# SPEC CPU®2017 Integer Speed Result

## Supermicro

SuperServer SYS-740GP-TNRT  
(X12DPG-QT6, Intel Xeon Platinum 8380)

| Test Sponsor: | Supermicro |
| Test Date: | May-2021 |
| Hardware Availability: | Apr-2021 |

### SPEC CPU®2017 int_base

| SPECspeed®2017_int_base = 11.7 |

### SPEC CPU®2017 int_peak

| SPECspeed®2017_int_peak = 12.0 |

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**Threads**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<tr>
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**Hardware**

- **CPU Name:** Intel Xeon Platinum 8380
- **Max MHz:** 3400
- **Nominal:** 2300
- **Enabled:** 80 cores, 2 chips
- **Orderable:** 1.2 chips
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **Cache L2:** 1.25 MB I+D on chip per core
- **Cache L3:** 60 MB I+D on chip per chip
- **Memory:** 1 TB (16 x 64 GB 4DRx4 PC4-3200AA-L)
- **Storage:** 1 x 200 GB SATA III SSD

**Software**

- **OS:** Red Hat Enterprise Linux 8.3
- **Kernel:** 4.18.0-240.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:** Yes
- **Firmware:** Version 1.1 released May-2021
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.

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<td><strong>24.2</strong></td>
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<td><strong>255</strong></td>
<td><strong>24.2</strong></td>
<td>255</td>
<td>24.3</td>
</tr>
</tbody>
</table>

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

### Operating System Notes

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

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- `KMP_AFFINITY = "granularity=fine,scatter"
- `LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
- `MALLOC_CONF = "retain:true"
- `OMP_STACKSIZE = "192M"

### General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
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`

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

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

Supermicro
SuperServer SYS-740GP-TNRT
(X12DPG-QT6 , Intel Xeon Platinum 8380)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

General Notes (Continued)

built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS Settings:
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode = Performance
Hyper-Threading [ALL] = Disable
Stale AtoS = Disable
Patrol Scrub = Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a6lec0915b55891ef0e16acafc64d
running on X12DPG-01 Mon May 24 18:50:06 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) Platinum 8380 CPU @ 2.30GHz
  2 "physical id"s (chips)
  80 "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 : 40
siblings : 40
physical 0: cores 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 32 33 34 35 36 37 38 39
physical 1: cores 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 32 33 34 35 36 37 38 39

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): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 1
Core(s) per socket: 40
Socket(s): 2
NUMA node(s): 2
Vendor node(s): GenuineIntel
CPU family: 6

(Continued on next page)
Supermicro
SuperServer SYS-740GP-TNRT (X12DPG-QT6, Intel Xeon Platinum 8380)

SPECspeed®2017_int_peak = 12.0
SPECspeed®2017_int_base = 11.7

Platform Notes (Continued)

Model: 106
Model name: Intel(R) Xeon(R) Platinum 8380 CPU @ 2.30GHz
Stepping: 6
CPU MHz: 1847.754
CPU max MHz: 3400.0000
CPU min MHz: 800.0000
BogoMIPS: 4600.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 61440K
NUMA node0 CPU(s): 0-39
NUMA node1 CPU(s): 40-79
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
        pat pse36 clflush dtsc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdelgb rdtscp
        lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
        aperfmpref perf 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 abal_mm 3nowprefetch cpuid_fault epb cat_l3 invpcid_single
        intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept
        vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a
        avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
        avx512bw avx512vl xsaveopt xsaves xssaves csssave cssaves cqm_occup_llc cqm_mbm_total
        cqm_mbm_local split_lock_detect wbinvd dtherm ida arat pin pts avx512vbm umip pku
        ospe avx512_vbmi2 gfnf vaes vpclmulqdq avx512_vnni avx512_bitalg tme
        avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 61440 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
node 0 cpus: 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 32 33 34 35 36 37 38 39
node 0 size: 485361 MB
node 0 free: 515037 MB
node 1 cpus: 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
node 1 size: 486090 MB
node 1 free: 515063 MB
node distances:
  node 0 1
    0: 10 20
    1: 20 10
SPEC CPU®2017 Integer Speed Result

Supermicro
SuperServer SYS-740GP-TNRT (X12DPG-QT6 , Intel Xeon Platinum 8380)

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SPECspeed®2017_int_peak = 12.0

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

Platform Notes (Continued)

From /proc/meminfo
MemTotal: 1056442420 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 performance

From /etc/*release* /etc/*version*
NAME="Red Hat Enterprise Linux"
VERSION="8.3 (Ootpa)"
ID="rhel"
ID LIKE="fedora"
VERSION_ID="8.3"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga
uname -a:
Linux X12DPG-01 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020 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/swaps 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 May 24 18:41

(Continued on next page)
Platform Notes (Continued)

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 185G 15G 171G 8% /

From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: SYS-740GP-TNRT
Product Family: Family
Serial: 0123456789

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:
16x Samsung M386A8K40DM2-CWE 64 GB 4 rank 3200

BIOS:
  BIOS Vendor: American Megatrends International, LLC.
  BIOS Version: T20210511190119
  BIOS Date: 05/11/2021
  BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(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       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
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SPEC CPU®2017 Integer Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

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Compiler Version Notes (Continued)

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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort
Supermicro
SuperServer SYS-740GP-TNRT
(X12DPG-QT6, Intel Xeon Platinum 8380)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Apr-2021

### Base Portability Flags

- 600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
- 602.gcc_s: -DSPEC_LP64
- 605.mcf_s: -DSPEC_LP64
- 620.omnetpp_s: -DSPEC_LP64
- 623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
- 625.x264_s: -DSPEC_LP64
- 631.deepsjeng_s: -DSPEC_LP64
- 641.leela_s: -DSPEC_LP64
- 648.exchange2_s: -DSPEC_LP64
- 657.xz_s: -DSPEC_LP64

### Base Optimization Flags

**C benchmarks:**
- -DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
- -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
- -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

**C++ benchmarks:**
- -DSPEC_OPENMP -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:**
- -m64 -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs -align array32byte -auto
- -mbranches-within-32B-boundaries

### Peak Compiler Invocation

**C benchmarks (except as noted below):**
- icx

- 600.perlbench_s: icc

**C++ benchmarks:**
- icpx

(Continued on next page)
Peak Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass l) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass l) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -DSPEC_OPENMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs
-xCORE-AVX512 -flto -O3 -ffast-math
-qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-1/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

(Continued on next page)
Supermicro
SuperServer SYS-740GP-TNRT
(X12DPG-QT6, Intel Xeon Platinum 8380)

SPEC speed®2017_int_base = 11.7
SPEC speed®2017_int_peak = 12.0

Peak Optimization Flags (Continued)

641.leela_s: basepeak = yes

Fortran benchmarks:
648.exchange2_s: basepeak = yes

The flags files that were used to format this result can be browsed at

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-ICX-revA.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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