SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro
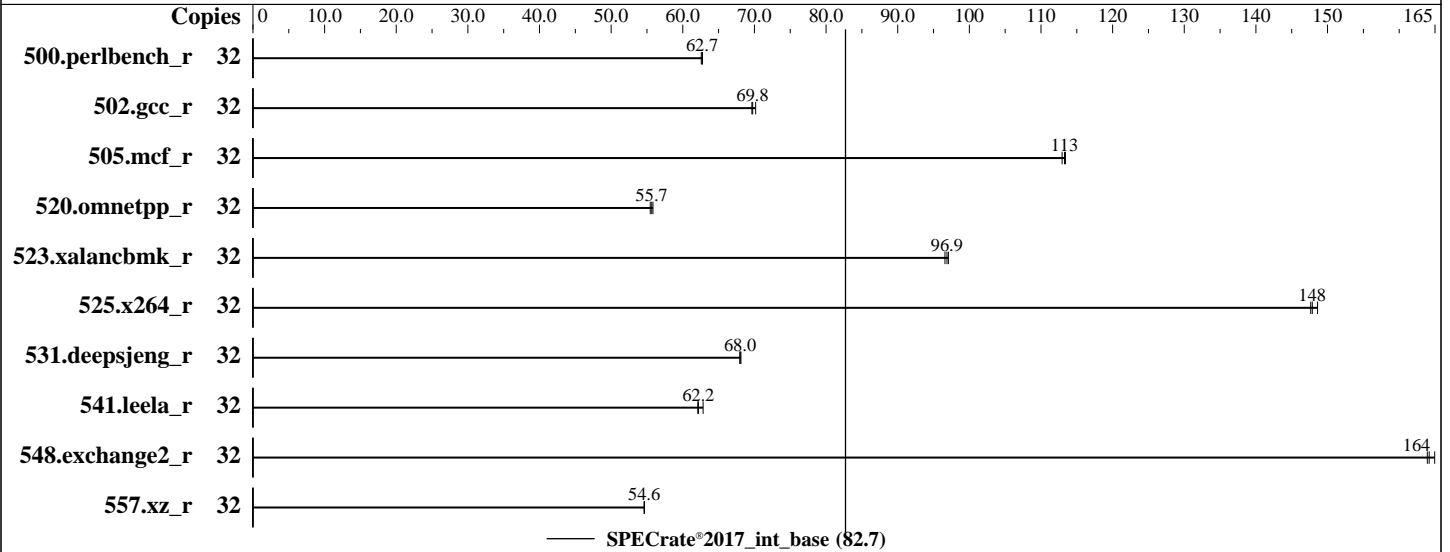
SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

$SPECrate^{®}2017\_int\_base =$ 82.7

$SPECrate^{®}2017\_int\_peak =$ Not Run

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

Test Date: Sep-2019
Hardware Availability: Apr-2019
Software Availability: Jun-2019

Copies		
500.perlbench_r	32	62.7
502.gcc_r	32	69.8
505.mcf_r	32	113
520.omnetpp_r	32	55.7
523.xalancbmk_r	32	96.9
525.x264_r	32	148
531.deepsjeng_r	32	68.0
541.leela_r	32	62.2
548.exchange2_r	32	164
557.xz_r	32	54.6

——— SPECrate®2017_int_base (82.7)

Hardware

CPU Name: Intel Xeon Silver 4208
 Max MHz: 3200
 Nominal: 2100
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 11 MB I+D on chip per chip
 Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R,
 running at 2400)
Storage: 800 GB SATA 3 SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP1
 4.12.14-195-default
Compiler: C/C++: Version 19.0.4.227 of Intel C/C++
 Compiler Build 20190416 for Linux;
 Fortran: Version 19.0.4.227 of Intel Fortran
 Compiler Build 20190416 for Linux;
Parallel: No
Firmware: version 3.1 released Apr-2019
File System: xfs
System State: Run level 3 (Multi-user mode with networking)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base = 82.7

SPECrate®2017_int_peak = Not Run

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

Test Date: Sep-2019
Hardware Availability: Apr-2019
Software Availability: Jun-2019

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	32	814	62.6	**813**	**62.7**	812	62.7							
502.gcc_r	32	**650**	**69.8**	651	69.6	646	70.2							
505.mcf_r	32	**456**	**113**	458	113	456	113							
520.omnetpp_r	32	757	55.5	**754**	**55.7**	752	55.8							
523.xalancbmk_r	32	350	96.6	348	97.1	**349**	**96.9**							
525.x264_r	32	**379**	**148**	377	149	379	148							
531.deepsjeng_r	32	538	68.1	540	68.0	**539**	**68.0**							
541.leela_r	32	853	62.1	**852**	**62.2**	843	62.8							
548.exchange2_r	32	511	164	**511**	**164**	508	165							
557.xz_r	32	632	54.7	633	54.6	**633**	**54.6**							
SPECrate®2017_int_base =	**82.7**													
SPECrate®2017_int_peak =	Not Run													

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"

General 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"

Binaries compiled on a system with 1x Intel Core i9-799X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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)

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base =   82.7

SPECrate®2017_int_peak = Not Run

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

Test Date: Sep-2019
Hardware Availability: Apr-2019
Software Availability: Jun-2019

General Notes (Continued)

is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4)
is mitigated in the system as tested and documented.

Platform Notes

```
BIOS Settings:
Intel Virtualization Technology = Disable
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
Energy Performance BIAS Setting = Max Performance
SNC = Enable
Stale Atos = Disable
LLC Dead Line Alloc = Disable
IMC Interleaving = 1-way Interleave
ADDDC Sparing = Disable
SDDC plus one = Disable
Patrol Scrub = Disable
 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on 119-9 Tue Sep 17 14:17:46 2019

 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) Silver 4208 CPU @ 2.10GHz
       2  "physical id"s (chips)
       32 "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
       physical 1: cores 0 1 2 3 4 5 6 7

 From lscpu:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      Address sizes:       46 bits physical, 48 bits virtual
      CPU(s):              32
      On-line CPU(s) list: 0-31
```

(Continued on next page)

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base =   82.7

SPECrate®2017_int_peak = Not Run

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Sep-2019

Hardware Availability: Apr-2019

Software Availability: Jun-2019

Platform Notes (Continued)

```
      Thread(s) per core:    2
      Core(s) per socket:    8
      Socket(s):             2
      NUMA node(s):          2
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Silver 4208 CPU @ 2.10GHz
      Stepping:              6
      CPU MHz:               2100.000
      CPU max MHz:           3200.0000
      CPU min MHz:           800.0000
      BogoMIPS:              4200.00
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              11264K
      NUMA node0 CPU(s):     0-7,16-23
      NUMA node1 CPU(s):     8-15,24-31
      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 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 cdp_l3
    invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
    flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
    cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
    avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
    cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_l1d
    arch_capabilities

  /proc/cpuinfo cache data
     cache size : 11264 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 16 17 18 19 20 21 22 23
    node 0 size: 193032 MB
    node 0 free: 192565 MB
    node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
    node 1 size: 193532 MB
    node 1 free: 193164 MB
    node distances:
    node   0   1
```

(Continued on next page)

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base = 82.7

SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

```
      0:  10  21
      1:  21  10

 From /proc/meminfo
    MemTotal:       395842428 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    os-release:
        NAME="SLES"
        VERSION="15-SP1"
        VERSION_ID="15.1"
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp1"

 uname -a:
    Linux 119-9 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516) x86_64
    x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 CVE-2017-5754 (Meltdown):           Not affected
 CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
 CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB
 filling

 run-level 3 Sep 17 14:11

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       xfs   711G   15G  697G   3% /home

 Additional information from dmidecode 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.
   BIOS American Megatrends Inc. 3.1 04/26/2019
   Memory:
    4x NO DIMM NO DIMM
    12x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

 (End of data from sysinfo program)
 System memory running at the CPU supported max DIMM speed (2400 MHz)
```

SPEC CPU®2017 Integer Rate Result

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base =   82.7

SPECrate®2017_int_peak = Not Run

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

Test Date: Sep-2019
Hardware Availability: Apr-2019
Software Availability: Jun-2019

Compiler Version Notes

```
==============================================================================
C        | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
         | 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++      | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
         | 541.leela_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc -m64 -std=c11`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

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`

(Continued on next page)

Supermicro

SuperServer 6029P-TR
(X11DPi-N, Intel Xeon Silver 4208)

SPECrate®2017_int_base = 82.7

SPECrate®2017_int_peak = Not Run

CPU2017 License: 001176　　　　　　　　　　　　　　　　**Test Date:** Sep-2019
Test Sponsor: Supermicro　　　　　　　　　　　　　　**Hardware Availability:** Apr-2019
Tested by: Supermicro　　　　　　　　　　　　　　　**Software Availability:** Jun-2019

Base Portability Flags (Continued)

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:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
```

C++ benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
```

Fortran benchmarks:
```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
```

The flags files that were used to format this result can be browsed at
　http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.html
　http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revD.html

You can also download the XML flags sources by saving the following links:
　http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.xml
　http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revD.xml

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

Tested with SPEC CPU®2017 v1.0.5 on 2019-09-17 17:17:46-0400.
Report generated on 2019-10-30 12:01:41 by CPU2017 PDF formatter v6255.
Originally published on 2019-10-30.