



# SPEC® CPU2017 Floating Point Rate Result

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## Huawei

SPECrate2017\_fp\_base = 956

### Huawei 9008 V5 (Intel Xeon Platinum 8180M)

SPECrate2017\_fp\_peak = Not Run

CPU2017 License: 3175

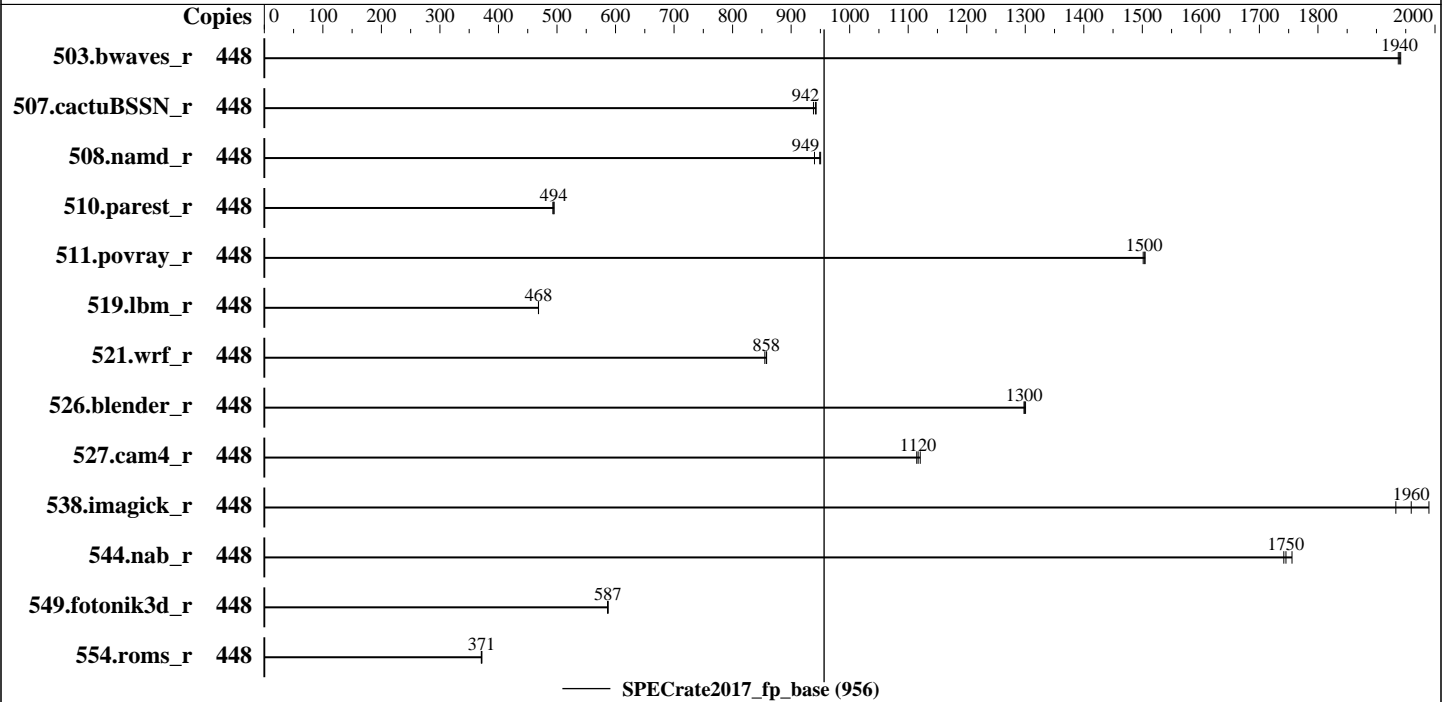
Test Date: Jun-2018

Test Sponsor: Huawei

Hardware Availability: Jul-2018

Tested by: Huawei

Software Availability: Mar-2018



### Hardware

CPU Name: Intel Xeon Platinum 8180M  
 Max MHz.: 3800  
 Nominal: 2500  
 Enabled: 224 cores, 8 chips, 2 threads/core  
 Orderable: 2,4,6,8 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: 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)  
 Storage: 2 x 900 GB SAS HDD 10K RPM, RAID 0  
 Other: None

### Software

OS: SUSE Linux Enterprise Server for SAP Applications 12 SP2  
 4.4.120-92.70-default  
 Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;  
 Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux  
 Parallel: No  
 Firmware: Version 0.80 released Feb-2018  
 File System: ext4  
 System State: Run level 5 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: None



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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	448	2319	1940	2314	1940	<b>2316</b>	<b>1940</b>							
507.cactuBSSN_r	448	602	943	605	938	<b>602</b>	<b>942</b>							
508.namd_r	448	<b>449</b>	<b>949</b>	448	950	453	940							
510.parest_r	448	2378	493	2367	495	<b>2370</b>	<b>494</b>							
511.povray_r	448	<b>696</b>	<b>1500</b>	695	1500	697	1500							
519.lbm_r	448	1008	468	<b>1008</b>	<b>468</b>	1008	468							
521.wrf_r	448	1169	858	<b>1170</b>	<b>858</b>	1174	855							
526.blender_r	448	526	1300	525	1300	<b>525</b>	<b>1300</b>							
527.cam4_r	448	<b>701</b>	<b>1120</b>	699	1120	703	1110							
538.imagick_r	448	576	1930	560	1990	<b>569</b>	<b>1960</b>							
544.nab_r	448	433	1740	429	1760	<b>432</b>	<b>1750</b>							
549.fotonik3d_r	448	2977	586	<b>2974</b>	<b>587</b>	2973	587							
554.roms_r	448	<b>1917</b>	<b>371</b>	1916	372	1920	371							

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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"  
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa\_balancing"

## General Notes

Environment variables set by runcpu before the start of the run:

LD\_LIBRARY\_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.4  
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>

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**Software Availability:** Mar-2018

## General Notes (Continued)

Yes: 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

BIOS configuration:

Sub NUMA Cluster (SNC) set to enabled  
IMC (Integrated memory controller) Interleaving set to 1 way interleave  
Xtended Prediction Table (XPT) Prefetch set to Enable  
Memory Patrol Scrub set to Disable  
Last Level Cache (LLC) Prefetch set to Disable  
Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on linux-6n7q Wed Jun 13 08:01:19 2018

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 8180M CPU @ 2.50GHz
 8 "physical id"s (chips)
448 "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 : 56
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
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
physical 4: 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 5: 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 6: 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 7: 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
```

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### Platform Notes (Continued)

28 29 30

From lscpu:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
CPU(s):                 448
On-line CPU(s) list:   0-447
Thread(s) per core:    2
Core(s) per socket:    28
Socket(s):              8
NUMA node(s):          16
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  85
Model name:             Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
Stepping:               4
CPU MHz:                2501.000
CPU max MHz:            2501.0000
CPU min MHz:            1000.0000
BogoMIPS:               5000.03
Virtualization:         VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               1024K
L3 cache:               39424K
NUMA node0 CPU(s):     0-3,7-9,14-17,21-23,224-227,231-233,238-241,245-247
NUMA node1 CPU(s):     4-6,10-13,18-20,24-27,228-230,234-237,242-244,248-251
NUMA node2 CPU(s):     28-31,35-37,42-45,49-51,252-255,259-261,266-269,273-275
NUMA node3 CPU(s):     32-34,38-41,46-48,52-55,256-258,262-265,270-272,276-279
NUMA node4 CPU(s):     56-59,63-65,70-73,77-79,280-283,287-289,294-297,301-303
NUMA node5 CPU(s):     60-62,66-69,74-76,80-83,284-286,290-293,298-300,304-307
NUMA node6 CPU(s):     84-87,91-93,98-101,105-107,308-311,315-317,322-325,329-331
NUMA node7 CPU(s):     88-90,94-97,102-104,108-111,312-314,318-321,326-328,332-335
NUMA node8 CPU(s):     112-115,119-121,126-129,133-135,336-339,343-345,350-353,357-359
NUMA node9 CPU(s):     116-118,122-125,130-132,136-139,340-342,346-349,354-356,360-363
NUMA node10 CPU(s):    140-143,147-149,154-157,161-163,364-367,371-373,378-381,385-387
NUMA node11 CPU(s):    144-146,150-153,158-160,164-167,368-370,374-377,382-384,388-391
NUMA node12 CPU(s):    168-171,175-177,182-185,189-191,392-395,399-401,406-409,413-415
NUMA node13 CPU(s):    172-174,178-181,186-188,192-195,396-398,402-405,410-412,416-419
NUMA node14 CPU(s):

```

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### Platform Notes (Continued)

196-199,203-205,210-213,217-219,420-423,427-429,434-437,441-443

NUMA node15 CPU(s):

200-202,206-209,214-216,220-223,424-426,430-433,438-440,444-447

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 aperfmperf eagerfpu 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 ida arat epb invpcid\_single pln pts dtherm intel\_pt rsb\_ctxsw spec\_ctrl stibp retpoline kaiser tpr\_shadow vnmi flexpriority ept vpid fsgsbase tsc\_adjust bmil hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm\_llc cqm\_occup\_llc

/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: 16 nodes (0-15)

node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23 224 225 226 227 231 232 233 238 239 240 241 245 246 247

node 0 size: 94994 MB

node 0 free: 93824 MB

node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 228 229 230 234 235 236 237 242 243 244 248 249 250 251

node 1 size: 96762 MB

node 1 free: 96214 MB

node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 252 253 254 255 259 260 261 266 267 268 269 273 274 275

node 2 size: 96762 MB

node 2 free: 96215 MB

node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 256 257 258 262 263 264 265 270 271 272 276 277 278 279

node 3 size: 96762 MB

node 3 free: 96199 MB

node 4 cpus: 56 57 58 59 63 64 65 70 71 72 73 77 78 79 280 281 282 283 287 288 289 294 295 296 297 301 302 303

node 4 size: 96762 MB

node 4 free: 96250 MB

node 5 cpus: 60 61 62 66 67 68 69 74 75 76 80 81 82 83 284 285 286 290 291 292 293 298 299 300 304 305 306 307

node 5 size: 96762 MB

node 5 free: 96255 MB

node 6 cpus: 84 85 86 87 91 92 93 98 99 100 101 105 106 107 308 309 310 311 315 316 317 322 323 324 325 329 330 331

node 6 size: 96762 MB

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### Platform Notes (Continued)

```

node 6 free: 96233 MB
node 7 cpus: 88 89 90 94 95 96 97 102 103 104 108 109 110 111 312 313 314 318 319 320
321 326 327 328 332 333 334 335
node 7 size: 96762 MB
node 7 free: 96286 MB
node 8 cpus: 112 113 114 115 119 120 121 126 127 128 129 133 134 135 336 337 338 339
343 344 345 350 351 352 353 357 358 359
node 8 size: 96762 MB
node 8 free: 96298 MB
node 9 cpus: 116 117 118 122 123 124 125 130 131 132 136 137 138 139 340 341 342 346
347 348 349 354 355 356 360 361 362 363
node 9 size: 96762 MB
node 9 free: 96302 MB
node 10 cpus: 140 141 142 143 147 148 149 154 155 156 157 161 162 163 364 365 366 367
371 372 373 378 379 380 381 385 386 387
node 10 size: 96762 MB
node 10 free: 96304 MB
node 11 cpus: 144 145 146 150 151 152 153 158 159 160 164 165 166 167 368 369 370 374
375 376 377 382 383 384 388 389 390 391
node 11 size: 96762 MB
node 11 free: 96286 MB
node 12 cpus: 168 169 170 171 175 176 177 182 183 184 185 189 190 191 392 393 394 395
399 400 401 406 407 408 409 413 414 415
node 12 size: 96762 MB
node 12 free: 96273 MB
node 13 cpus: 172 173 174 178 179 180 181 186 187 188 192 193 194 195 396 397 398 402
403 404 405 410 411 412 416 417 418 419
node 13 size: 96762 MB
node 13 free: 96292 MB
node 14 cpus: 196 197 198 199 203 204 205 210 211 212 213 217 218 219 420 421 422 423
427 428 429 434 435 436 437 441 442 443
node 14 size: 96762 MB
node 14 free: 96226 MB
node 15 cpus: 200 201 202 206 207 208 209 214 215 216 220 221 222 223 424 425 426 430
431 432 433 438 439 440 444 445 446 447
node 15 size: 96605 MB
node 15 free: 96123 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
  0:  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20  20
  1:  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20
  2:  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20
  3:  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20
  4:  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20
  5:  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20
  6:  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20
  7:  20  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20

```

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### Platform Notes (Continued)

8:	20	20	20	20	20	20	20	20	10	20	20	20	20	20	20	20
9:	20	20	20	20	20	20	20	20	20	10	20	20	20	20	20	20
10:	20	20	20	20	20	20	20	20	20	20	10	20	20	20	20	20
11:	20	20	20	20	20	20	20	20	20	20	20	10	20	20	20	20
12:	20	20	20	20	20	20	20	20	20	20	20	20	10	20	20	20
13:	20	20	20	20	20	20	20	20	20	20	20	20	20	10	20	20
14:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10	20
15:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10

From /proc/meminfo

MemTotal: 1583378316 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

/usr/bin/lsb\_release -d

SUSE Linux Enterprise Server for SAP Applications 12 SP2

From /etc/\*release\* /etc/\*version\*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86\_64)  
VERSION = 12  
PATCHLEVEL = 2

# This file is deprecated and will be removed in a future service pack or release.  
# Please check /etc/os-release for details about this release.

os-release:

NAME="SLES\_SAP"  
VERSION="12-SP2"  
VERSION\_ID="12.2"  
PRETTY\_NAME="SUSE Linux Enterprise Server for SAP Applications 12 SP2"  
ID="sles\_sap"  
ANSI\_COLOR="0;32"  
CPE\_NAME="cpe:/o:suse:sles\_sap:12:sp2"

uname -a:

Linux linux-6n7q 4.4.120-92.70-default #1 SMP Wed Mar 14 15:59:43 UTC 2018 (52a83de)  
x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 5 Jun 12 22:21

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	ext4	745G	17G	728G	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.

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### Platform Notes (Continued)

BIOS INSYDE Corp. 0.80 02/24/2018  
Memory:  
48x NO DIMM NO DIMM  
48x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

### Compiler Version Notes

```

=====
CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
-----
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----

=====
CXXC 508.namd_r(base) 510.parest_r(base)
-----
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----

=====
CC  511.povray_r(base) 526.blender_r(base)
-----
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----

=====
FC  507.cactuBSSN_r(base)
-----
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-----

=====
FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
-----

```

(Continued on next page)





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### Compiler Version Notes (Continued)

ifort (IFORT) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====  
CC 521.wrf\_r(base) 527.cam4\_r(base)

ifort (IFORT) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
icc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

### Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
icpc

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

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## Base Portability Flags (Continued)

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:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

## Base Other Flags

C benchmarks:

-m64 -std=c11

C++ benchmarks:

-m64

Fortran benchmarks:

-m64

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# SPEC CPU2017 Floating Point Rate Result

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**Huawei**

SPECrate2017\_fp\_base = 956

Huawei 9008 V5 (Intel Xeon Platinum 8180M)

SPECrate2017\_fp\_peak = Not Run

CPU2017 License: 3175

Test Sponsor: Huawei

Tested by: Huawei

Test Date: Jun-2018

Hardware Availability: Jul-2018

Software Availability: Mar-2018

## Base Other Flags (Continued)

Benchmarks using both Fortran and C:

-m64 -std=c11

Benchmarks using both C and C++:

-m64 -std=c11

Benchmarks using Fortran, C, and C++:

-m64 -std=c11

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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html>

<http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml>

<http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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