

With Optimazion Flag 01:

Vectorlength 50

```
time: 0.0817 seconds
```

Vectorlength 20

```
time: 0.0329 seconds
```

Vectorlength 10:

```
time: 0.0127 seconds
```

Without Optimaion Flag:

Vectorlength 50

```
time: 0.2263 seconds
```

Vectorlength 20

```
time: 0.0914 seconds
```

Vectorlength 10:

```
time: 0.0470 seconds
```

As you can see the optimization flag helps a lot.

With Flag:

```
-ftree-vectorize WITHOUT 01 Flag
```

In the Internet there was that this command only also makes O3 optimization. So if you extra give the Flag 01 plus the vectorize Flag so you have (mostly) only vectorizing, like required. Only Vectorizing is not possible as I saw in the internet.

Vectorlength 50

```
time: 0.2266 seconds
```

Vectorlength 20

```
time: 0.0916 seconds
```

Vectorlength 10:

```
time: 0.0470 seconds
```

With Flag:

-ftree-vectorize AND O1 Flag

Vectorlength 50

```
time: 0.0165 seconds
```

Vectorlength 20

```
time: 0.0084 seconds
```

Vectorlength 10:

```
time: 0.0043 seconds
```

So as you can see the best results you have are with ONLY (mostly) Vectorizing. This you can achieve with the vector flag and the O1 Flag.

When you don't do this vector makes automatically O3 and this is worse. Next best results would be simply O1 flag.

False Results ?

No I get the right results, I checked it everytime with the Output of Every Vector Input. Stays the same.

Change Problem Size?

No not really , maybe a little bit it changes the calculation , but nothing special because the number is already very high.

Using Perf:

I decided to look deeper into the difference between the vectorization with and without O1. So I compared both of them with perf tools.

SIMD_INST_RETIRED.PACKED_SINGLE	C7	01
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This event counts the number of Streaming SIMD Extensions (SSE) packed-single instructions retired.

SIMD_INST_RETIRED.VECTOR	C7	10
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Retired Streaming SIMD Extensions 2 (SSE2) vector instructions.

Vectorization WITH O1

SIMD_INST_RETIRED.PACKED_SINGLE	C7	01
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```
Performance counter stats for './vl50':  
  
      48.000.701      r01C7:u  
  
0,020548323 seconds time elapsed  
  
0,017145000 seconds user  
0,001071000 seconds sys
```

SIMD_INST_RETIRED.VECTOR	C7	10
--------------------------	----	----

```
Performance counter stats for './vl50':  
  
      1.521      r10C7:u  
  
0,229198590 seconds time elapsed  
  
0,225951000 seconds user  
0,001990000 seconds sys
```

WITHOUT O1 (O3) automatically)

SIMD_INST_RETIRED.VECTOR	C7	10
<pre>time: 0.0168 seconds Performance counter stats for './v150': 1.471 r10C7:u 0,019139229 seconds time elapsed 0,016108000 seconds user 0,002013000 seconds sys</pre>		

SIMD_INST_RETIRED.PACKED_SINGLE	C7	01
<pre>Performance counter stats for './v150': 701 r01C7:u 0,230647348 seconds time elapsed 0,223756000 seconds user 0,004994000 seconds sys</pre>		

LL2 Measures:

Only with vector flag -

```
time: 9.4278 seconds
```

With Vector Flag O1 extra (only vectorizing)

```
time: 0.6575 seconds
```

