Supermicro
Microcloud SuperServer SYS-530MT-H8TNR
(X12STD-F, Intel Xeon E-2378G)

SPECrate®2017_int_base = 66.1
SPECrate®2017_int_peak = 68.9

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

Test Date: Nov-2021
Hardware Availability: Sep-2021
Software Availability: May-2021

<table>
<thead>
<tr>
<th>Benchmark</th>
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</tbody>
</table>

**Hardware**

CPU Name: Intel Xeon E-2378G
Max MHz: 5100
Nominal: 2800
Enabled: 8 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 512 KB I+D on chip per core
L3: 16 MB I+D on chip per chip
Other: None
Memory: 128 GB (4 x 32 GB 2Rx8 PC4-3200AA-E, running at 2933)
Storage: 1 x 200 GB SATA III SSD
Other: None

**Software**

OS: Red Hat Enterprise Linux release 8.4
Kernel 4.18.0-305.el8.x86_64
Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux;
Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux
Parallel: No
Firmware: Version 1.0 released Aug-2021
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: OS set to prefer performance at the cost of additional power usage.
**SPEC CPU®2017 Integer Rate Result**

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**Supermicro**

Microcloud SuperServer SYS-530MT-H8TNR (X12STD-F, Intel Xeon E-2378G)

SPEC CPU®2017 Integer Rate Result

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Supermicro

Microcloud SuperServer SYS-530MT-H8TNR (X12STD-F, Intel Xeon E-2378G)

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Results Table

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<td>448</td>
<td>38.5</td>
<td></td>
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

**Submit Notes**

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

**Operating System Notes**

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

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = 
"/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"

MALLOC_CONF = "retain:true"

**General Notes**

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Red Hat Enterprise Linux 8.1
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

(Continued on next page)
# SPEC CPU®2017 Integer Rate Result

**Supermicro**  
Microcloud SuperServer SYS-530MT-H8TNR  
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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

## General Notes (Continued)

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  

## Platform Notes

- **Sysinfo program** /home/cpu2017/bin/sysinfo  
  Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca56d  
  running on 135-170-143.engtw Wed Nov 3 01:41:48 2021

- **SUT (System Under Test) info as seen by some common utilities.**  
  For more information on this section, see  
  https://www.spec.org/cpu2017/Docs/config.html#sysinfo

- **From /proc/cpuinfo**  
  ```
  model name : Intel(R) Xeon(R) E-2378G CPU @ 2.80GHz
  1 "physical id"s (chips)
  16 "processors"
  cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  ```

- **From lscpu from util-linux 2.32.1:**  
  ```
  Architecture:     x86_64
  CPU op-mode(s):   32-bit, 64-bit
  Byte Order:       Little Endian
  CPU(s):           16
  On-line CPU(s) list: 0-15
  Thread(s) per core: 2
  Core(s) per socket: 8
  Socket(s):        1
  NUMA node(s):     1
  Vendor ID:        GenuineIntel
  BIOS Vendor ID:   Intel(R) Corporation
  CPU family:       6
  Model:            167
  Model name:       Intel(R) Xeon(R) E-2378G CPU @ 2.80GHz
  ```

(Continued on next page)
## SPEC CPU®2017 Integer Rate Result

### Supermicro

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<tr>
<td><strong>Tested by:</strong> Supermicro</td>
<td><strong>Software Availability:</strong> May-2021</td>
</tr>
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</table>

### Platform Notes (Continued)

| BIOS Model name: | Intel(R) Xeon(R) E-2378G CPU @ 2.80GHz |
| Stepping:        | 1 |
| CPU MHz:         | 4847.928 |
| CPU max MHz:     | 2801.0000 |
| CPU min MHz:     | 800.0000 |
| BogoMIPS:        | 5616.00 |
| Virtualization:  | VT-x |
| L1d cache:       | 48K |
| L1i cache:       | 32K |
| L2 cache:        | 512K |
| L3 cache:        | 16384K |
| NUMA node0 CPU(s): | 0-15 |
| 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 sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb stibp ibrs Enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fpsgbase tsc_adjust bm1 avx2 smep bmi2 erms invpcid mxp avx512f avx512dq rdseed adx smap avx512lfma clflushopt intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves dtherm ida arat pln pts avx512vmbi umip pku ospke avx512_vmbi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq rdpid fsrn md_clear flush_l1d arch_capabilities |

/proc/cpuinfo cache data
- cache size : 16384 KB

From numactl --hardware
- WARNING: a numactl 'node' might or might not correspond to a physical chip.
- available: 1 nodes (0)
- node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- node 0 size: 128815 MB
- node 0 free: 113203 MB
- node distances:
- node 0
- 0: 10

From /proc/meminfo
- MemTotal: 131907500 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/sbin/tuned-adm active
- Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has

(Continued on next page)
Platform Notes (Continued)

From /etc/*release* /etc/*version*

```plaintext
os-release:
   NAME="Red Hat Enterprise Linux"
   VERSION="8.4 (Ootpa)"
   ID="rhel"
   ID_LIKE="fedora"
   VERSION_ID="8.4"
   PLATFORM_ID="platform:el8"
   PRETTY_NAME="Red Hat Enterprise Linux 8.4 (Ootpa)"
   ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.4 (Ootpa)
```

system-release: Red Hat Enterprise Linux release 8.4 (Ootpa)

```
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.4:ga
```

```
uname -a:
Linux 135-170-143.engtw 4.18.0-305.el8.x86_64 #1 SMP Thu Apr 29 08:54:30 EDT 2021
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- **CVE-2018-12207 (iTLB Multihit):** Not affected
- **CVE-2018-3620 (L1 Terminal Fault):** Not affected
- **Microarchitectural Data Sampling:** Not affected
- **CVE-2017-5754 (Meltdown):** Not affected
- **CVE-2018-3639 (Speculative Store Bypass):** Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- **CVE-2017-5753 (Spectre variant 1):** Mitigation: usercopy/swapgs barriers and __user pointer sanitization
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- **CVE-2020-0543 (Special Register Buffer Data Sampling):** Not affected
- **CVE-2019-11135 (TSX Asynchronous Abort):** Not affected

```
run-level 3 Nov 2 16:40
```

```
SPEC is set to: /home/cpu2017
```

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs 182G 22G 160G 12% /
```

```
From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: Super Server
Serial: 0123456789
```

(Continued on next page)
Supermicro
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Platform Notes (Continued)

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:
4x Micron Technology 18ADF4G72AZ-3G2B3 32 GB 2 rank 3200, configured at 2933

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.0
BIOS Date: 08/31/2021
BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 500.perlbench_r(peak) 557.xz_r(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C       | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

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C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
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Compilier Version Notes (Continued)

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**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

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### 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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

| Fortran | 548.exchange2_r(base, peak) |
|--------------------------|

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64,
Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

### Base Compiler Invocation

**C benchmarks:**

- icx

**C++ benchmarks:**

- icpx

**Fortran benchmarks:**

- ifort

---

### 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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Test Date: Nov-2021
Hardware Availability: Sep-2021
Software Availability: May-2021

Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icx

500.perlbench_r: icc

557.xz_r: icc

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64

(Continued on next page)
Peak Portability Flags (Continued)

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: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdatalpass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-3 -fno-alias -ipo -O3 -ffast-math -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:

520.omnetpp_r: basepeak = yes

(Continued on next page)
## SPEC CPU®2017 Integer Rate Result

### Supermicro

**Microcloud SuperServer SYS-530MT-H8TNR (X12STD-F, Intel Xeon E-2378G)**

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>66.1</th>
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<tr>
<td>SPECrate®2017_int_peak</td>
<td>68.9</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Nov-2021  
**Hardware Availability:** Sep-2021  
**Software Availability:** May-2021

### 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:


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


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Tested with SPEC CPU®2017 v1.1.8 on 2021-11-02 13:41:47-0400.  
Originally published on 2021-11-23.