



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

## Dell Inc.

### SPECrate®2017\_fp\_base = 840

### PowerEdge MX760c (Intel Xeon Platinum 8458P)

### SPECrate®2017\_fp\_peak = 896

CPU2017 License: 6573

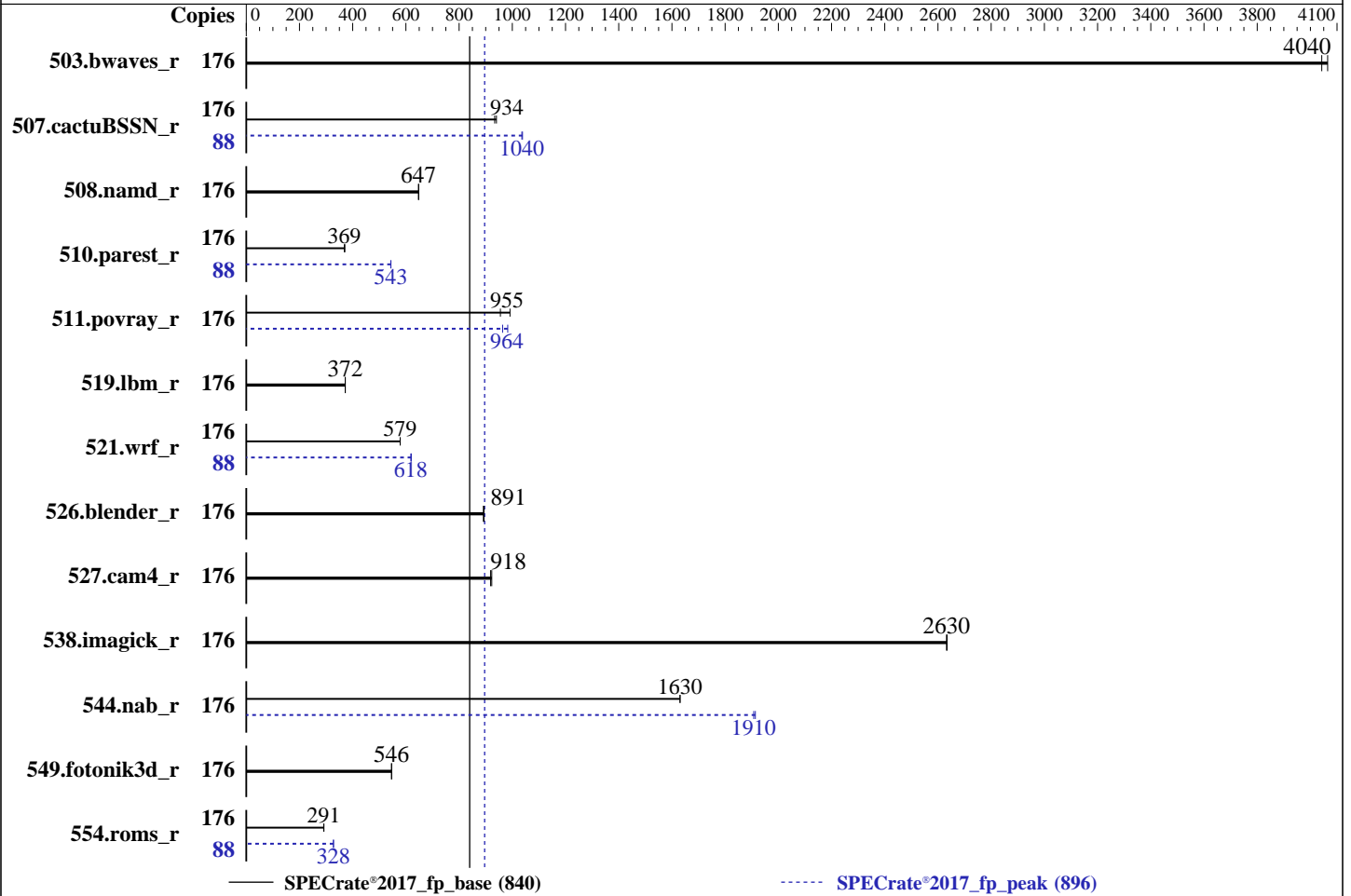
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: Nov-2022



### Hardware

CPU Name: Intel Xeon Platinum 8458P  
 Max MHz: 3800  
 Nominal: 2700  
 Enabled: 88 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 2 MB I+D on chip per core  
 L3: 82.5 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)  
 Storage: 125 GB on tmpfs  
 Other: None

### Software

OS: Red Hat Enterprise Linux 8.7 (Ootpa)  
 4.18.0-425.3.1.el8.x86\_64  
 Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux;  
 Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;  
 Parallel: No  
 Firmware: Version 0.3.2 released Nov-2022  
 File System: tmpfs  
 System State: Run level 5 (graphical 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.



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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	176	434	4060	<b><u>437</u></b>	<b><u>4040</u></b>			176	434	4060	<b><u>437</u></b>	<b><u>4040</u></b>		
507.cactuBSSN_r	176	<b><u>239</u></b>	<b><u>934</u></b>	237	940			88	<b><u>108</u></b>	<b><u>1040</u></b>	107	1040		
508.namd_r	176	258	648	<b><u>258</u></b>	<b><u>647</u></b>			176	258	648	<b><u>258</u></b>	<b><u>647</u></b>		
510.parest_r	176	1242	371	<b><u>1249</u></b>	<b><u>369</u></b>			88	423	544	<b><u>424</u></b>	<b><u>543</u></b>		
511.povray_r	176	415	991	<b><u>430</u></b>	<b><u>955</u></b>			176	418	983	<b><u>426</u></b>	<b><u>964</u></b>		
519.lbm_r	176	498	372	<b><u>499</u></b>	<b><u>372</u></b>			176	498	372	<b><u>499</u></b>	<b><u>372</u></b>		
521.wrf_r	176	681	579	<b><u>681</u></b>	<b><u>579</u></b>			88	<b><u>319</u></b>	<b><u>618</u></b>	318	620		
526.blender_r	176	<b><u>301</u></b>	<b><u>891</u></b>	300	894			176	<b><u>301</u></b>	<b><u>891</u></b>	300	894		
527.cam4_r	176	<b><u>335</u></b>	<b><u>918</u></b>	334	923			176	<b><u>335</u></b>	<b><u>918</u></b>	334	923		
538.imagick_r	176	<b><u>166</u></b>	<b><u>2630</u></b>	166	2630			176	<b><u>166</u></b>	<b><u>2630</u></b>	166	2630		
544.nab_r	176	<b><u>182</u></b>	<b><u>1630</u></b>	182	1630			176	<b><u>155</u></b>	<b><u>1910</u></b>	155	1910		
549.fotonik3d_r	176	<b><u>1256</u></b>	<b><u>546</u></b>	1255	546			176	<b><u>1256</u></b>	<b><u>546</u></b>	1255	546		
554.roms_r	176	958	292	<b><u>961</u></b>	<b><u>291</u></b>			88	426	328	<b><u>427</u></b>	<b><u>328</u></b>		

SPECrate®2017\_fp\_base = **840**

SPECrate®2017\_fp\_peak = **896**

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 =  
"/mnt/ramdisk/cpu2017-1.1.8-ic2022.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.8-ic2022.1/je5.0.1-64"  
MALLOC\_CONF = "retain:true"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM memory using Red Hat Enterprise Linux 8.4  
Transparent Huge Pages enabled by default

(Continued on next page)



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## General Notes (Continued)

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>`  
 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.

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS settings:

```

      ADDDC Setting : Disabled
      DIMM Self Healing on
Uncorrectable Memory Error : Disabled
Virtualization Technology : Disabled
      Sub NUMA Cluster : 4-way Clustering
      DCU Streamer Prefetcher : Disabled
      LLC Prefetch : Disabled
      Dead Line LLC Alloc : Disabled
      Optimizer Mode : Enabled

      System Profile : Custom
      CPU Power Management : Maximum Performance
      C1E : Disabled
      C States : Autonomous
      Memory Patrol Scrub : Disabled
      Energy Efficiency Policy : Performance
      PCI ASPM L1 Link
      Power Management : Disabled
  
```

Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-ic2022.1/bin/sysinfo  
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d  
 running on localhost.localdomain Tue Dec 6 07:33:11 2022

SUT (System Under Test) info as seen by some common utilities.

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## Platform Notes (Continued)

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 8458P
 2 "physical id"s (chips)
176 "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      : 44
siblings       : 88
physical 0:    cores 0 1 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39 40 41 42 43
physical 1:    cores 0 1 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39 40 41 42 43

```

From lscpu from util-linux 2.32.1:

```

Architecture:    x86_64
CPU op-mode(s):  32-bit, 64-bit
Byte Order:      Little Endian
CPU(s):          176
On-line CPU(s) list: 0-175
Thread(s) per core: 2
Core(s) per socket: 44
Socket(s):       2
NUMA node(s):   8
Vendor ID:      GenuineIntel
BIOS Vendor ID: Intel
CPU family:     6
Model:         143
Model name:     Intel(R) Xeon(R) Platinum 8458P
BIOS Model name: Intel(R) Xeon(R) Platinum 8458P
Stepping:      8
CPU MHz:       3800.000
BogoMIPS:      5400.00
L1d cache:     48K
L1i cache:     32K
L2 cache:      2048K
L3 cache:      84480K
NUMA node0 CPU(s):
0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124, 128
NUMA node1 CPU(s):
44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 132, 136, 140, 144, 148, 152, 156, 160, 164, 168, 172
NUMA node2 CPU(s):
2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 90, 94, 98, 102, 106, 110, 114, 118, 122, 126, 130
NUMA node3 CPU(s):
46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 134, 138, 142, 146, 150, 154, 158, 162, 166, 170, 174

```

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## Platform Notes (Continued)

```

NUMA node4 CPU(s):
1,5,9,13,17,21,25,29,33,37,41,89,93,97,101,105,109,113,117,121,125,129
NUMA node5 CPU(s):
45,49,53,57,61,65,69,73,77,81,85,133,137,141,145,149,153,157,161,165,169,173
NUMA node6 CPU(s):
3,7,11,15,19,23,27,31,35,39,43,91,95,99,103,107,111,115,119,123,127,131
NUMA node7 CPU(s):
47,51,55,59,63,67,71,75,79,83,87,135,139,143,147,151,155,159,163,167,171,175
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 tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl 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 cat_l2 cdp_l3
invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust
bmi1 avx2 smep bmi2 erms invpcid 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
split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hfi
avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni
avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri
movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr amx_bf16
avx512_fp16 amx_tile amx_int8 flush_lld arch_capabilities

```

```

/proc/cpuinfo cache data
cache size : 84480 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 4 8 12 16 20 24 28 32 36 40 88 92 96 100 104 108 112 116 120 124 128
node 0 size: 128215 MB
node 0 free: 115262 MB
node 1 cpus: 44 48 52 56 60 64 68 72 76 80 84 132 136 140 144 148 152 156 160 164 168
172
node 1 size: 129019 MB
node 1 free: 120695 MB
node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 90 94 98 102 106 110 114 118 122 126 130
node 2 size: 129019 MB
node 2 free: 120538 MB
node 3 cpus: 46 50 54 58 62 66 70 74 78 82 86 134 138 142 146 150 154 158 162 166 170
174
node 3 size: 129019 MB
node 3 free: 120670 MB
node 4 cpus: 1 5 9 13 17 21 25 29 33 37 41 89 93 97 101 105 109 113 117 121 125 129
node 4 size: 129019 MB
node 4 free: 119680 MB

```

(Continued on next page)



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## Platform Notes (Continued)

```

node 5 cpus: 45 49 53 57 61 65 69 73 77 81 85 133 137 141 145 149 153 157 161 165 169
173
node 5 size: 128977 MB
node 5 free: 120506 MB
node 6 cpus: 3 7 11 15 19 23 27 31 35 39 43 91 95 99 103 107 111 115 119 123 127 131
node 6 size: 129019 MB
node 6 free: 120639 MB
node 7 cpus: 47 51 55 59 63 67 71 75 79 83 87 135 139 143 147 151 155 159 163 167 171
175
node 7 size: 129007 MB
node 7 free: 112914 MB
node distances:
node  0  1  2  3  4  5  6  7
  0:  10  12  12  12  21  21  21  21
  1:  12  10  12  12  21  21  21  21
  2:  12  12  10  12  21  21  21  21
  3:  12  12  12  10  21  21  21  21
  4:  21  21  21  21  10  12  12  12
  5:  21  21  21  21  12  10  12  12
  6:  21  21  21  21  12  12  10  12
  7:  21  21  21  21  12  12  12  10

```

```

From /proc/meminfo
MemTotal:      1056046648 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

/sbin/tuned-adm active
Current active profile: throughput-performance

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.7 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.7"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.7 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.7 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.7 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8::baseos

```

```

uname -a:
Linux localhost.localdomain 4.18.0-425.3.1.el8.x86_64 #1 SMP Fri Sep 30 11:45:06 EDT
2022 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
mmio_stale_data:	Not affected
retbleed:	Not affected
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl
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, PBRSE-eIBRS: SW sequence
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 5 Dec 6 03:18

```
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.8-ic2022.1
Filesystem      Type      Size  Used Avail Use% Mounted on
tmpfs           tmpfs    125G   71G   55G   57% /mnt/ramdisk
```

```
From /sys/devices/virtual/dmi/id
Vendor:          Dell Inc.
Product:         PowerEdge MX760c
Product Family: PowerEdge
Serial:          MWCFG04
```

Additional information from dmidecode 3.3 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 002C0632002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800
```

```
BIOS:
BIOS Vendor:     Dell Inc.
BIOS Version:    0.3.2
BIOS Date:       11/30/2022
BIOS Revision:   0.3
```

(End of data from sysinfo program)



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## 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 2022.1.0 Build 20220316  
Copyright (C) 1985-2022 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,  
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-----

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

-----  
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Version 2022.1.0 Build 20220316  
Copyright (C) 1985-2022 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,  
Version 2022.1.0 Build 20220316  
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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2022.1.0 Build 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version  
2022.1.0 Build 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
-----

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

-----  
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version

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## Compiler Version Notes (Continued)

2022.1.0 Build 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

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

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version  
2022.1.0 Build 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2022.1.0 Build 20220316  
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.  
-----

## Base Compiler Invocation

C benchmarks:  
icx

C++ benchmarks:  
icpx

Fortran benchmarks:  
ifx

Benchmarks using both Fortran and C:  
ifx icx

Benchmarks using both C and C++:  
icpx icx

Benchmarks using Fortran, C, and C++:  
icpx icx ifx

## 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

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## Base Portability Flags (Continued)

```
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 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

### C++ benchmarks:

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

### Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -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
-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 -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
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_fp\_base = 840

PowerEdge MX760c (Intel Xeon Platinum 8458P)

SPECrate®2017\_fp\_peak = 896

CPU2017 License: 6573  
Test Sponsor: Dell Inc.  
Tested by: Dell Inc.

Test Date: Dec-2022  
Hardware Availability: Feb-2023  
Software Availability: Nov-2022

## Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Benchmarks using both Fortran and C:

ifx icx

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx

## 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 -Ofast  
-ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -qopt-zmm-usage=high -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  
-qopt-mem-layout-trans=4 -ljemalloc

(Continued on next page)



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## Peak Optimization Flags (Continued)

510.parest\_r (continued):

```
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:

503.bwaves\_r: basepeak = yes

549.fotonik3d\_r: basepeak = yes

```
554.roms_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both Fortran and C:

```
521.wrf_r: -w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

527.cam4\_r: basepeak = yes

Benchmarks using both C and C++:

```
511.povray_r: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profddata(pass 2) -xCORE-AVX512
-Ofast -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

526.blender\_r: basepeak = yes

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
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

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

<http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64-revB.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.2.html>



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**Software Availability:** Nov-2022

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

<http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64-revB.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.2.xml>

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