 21 21 21 21 21 21 31 31 31 31 31 31 31 21 21 21 21 21
21 21 21 12 12 12 10

```

```

-----
9. /proc/meminfo
   MemTotal:      4227033784 kB

```

```

-----
10. who -r
    run-level 3 Mar 20 19:20

```

```

-----
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target Status
    multi-user      running

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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## Supermicro

SuperServer SYS-681E-TR  
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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Mar-2023  
**Hardware Availability:** May-2023  
**Software Availability:** Dec-2022

### Platform Notes (Continued)

12. Services, from `systemctl list-unit-files`

STATE	UNIT FILES
enabled	YaST2-Firstboot YaST2-Second-Stage apparmor auditd bluetooth cron display-manager getty@ haveged irqbalance iscsi issue-generator kbdsettings klog lvm2-monitor nscd nvme-fc-boot-connections postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime	systemd-fsck-root systemd-remount-fs
disabled	accounts-daemon appstream-sync-cache autofs autoyast-initscripts blk-availability bluetooth-mesh boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed debug-shell ebttables exchange-bmc-os-info firewallld gpm grub2-once haveged-switch-root ipmi ipmievd iscsi-init iscsid iscsiui issue-add-ssh-keys kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nmb nvme-autoconnect ostree-remount rdisc rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@ smartd-generate_opts smb snmpd snmptrapd speech-dispatcherd svnservice systemd-boot-check-no-failures systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2 upower
indirect	wickedd

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

```

BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=UUID=45b5dbe6-1d05-41ac-80df-f59bb33eace7
splash=silent
mitigations=auto
quiet
security=

```

14. `cpupower frequency-info`

```

analyzing CPU 0:
  current policy: frequency should be within 800 MHz and 1.90 GHz.
                  The governor "ondemand" may decide which speed to use
                  within this range.

  boost state support:
    Supported: yes
    Active: yes

```

15. `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

```

(Continued on next page)



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### Platform Notes (Continued)

16. /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

-----  
17. /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

-----  
18. OS release  
From /etc/\*-release /etc/\*-version  
os-release SUSE Linux Enterprise Server 15 SP4

-----  
19. Disk information  
SPEC is set to: /root/cpu2017-1.1.9  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/nvme1n1p2 ext4 732G 13G 682G 2% /

-----  
20. /sys/devices/virtual/dmi/id  
Vendor: Supermicro  
Product: Super Server  
Product Family: Family

-----  
21. dmidecode  
Additional information from dmidecode 3.2 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:  
64x Micron Technology MTC40F2046S1RC48BA1 64 GB 2 rank 4800

-----  
22. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: American Megatrends International, LLC.  
BIOS Version: 1.0a  
BIOS Date: 03/16/2023  
BIOS Revision: 5.29

### Compiler Version Notes

=====  
C | 500.perlbench\_r(base, peak) 502.gcc\_r(base, peak) 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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(Continued on next page)



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**Test Date:** Mar-2023  
**Hardware Availability:** May-2023  
**Software Availability:** Dec-2022

## Compiler Version Notes (Continued)

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

=====  
Fortran | 548.exchange2\_r(base, peak)  
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

## 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

(Continued on next page)



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## Supermicro

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**Hardware Availability:** May-2023  
**Software Availability:** Dec-2022

## Base Optimization Flags (Continued)

C benchmarks (continued):

```
-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

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs  
-fprofile-generate(pass 1)  
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
```

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# SPEC CPU®2017 Integer Rate Result

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## Supermicro

SuperServer SYS-681E-TR  
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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Mar-2023  
**Hardware Availability:** May-2023  
**Software Availability:** Dec-2022

## Peak Optimization Flags (Continued)

500.perlbench\_r (continued):

```
-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  
-lqkmallocc
```

502.gcc\_r: basepeak = yes

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  
-lqkmallocc
```

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/Supermicro-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-ic2023-official-linux64.xml>

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



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