SPEC CPU®2017 Floating Point Rate Result

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Supermicro
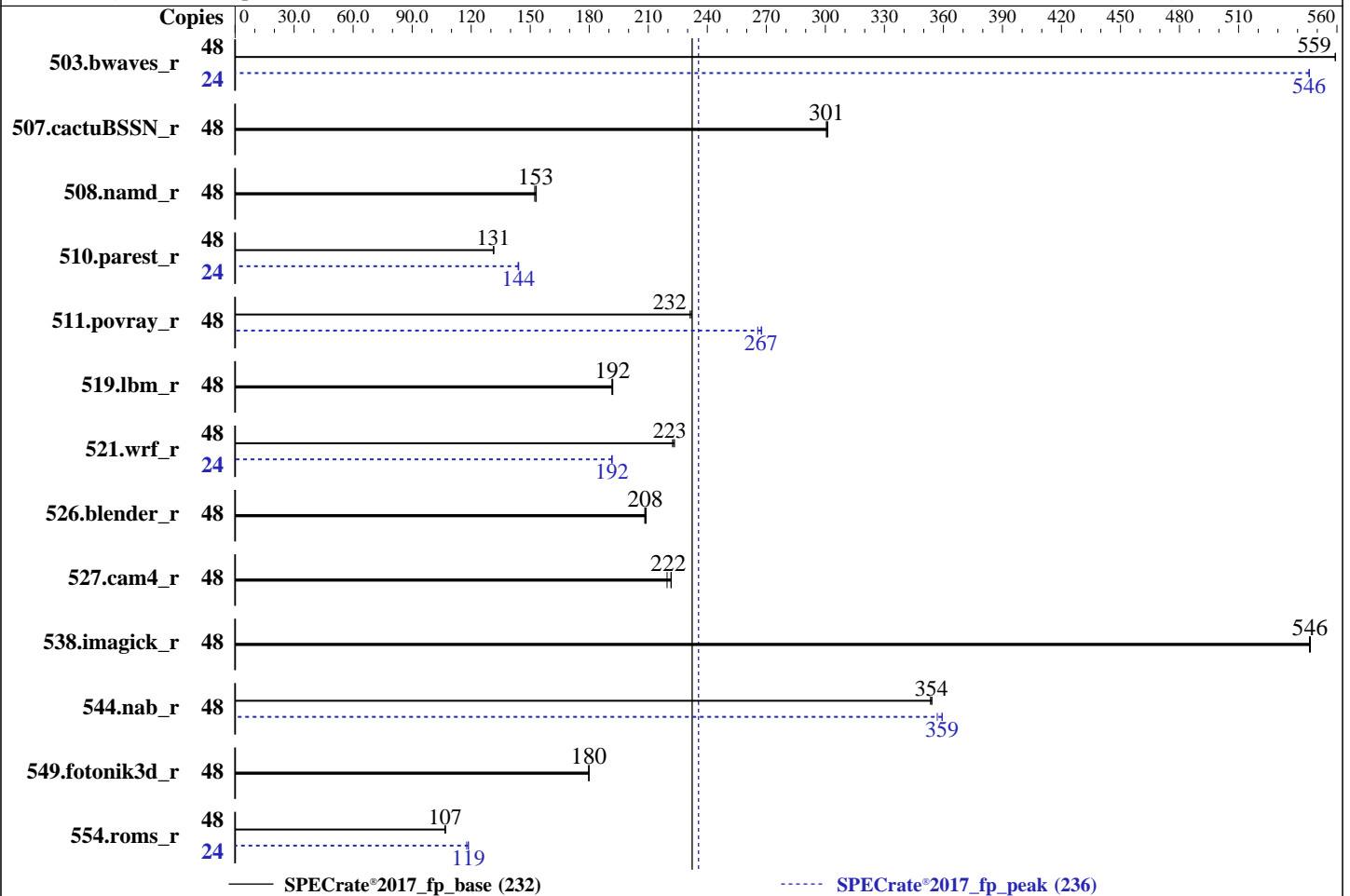
SuperServer SYS-620U-TNR
(X12DPU-6 , Intel Xeon Gold 5317)

$SPECrate^{®}2017\_fp\_base = 232$

$SPECrate^{®}2017\_fp\_peak = 236$

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

Test Date: Nov-2021
Hardware Availability: Apr-2021
Software Availability: Jun-2021

SPECrate®2017_fp_base (232)   SPECrate®2017_fp_peak (236)

Benchmark	Copies	Base	Peak
503.bwaves_r	48 / 24	559	546
507.cactuBSSN_r	48	301	
508.namd_r	48	153	
510.parest_r	48 / 24	131	144
511.povray_r	48	232	267
519.lbm_r	48	192	
521.wrf_r	48 / 24	223	192
526.blender_r	48	208	
527.cam4_r	48	222	
538.imagick_r	48	546	
544.nab_r	48	354	359
549.fotonik3d_r	48	180	
554.roms_r	48 / 24	107	119

Hardware

CPU Name: Intel Xeon Gold 5317
 Max MHz: 3600
 Nominal: 3000
Enabled: 24 cores, 2 chips, 2 threads/core
Orderable: 1,2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1.25 MB I+D on chip per core
 L3: 18 MB I+D on chip per chip
 Other: None
Memory: 512 GB
 (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2933)
Storage: 1 x 1 TB NVMe SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP3
 5.3.18-57-default
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 1.1 released Apr-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 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.

Standard Performance Evaluation Corporation (info@spec.org)

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Results Table

Benchmark	Base						Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	48	861	559	861	559	**861**	**559**	24	**441**	**546**	441	546	441	546
507.cactuBSSN_r	48	202	301	**202**	**301**	202	301	48	202	301	**202**	**301**	202	301
508.namd_r	48	298	153	299	152	**298**	**153**	48	298	153	299	152	**298**	**153**
510.parest_r	48	**957**	**131**	957	131	954	132	24	**436**	**144**	437	144	436	144
511.povray_r	48	483	232	485	231	**483**	**232**	48	422	266	419	268	**419**	**267**
519.lbm_r	48	264	191	**264**	**192**	264	192	48	264	191	**264**	**192**	264	192
521.wrf_r	48	**482**	**223**	484	222	481	223	24	281	191	281	192	**281**	**192**
526.blender_r	48	351	208	**351**	**208**	350	209	48	351	208	**351**	**208**	350	209
527.cam4_r	48	379	222	**379**	**222**	382	220	48	379	222	**379**	**222**	382	220
538.imagick_r	48	219	546	218	546	**219**	**546**	48	219	546	218	546	**219**	**546**
544.nab_r	48	**228**	**354**	229	353	228	354	48	225	359	226	357	**225**	**359**
549.fotonik3d_r	48	1041	180	1039	180	**1040**	**180**	48	1041	180	1039	180	**1040**	**180**
554.roms_r	48	715	107	713	107	**714**	**107**	24	322	119	**322**	**119**	324	118
SPECrate®2017_fp_base =	**232**											
SPECrate®2017_fp_peak =	**236**											

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"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
      "/home/cpu2017-1.1.8/lib/intel64:/home/cpu2017-1.1.8/je5.0.1-64"
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
```

(Continued on next page)

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General Notes (Continued)

```
 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.
 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 Settings:
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode = Extreme Performance
SNC (Sub NUMA) = Enable
KTI Prefetch = Enable
LLC Dead Line Alloc = Disable
DCU Streamer Prefetcher = Disable

 Sysinfo program /home/cpu2017-1.1.8/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on localhost Tue Nov 16 08:58:24 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) Gold 5317 CPU @ 3.00GHz
       2  "physical id"s (chips)
      48 "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 : 12
       siblings  : 24
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11
       physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11

 From lscpu from util-linux 2.36.2:
```

(Continued on next page)

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Platform Notes (Continued)

```
          Architecture:                     x86_64
          CPU op-mode(s):                   32-bit, 64-bit
          Byte Order:                       Little Endian
          Address sizes:                    46 bits physical, 57 bits virtual
          CPU(s):                           48
          On-line CPU(s) list:              0-47
          Thread(s) per core:               2
          Core(s) per socket:               12
          Socket(s):                        2
          NUMA node(s):                     4
          Vendor ID:                        GenuineIntel
          CPU family:                       6
          Model:                            106
          Model name:                       Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz
          Stepping:                         6
          CPU MHz:                          3400.000
          BogoMIPS:                         6000.00
          Virtualization:                   VT-x
          L1d cache:                        1.1 MiB
          L1i cache:                        768 KiB
          L2 cache:                         30 MiB
          L3 cache:                         36 MiB
          NUMA node0 CPU(s):                0-5,24-29
          NUMA node1 CPU(s):                6-11,30-35
          NUMA node2 CPU(s):                12-17,36-41
          NUMA node3 CPU(s):                18-23,42-47
          Vulnerability Itlb multihit:      Not affected
          Vulnerability L1tf:               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/swapgs 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
          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 invpcid_single 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
```

(Continued on next page)

Supermicro

SPECrate®2017_fp_base = 232

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

Platform Notes (Continued)

```
    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 wbnoinvd dtherm ida arat
    pln pts avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni
    avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrm md_clear pconfig flush_l1d
    arch_capabilities

From lscpu --cache:
    NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL   SETS PHY-LINE COHERENCY-SIZE
    L1d        48K     1.1M   12 Data            1     64        1             64
    L1i        32K     768K    8 Instruction     1     64        1             64
    L2        1.3M      30M   20 Unified         2   1024        1             64
    L3         18M      36M   12 Unified         3  24576        1             64

/proc/cpuinfo cache data
   cache size : 18432 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
  node 0 size: 128535 MB
  node 0 free: 118964 MB
  node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
  node 1 size: 129020 MB
  node 1 free: 123395 MB
  node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
  node 2 size: 129020 MB
  node 2 free: 123820 MB
  node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
  node 3 size: 129017 MB
  node 3 free: 123741 MB
  node distances:
  node   0   1   2   3
    0:  10  11  20  20
    1:  11  10  20  20
    2:  20  20  10  11
    3:  20  20  11  10

From /proc/meminfo
   MemTotal:       527969672 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP3"
```

(Continued on next page)

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Platform Notes (Continued)

```
        VERSION_ID="15.3"
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp3"

 uname -a:
    Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9) 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 16 02:30

 SPEC is set to: /home/cpu2017-1.1.8
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/nvme0n1p4 xfs   815G   53G  762G   7% /home

 From /sys/devices/virtual/dmi/id
    Vendor:         Supermicro
    Product:        Super Server
    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 SK Hynix HMA84GR7DJR4N-XN 32 GB 2 rank 3200, configured at 2933
```

(Continued on next page)

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Platform Notes (Continued)

```
  BIOS:
     BIOS Vendor:        American Megatrends International, LLC.
     BIOS Version:       1.1
     BIOS Date:          04/21/2021
     BIOS Revision:      5.22

  (End of data from sysinfo program)
```

Compiler Version Notes

```
================================================================================
C                  | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
                   | 544.nab_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.
--------------------------------------------------------------------------------


================================================================================
C++                | 508.namd_r(base, peak) 510.parest_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.
--------------------------------------------------------------------------------


================================================================================
C++, C             | 511.povray_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.
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++, C             | 511.povray_r(base) 526.blender_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.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
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```

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Compiler Version Notes (Continued)

```
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C              | 511.povray_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.
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
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Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
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  Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
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Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
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Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
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.
------------------------------------------------------------------------------


==============================================================================
Fortran             | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
                    | 554.roms_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
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Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
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Compiler Version Notes (Continued)

```
==============================================================================
Fortran, C      | 521.wrf_r(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.
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.
------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
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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.
------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
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Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`ifort icx`

Benchmarks using both C and C++:
`icpx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifort`

Base Portability Flags

503.bwaves_r: `-DSPEC_LP64`
507.cactuBSSN_r: `-DSPEC_LP64`
508.namd_r: `-DSPEC_LP64`
510.parest_r: `-DSPEC_LP64`
511.povray_r: `-DSPEC_LP64`
519.lbm_r: `-DSPEC_LP64`
521.wrf_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
526.blender_r: `-DSPEC_LP64 -DSPEC_LINUX -funsigned-char`
527.cam4_r: `-DSPEC_LP64 -DSPEC_CASE_FLAG`
538.imagick_r: `-DSPEC_LP64`
544.nab_r: `-DSPEC_LP64`
549.fotonik3d_r: `-DSPEC_LP64`
554.roms_r: `-DSPEC_LP64`

Base Optimization Flags

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

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SPECrate®2017_fp_base = 232

SPECrate®2017_fp_peak = 236

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

Base Optimization Flags (Continued)

C++ benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both Fortran and C:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both C and C++:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using Fortran, C, and C++:
```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-mbranches-within-32B-boundaries -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

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Supermicro

SuperServer SYS-620U-TNR
(X12DPU-6 , Intel Xeon Gold 5317)

SPECrate®2017_fp_base = 232

SPECrate®2017_fp_peak = 236

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

Test Date: Nov-2021
Hardware Availability: Apr-2021
Software Availability: Jun-2021

Peak Compiler Invocation (Continued)

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:

521.wrf_r: `ifort icc`

527.cam4_r: `ifort icx`

Benchmarks using both C and C++:

511.povray_r: `icpc icc`

526.blender_r: `icpx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifort`

Peak Portability Flags

`Same as Base Portability Flags`

Peak Optimization Flags

C benchmarks:

519.lbm_r: `basepeak = yes`

538.imagick_r: `basepeak = yes`

544.nab_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto`
`-Ofast -qopt-mem-layout-trans=4`
`-fimf-accuracy-bits=14:sqrt`
`-mbranches-within-32B-boundaries -ljemalloc`
`-L/usr/local/jemalloc64-5.0.1/lib`

C++ benchmarks:

508.namd_r: `basepeak = yes`

510.parest_r: `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math`
`-flto -mfpmath=sse -funroll-loops`

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Supermicro

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Peak Optimization Flags (Continued)

510.parest_r (continued):
```
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:

503.bwaves_r: `-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo`
```
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -mbranches-within-32B-boundaries
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

549.fotonik3d_r: `basepeak = yes`

554.roms_r: `Same as 503.bwaves_r`

Benchmarks using both Fortran and C:

521.wrf_r: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX512 -O3`
```
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

527.cam4_r: `basepeak = yes`

Benchmarks using both C and C++:

511.povray_r: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX512 -O3`
```
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

526.blender_r: `basepeak = yes`

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-ICX-revB.html

SPEC CPU®2017 Floating Point Rate Result

Supermicro

SuperServer SYS-620U-TNR
(X12DPU-6 , Intel Xeon Gold 5317)

SPECrate®2017_fp_base = 232

SPECrate®2017_fp_peak = 236

CPU2017 License: 001176

Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Nov-2021

Hardware Availability: Apr-2021

Software Availability: Jun-2021

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-revB.xml

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

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