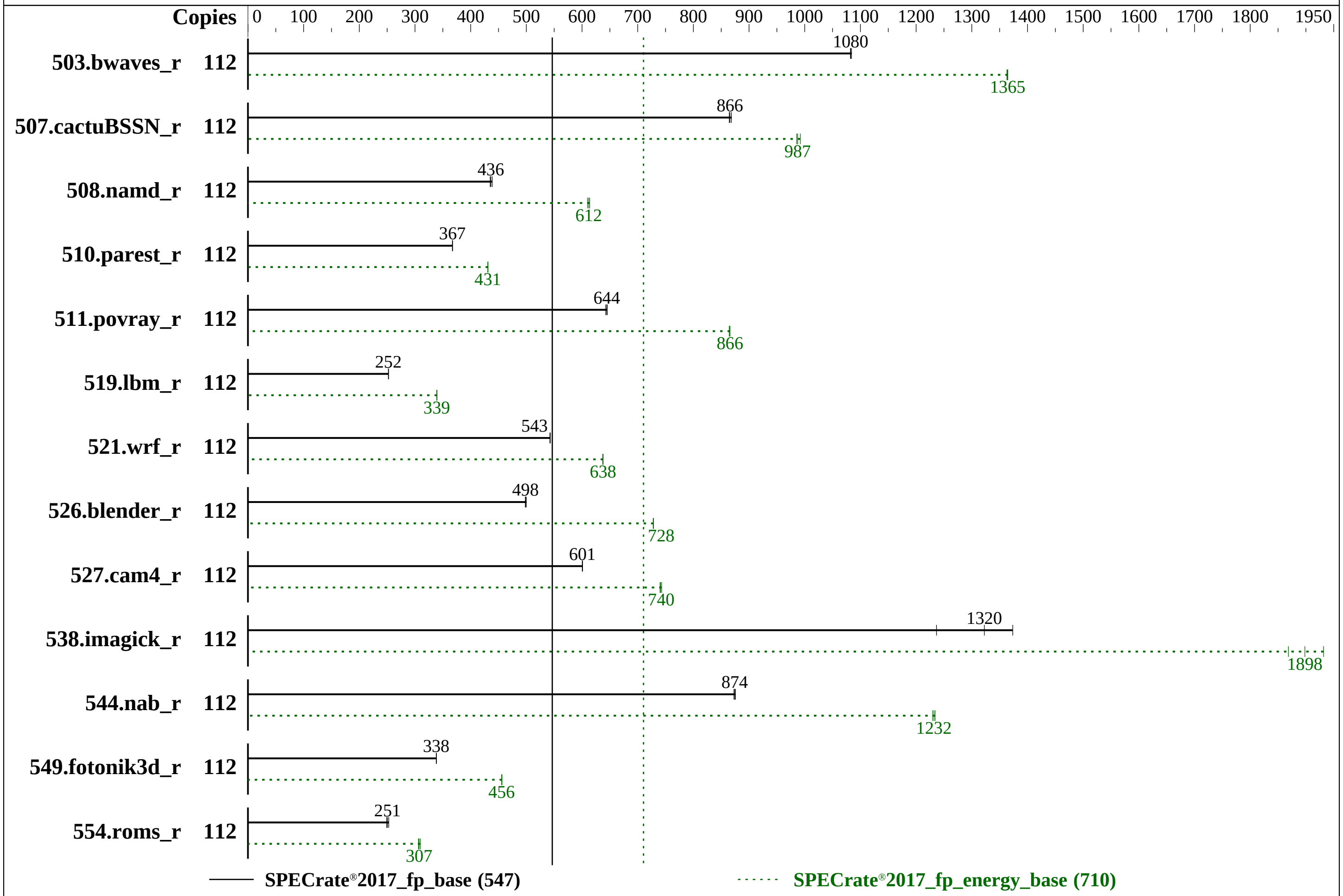
SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

SPECrate®2017_fp_base =	547
SPECrate®2017_fp_energy_base =	710
SPECrate®2017_fp_peak =	Not Run
SPECrate®2017_fp_energy_peak =	Not Run

CPU2017 License:	9017	**Test Date:**	Dec-2020
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Nov-2020
Tested by:	Lenovo Global Technology	**Software Availability:**	Aug-2020



Hardware

CPU Name:	Intel Xeon Platinum 8376HL
Max MHz:	4300
Nominal:	2600
Enabled:	112 cores, 4 chips
Orderable:	2,4 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	38.5 MB I+D on chip per chip
Other:	None
Memory:	384 GB (24 x 16 GB 2Rx8 PC4-3200AA-R)
Storage:	1 x 960 GB SATA SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux release 8.2 (Ootpa) Kernel 4.18.0-193.el8.x86_64
Compiler:	C/C++: Version 19.1.2.275 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.2.275 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	Lenovo BIOS Version M5E107I 1.01 released Nov-2020
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable

(Continued on next page)

Lenovo Global Technology

ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

SPECrate®2017_fp_base =	547
SPECrate®2017_fp_energy_base =	710
SPECrate®2017_fp_peak =	Not Run
SPECrate®2017_fp_energy_peak =	Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Aug-2020

Software (Continued)

Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to balance power and performance

Power

Max. Power (W): 1046.8
Idle Power (W): 154.42
Min. Temperature (C): 23.50
Elevation (m): 43
Line Standard: 220 V / 50 Hz / 1 phase / 3 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 1.01 of TGBT07V
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 2 x 1100 W (non-redundant)
Details: ThinkSystem 1100W Platinum Power Supply 4P57A26293
Backplane: 8 x 2.5-inch HDD back plane
Other Storage: None
Storage Model #s: 4XB7A17089
NICs Installed: 1 x ThinkSystem Ethernet 4-port Adaptor @ 1 Gb
NICs Enabled (FW/OS): 4 / 1
NICs Connected/Speed: 1 @ 1 Gb
Other HW Model #s: 1 x ThinkSystem SR860 V2 Performance Fan Upgrade Kit

Power Analyzer

Power Analyzer: WIN:9888
Hardware Vendor: YOKOGAWA, Inc.
Model: YokogawaWT310E
Serial Number: C3UD17025E
Input Connection: Default
Metrology Institute: CNAS
Calibration By: GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.
Calibration Label: J202009040176A-0001
Calibration Date: 25-Sep-2020
PTDaemon™ Version: 1.9.1 (a2d19f26; 2019-07-17)
Setup Description: Connected to PSU1 and PSU2
Current Ranges Used: 5A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: WIN:9889
Hardware Vendor: Digi International, Inc.
Model: DigiWATCHPORT_H
Serial Number: W62330963
Input Connection: USB
PTDaemon Version: 1.9.1 (a2d19f26; 2019-07-17)
Setup Description: 50 mm in front of SUT main intake

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
503.bwaves_r	112	**1038**	**1080**	**897**	**1360**	**865**	**871**	1036	1080	897	1360	866	877	1038	1080	898	1360	865	877
507.cactuBSSN_r	112	164	864	158	985	964	994	**164**	**866**	**158**	**987**	**964**	**993**	163	868	157	992	962	996
508.namd_r	112	**244**	**436**	**190**	**612**	**777**	**806**	243	439	189	614	779	806	245	435	190	610	778	806
510.parest_r	112	797	368	739	431	927	1010	**798**	**367**	**740**	**431**	**927**	**1040**	798	367	740	431	927	1050
511.povray_r	112	405	645	328	865	810	837	407	642	328	864	806	836	**406**	**644**	**328**	**866**	**808**	**839**

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Lenovo Global Technology

ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

SPECrate®2017_fp_base = 547
SPECrate®2017_fp_energy_base = 710
SPECrate®2017_fp_peak = Not Run
SPECrate®2017_fp_energy_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test Date: Dec-2020
Hardware Availability: Nov-2020
Software Availability: Aug-2020

Base Results Table (Continued)

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
519.lbm_r	112	468	252	395	339	845	849	468	252	395	339	845	849	**468**	**252**	**395**	**339**	**845**	**849**
521.wrf_r	112	**462**	**543**	**430**	**638**	**929**	**988**	463	542	429	638	929	982	462	543	430	637	931	984
526.blender_r	112	**342**	**498**	**254**	**728**	**742**	**885**	341	500	254	728	744	883	342	498	254	728	741	888
527.cam4_r	112	326	601	288	741	883	996	326	600	287	743	880	996	**326**	**601**	**288**	**740**	**884**	**996**
538.imagick_r	112	**211**	**1320**	**159**	**1900**	**755**	**942**	225	1240	161	1870	717	943	203	1370	156	1930	770	936
544.nab_r	112	216	873	166	1230	769	828	215	875	166	1230	769	818	**216**	**874**	**166**	**1230**	**769**	**825**
549.fotonik3d_r	112	**1290**	**338**	**1070**	**456**	**827**	**833**	1291	338	1070	456	826	832	1290	338	1070	456	826	832
554.roms_r	112	704	253	634	310	901	937	715	249	641	306	897	935	**710**	**251**	**639**	**307**	**899**	**939**

SPECrate®2017_fp_base = 547
SPECrate®2017_fp_energy_base = 710

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/cpu2017-1.1.0-ic19.1u2/lib/intel64:/home/cpu2017-1.1.0-ic19.1u2/j
     e5.0.1-64"
MALLOC_CONF = "retain:true"
```

General Notes

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

(Continued on next page)

General Notes (Continued)

```
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
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
 BIOS settings:
 Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
 Turbo Mode set to Disabled
 CPU P-state Control set to Cooperative with Legacy
 C-States set to Legacy
 Memory Power Management set to Automatic
 UPI Link Disable set to Disabled 1 Link
 Platform Controlled Type set to Minimal Power
 Hyper-Threading set to Disabled
 SNC set to Enabled
 C1 Enhanced Mode set to Enabled
 LLC dead line alloc set to Disable

 Sysinfo program /home/cpu2017-1.1.0-ic19.1u2/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on localhost.localdomain Mon Dec 21 23:19:58 2020

 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 8376HL CPU @ 2.60GHz
       4  "physical id"s (chips)
       112 "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 : 28
       siblings  : 28
       physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
```

(Continued on next page)

Platform Notes (Continued)

```
      physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30

  From lscpu:
       Architecture:        x86_64
       CPU op-mode(s):      32-bit, 64-bit
       Byte Order:          Little Endian
       CPU(s):              112
       On-line CPU(s) list: 0-111
       Thread(s) per core:  1
       Core(s) per socket:  28
       Socket(s):           4
       NUMA node(s):        8
       Vendor ID:           GenuineIntel
       CPU family:          6
       Model:               85
       Model name:          Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
       Stepping:            11
       CPU MHz:             2600.034
       CPU max MHz:         2600.0000
       CPU min MHz:         1000.0000
       BogoMIPS:            5200.00
       Virtualization:      VT-x
       L1d cache:           32K
       L1i cache:           32K
       L2 cache:            1024K
       L3 cache:            39424K
       NUMA node0 CPU(s):   0-3,7-9,14-17,21-23
       NUMA node1 CPU(s):   4-6,10-13,18-20,24-27
       NUMA node2 CPU(s):   28-31,35-37,42-45,49-51
       NUMA node3 CPU(s):   32-34,38-41,46-48,52-55
       NUMA node4 CPU(s):   56-59,63-65,70-73,77-79
       NUMA node5 CPU(s):   60-62,66-69,74-76,80-83
       NUMA node6 CPU(s):   84-87,91-93,98-101,105-107
       NUMA node7 CPU(s):   88-90,94-97,102-104,108-111
       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
```

(Continued on next page)

Platform Notes (Continued)

```
     cqm_mbm_local avx512_bf16 dtherm arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req
     pku ospke avx512_vnni md_clear flush_l1d arch_capabilities

 /proc/cpuinfo cache data
    cache size : 39424 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23
   node 0 size: 47942 MB
   node 0 free: 47582 MB
   node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27
   node 1 size: 48380 MB
   node 1 free: 48067 MB
   node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51
   node 2 size: 48380 MB
   node 2 free: 48269 MB
   node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55
   node 3 size: 48380 MB
   node 3 free: 48255 MB
   node 4 cpus: 56 57 58 59 63 64 65 70 71 72 73 77 78 79
   node 4 size: 48380 MB
   node 4 free: 48265 MB
   node 5 cpus: 60 61 62 66 67 68 69 74 75 76 80 81 82 83
   node 5 size: 48380 MB
   node 5 free: 48279 MB
   node 6 cpus: 84 85 86 87 91 92 93 98 99 100 101 105 106 107
   node 6 size: 48380 MB
   node 6 free: 48276 MB
   node 7 cpus: 88 89 90 94 95 96 97 102 103 104 108 109 110 111
   node 7 size: 48380 MB
   node 7 free: 48270 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  20  20  20  20  30  30
     1:  11  10  20  20  20  20  30  30
     2:  20  20  10  11  30  30  20  20
     3:  20  20  11  10  30  30  20  20
     4:  20  20  30  30  10  11  20  20
     5:  20  20  30  30  11  10  20  20
     6:  30  30  20  20  20  20  10  11
     7:  30  30  20  20  20  20  11  10

 From /proc/meminfo
```

(Continued on next page)

Platform Notes (Continued)

```
    MemTotal:       395885624 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

 /usr/bin/lsb_release -d
    Red Hat Enterprise Linux release 8.2 (Ootpa)

 From /etc/*release* /etc/*version*
    os-release:
       NAME="Red Hat Enterprise Linux"
       VERSION="8.2 (Ootpa)"
       ID="rhel"
       ID_LIKE="fedora"
       VERSION_ID="8.2"
       PLATFORM_ID="platform:el8"
       PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
       ANSI_COLOR="0;31"
    redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
    system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

 uname -a:
    Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
    x86_64 x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 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
 tsx_async_abort:                            Not affected

 run-level 3 Dec 21 23:19

 SPEC is set to: /home/cpu2017-1.1.0-ic19.1u2
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda3      xfs   892G   39G  854G   5% /
```

(Continued on next page)

Platform Notes (Continued)

```
From /sys/devices/virtual/dmi/id
    BIOS:    Lenovo M5E107I-1.01 11/02/2020
    Vendor:  Lenovo
    Product: ThinkSystem SR860 V2
    Product Family: ThinkSystem
    Serial:  none

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.
  Memory:
    24x NO DIMM NO DIMM
    24x SK Hynix HMA82GR7CJR8N-XN 16 GB 2 rank 3200

(End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C                | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
Intel(R) C Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++              | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++, C           | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.1.2.275 Build 20200623
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.1.2.275 Build 20200623
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.1.2.275 Build 20200623
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
Intel(R) C Compiler for applications running on Intel(R) 64, Version
  19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

(Continued on next page)

Base Compiler Invocation (Continued)

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`ifort icc`

Benchmarks using both C and C++:
`icpc icc`

Benchmarks using Fortran, C, and C++:
`icpc icc 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:
```
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:
```
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse
```

(Continued on next page)

Base Optimization Flags (Continued)

C++ benchmarks (continued):
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -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
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both Fortran and C:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -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
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

Benchmarks using both C and C++:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -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
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.html
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Cooperlake-A.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Cooperlake-A.xml

Tested with SPEC CPU®2017 v1.1.0 on 2020-12-21 10:19:58-0500.
Report generated on 2021-01-05 14:44:31 by CPU2017 PS formatter v6255.
Originally published on 2021-01-05.