



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## KTNF

(Test Sponsor: Telecommunications Technology Association)

### KTNF KR580S2

(3.00 GHz, Intel Xeon Gold 6354)

SPECrate®2017\_fp\_base = 314

SPECrate®2017\_fp\_peak = 322

CPU2017 License: A83

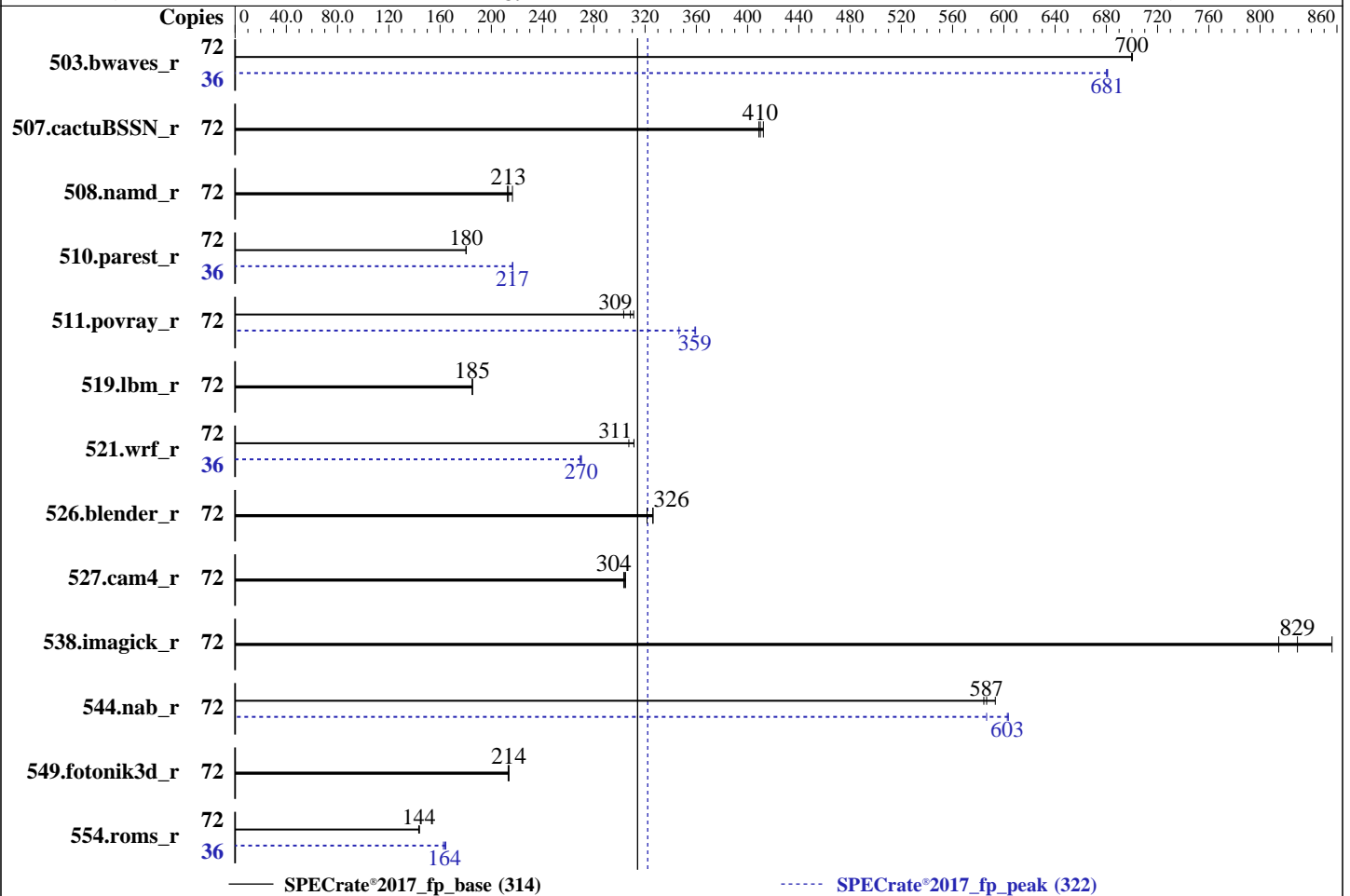
Test Sponsor: Telecommunications Technology Association

Tested by: Telecommunications Technology Association

Test Date: Aug-2021

Hardware Availability: Jul-2021

Software Availability: Jun-2021



### Hardware

CPU Name: Intel Xeon Gold 6354  
 Max MHz: 3600  
 Nominal: 3000  
 Enabled: 36 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: 39 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (32 x 32 GB 2Rx4 PC4-3200AA-R)

Storage: 1 X 762 GB SATA SSD  
 Other: None

### Software

OS: CentOS Linux release 8.2.2004 (Core)  
 4.18.0-193.el8.x86\_64

Compiler: C/C++: Version 2021.3.0 of Intel oneAPI DPC++/C++  
 Compiler Build 20210619 for Linux;  
 Fortran: Version 2021.3.0 of Intel Fortran  
 Compiler  
 Classic Build 20210609 for Linux;  
 C/C++: Version 2021.3.0 of Intel C/C++ Compiler  
 Classic Build 20210609 for Linux;

Parallel: No

Firmware: Version KM-M640-027-MS1 released Jun-2021

File System: xfs

System State: Run level 5 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 64-bit

Other: jemalloc: jemalloc memory allocator library  
 V5.0.1

Power Management: Default



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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	72	1031	700	<b>1032</b>	<b>700</b>	1032	700	36	531	680	<b>530</b>	<b>681</b>	530	681
507.cactuBSSN_r	72	223	409	221	412	<b>222</b>	<b>410</b>	72	223	409	221	412	<b>222</b>	<b>410</b>
508.namd_r	72	<b>321</b>	<b>213</b>	316	216	322	213	72	<b>321</b>	<b>213</b>	316	216	322	213
510.parest_r	72	<b>1044</b>	<b>180</b>	1045	180	1044	180	36	435	217	435	217	<b>435</b>	<b>217</b>
511.povray_r	72	<b>545</b>	<b>309</b>	554	303	540	311	72	485	346	<b>468</b>	<b>359</b>	468	359
519.lbm_r	72	<b>410</b>	<b>185</b>	410	185	410	185	72	<b>410</b>	<b>185</b>	410	185	410	185
521.wrf_r	72	<b>518</b>	<b>311</b>	518	311	525	307	36	298	270	299	269	<b>299</b>	<b>270</b>
526.blender_r	72	336	326	<b>336</b>	<b>326</b>	341	322	72	336	326	<b>336</b>	<b>326</b>	341	322
527.cam4_r	72	415	303	<b>414</b>	<b>304</b>	413	305	72	415	303	<b>414</b>	<b>304</b>	413	305
538.imagick_r	72	<b>216</b>	<b>829</b>	209	856	220	815	72	<b>216</b>	<b>829</b>	209	856	220	815
544.nab_r	72	204	593	<b>207</b>	<b>587</b>	207	584	72	201	604	207	587	<b>201</b>	<b>603</b>
549.fotonik3d_r	72	1313	214	<b>1313</b>	<b>214</b>	1316	213	72	1313	214	<b>1313</b>	<b>214</b>	1316	213
554.roms_r	72	798	143	<b>797</b>	<b>144</b>	795	144	36	352	163	<b>350</b>	<b>164</b>	348	164

SPECrate®2017\_fp\_base = **314**

SPECrate®2017\_fp\_peak = **322**

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/spec/speccpu/cpu2017/intel64:/home/spec/speccpu/cpu2017/je5.0.1-64"

MALLOC\_CONF = "retain:true"

## General Notes

Transparent Huge Pages enabled by default  
Prior to runcpu invocation  
Filesystem page cache synced and cleared with:

(Continued on next page)



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## General Notes (Continued)

```

sync; echo 3> /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
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

```

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.

## Platform Notes

```

Patrol Scrub -> Disabled
Intel VT for Directed I/O(VT-d) -> Disabled
LLC dead line alloc -> Disabled
SR-IOV Support -> Disabled
CSM Support -> Disabled
SNC set to Enabled

```

```

Sysinfo program /home/spec/speccpu/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost.localdomain Fri Aug 27 19:38:55 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 6354 CPU @ 3.00GHz
 2 "physical id"s (chips)
 72 "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 : 18
siblings  : 36
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

```

```

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian

```

(Continued on next page)



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## Platform Notes (Continued)

```

CPU(s): 72
On-line CPU(s) list: 0-71
Thread(s) per core: 2
Core(s) per socket: 18
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6354 CPU @ 3.00GHz
Stepping: 6
CPU MHz: 3599.983
CPU max MHz: 3600.0000
CPU min MHz: 800.0000
BogoMIPS: 6000.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 39936K
NUMA node0 CPU(s): 0-8,36-44
NUMA node1 CPU(s): 9-17,45-53
NUMA node2 CPU(s): 18-26,54-62
NUMA node3 CPU(s): 27-35,63-71
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
aperfmpperf pni pclmulqdq dtes64 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 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
xsaves xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local wbnoinvd
dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku
ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
avx512_vpopcntdq la57 rdpid md_clear pconfig flush_lld arch_capabilities

```

```

/proc/cpuinfo cache data
cache size : 39936 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 6 7 8 36 37 38 39 40 41 42 43 44

node 0 size: 257351 MB

node 0 free: 254601 MB

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## Platform Notes (Continued)

```

node 1 cpus: 9 10 11 12 13 14 15 16 17 45 46 47 48 49 50 51 52 53
node 1 size: 258043 MB
node 1 free: 256694 MB
node 2 cpus: 18 19 20 21 22 23 24 25 26 54 55 56 57 58 59 60 61 62
node 2 size: 258043 MB
node 2 free: 256786 MB
node 3 cpus: 27 28 29 30 31 32 33 34 35 63 64 65 66 67 68 69 70 71
node 3 size: 258041 MB
node 3 free: 256716 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:      1056235400 kB
HugePages_Total:      2048
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\*

```

centos-release: CentOS Linux release 8.2.2004 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 8.2 (Source)
os-release:
  NAME="CentOS Linux"
  VERSION="8 (Core)"
  ID="centos"
  ID_LIKE="rhel fedora"
  VERSION_ID="8"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="CentOS Linux 8 (Core)"
  ANSI_COLOR="0;31"
redhat-release: CentOS Linux release 8.2.2004 (Core)
system-release: CentOS Linux release 8.2.2004 (Core)
system-release-cpe: cpe:/o:centos:centos:8

```

uname -a:

```

Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri May 8 10:59:10 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

```

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## Platform Notes (Continued)

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):	No status reported
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 5 2021-08-27 19:35

SPEC is set to: /home/spec/speccpu/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xf	762G	356G	407G	47%	/

```
From /sys/devices/virtual/dmi/id
Vendor:          SYSTEM_MANUFACTURER
Product:         KM-M640
Product Family: Family
```

```
Cannot run dmidecode; consider saying (as root)
chmod +s /usr/sbin/dmidecode
```

```
BIOS:
  BIOS Vendor:    American Megatrends International, LLC.
  BIOS Version:   KM-M640-027-MS1
  BIOS Date:      06/07/2021
```

(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 2021.3.0 (2021.3.0.20210619)
Target: x86_64-unknown-linux-gnu
```

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## Compiler Version Notes (Continued)

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

=====  
C++ | 508.namd\_r(base, peak) 510.parest\_r(base, peak)  
=====

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

=====  
C++, C | 511.povray\_r(base) 526.blender\_r(base, peak)  
=====

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

=====  
C++, C | 511.povray\_r(peak)  
=====

icpc (ICC) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

icc (ICC) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

=====  
C++, C | 511.povray\_r(base) 526.blender\_r(base, peak)  
=====

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

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=====  
C++, C | 511.povray\_r(peak)  
-----

icpc (ICC) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

icc (ICC) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
-----

=====  
C++, C, Fortran | 507.cactuBSSN\_r(base, peak)  
-----

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

ifort (IFORT) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
-----

=====  
Fortran | 503.bwaves\_r(base, peak) 549.fotonik3d\_r(base, peak)  
554.roms\_r(base, peak)

ifort (IFORT) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.  
-----

=====  
Fortran, C | 521.wrf\_r(base) 527.cam4\_r(base, peak)  
-----

ifort (IFORT) 2021.3.0 20210609

Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

Intel(R) oneAPI DPC++/C++ Compiler 2021.3.0 (2021.3.0.20210619)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin  
-----

=====  
Fortran, C | 521.wrf\_r(peak)  
-----

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```

ifort (IFORT) 2021.3.0 20210609
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
icc (ICC) 2021.3.0 20210609
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

```

```

=====
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base, peak)
=====

```

```

ifort (IFORT) 2021.3.0 20210609
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Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2021.3.0/linux/bin

```

```

=====
Fortran, C      | 521.wrf_r(peak)
=====

```

```

ifort (IFORT) 2021.3.0 20210609
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
icc (ICC) 2021.3.0 20210609
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.

```

## 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



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## 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/je5.0.1-64/lib

```

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/je5.0.1-64/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/je5.0.1-64/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/je5.0.1-64/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

```

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# SPEC CPU®2017 Floating Point Rate Result

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**KTNF**

(Test Sponsor: Telecommunications Technology Association)

**KTNF KR580S2**

(3.00 GHz, Intel Xeon Gold 6354)

**SPECrate®2017\_fp\_base = 314**

**SPECrate®2017\_fp\_peak = 322**

**CPU2017 License:** A83

**Test Sponsor:** Telecommunications Technology Association

**Tested by:** Telecommunications Technology Association

**Test Date:** Aug-2021

**Hardware Availability:** Jul-2021

**Software Availability:** Jun-2021

## Base Optimization Flags (Continued)

Benchmarks using both C and C++ (continued):

```
-mbranches-within-32B-boundaries -ljemalloc -L/usr/local/je5.0.1-64/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/je5.0.1-64/lib
```

## Peak Compiler Invocation

C benchmarks:

```
icx
```

C++ benchmarks:

```
icpx
```

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



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## 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/je5.0.1-64/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  
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries  
-ljemalloc -L/usr/local/je5.0.1-64/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/je5.0.1-64/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/je5.0.1-64/lib -ljemalloc

527.cam4\_r: basepeak = yes

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## Peak Optimization Flags (Continued)

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/je5.0.1-64/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/KTNF-Platform-Flags-Version-KM-M640-027-MS1.html>

[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.html](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.html)

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

<http://www.spec.org/cpu2017/flags/KTNF-Platform-Flags-Version-KM-M640-027-MS1.xml>

[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml)

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