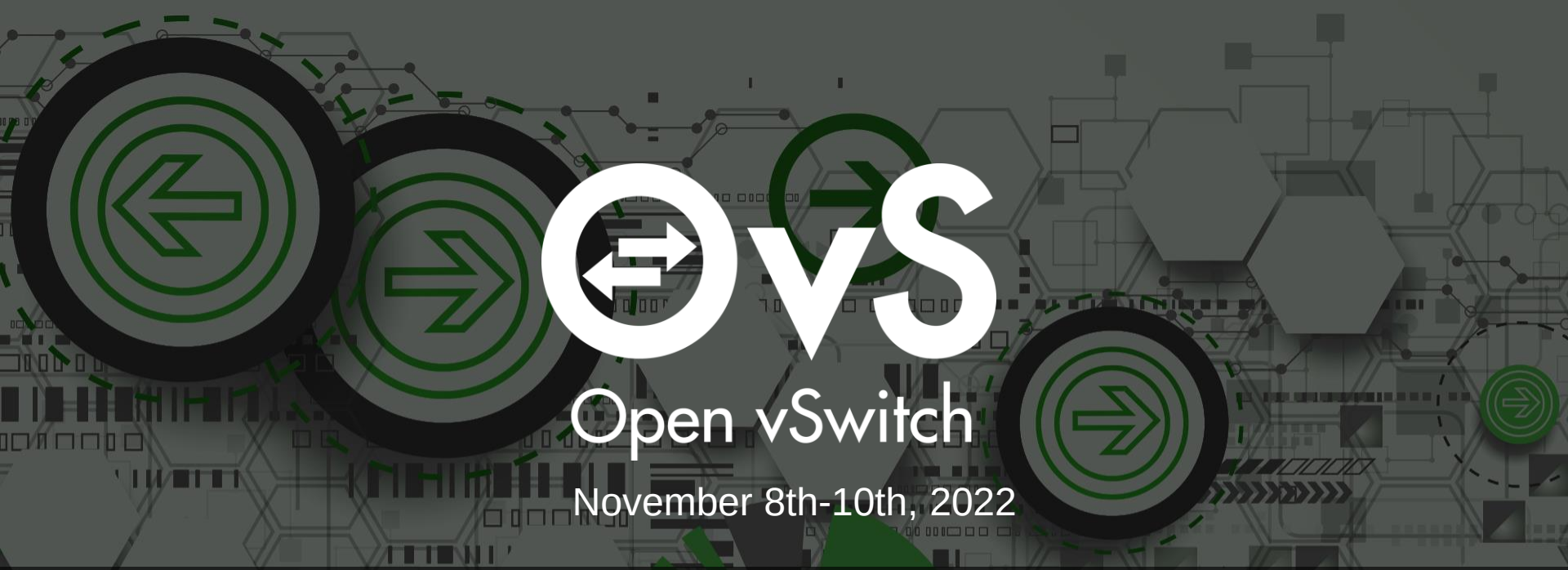

November 8th-10th, 2022

Take 2: Action!

Now with a focus on how SIMD benefits performance

Emma Finn
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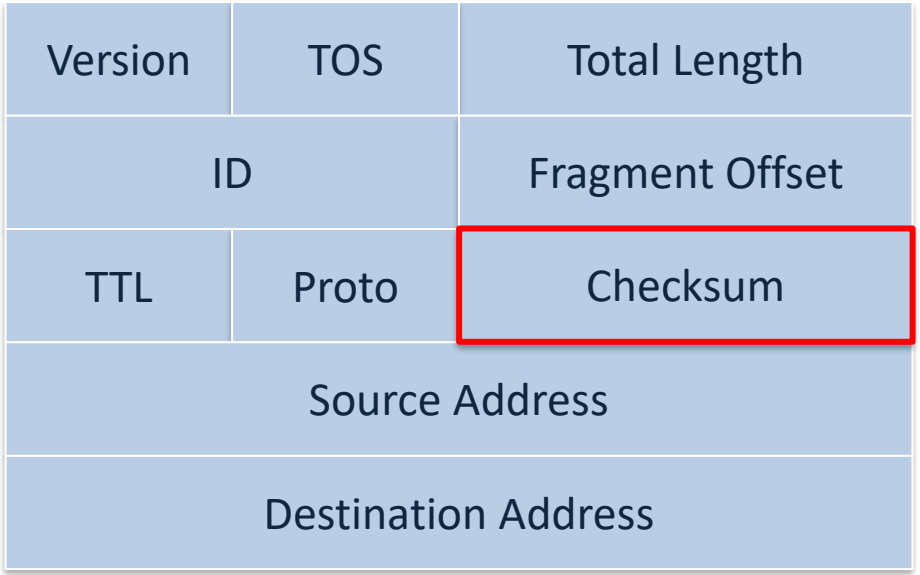
Checksums



`(16 bit sum of entire packet) + checksum = 0xFFFF`

Scalar Checksum (RFC 1624) – “Incremental Update”

```
uint32_t sum =  ~old_csum    +   ~old_val    +  new_val
```

```
ip_src= 1.1.1.1 -> 192.168.0.7
```

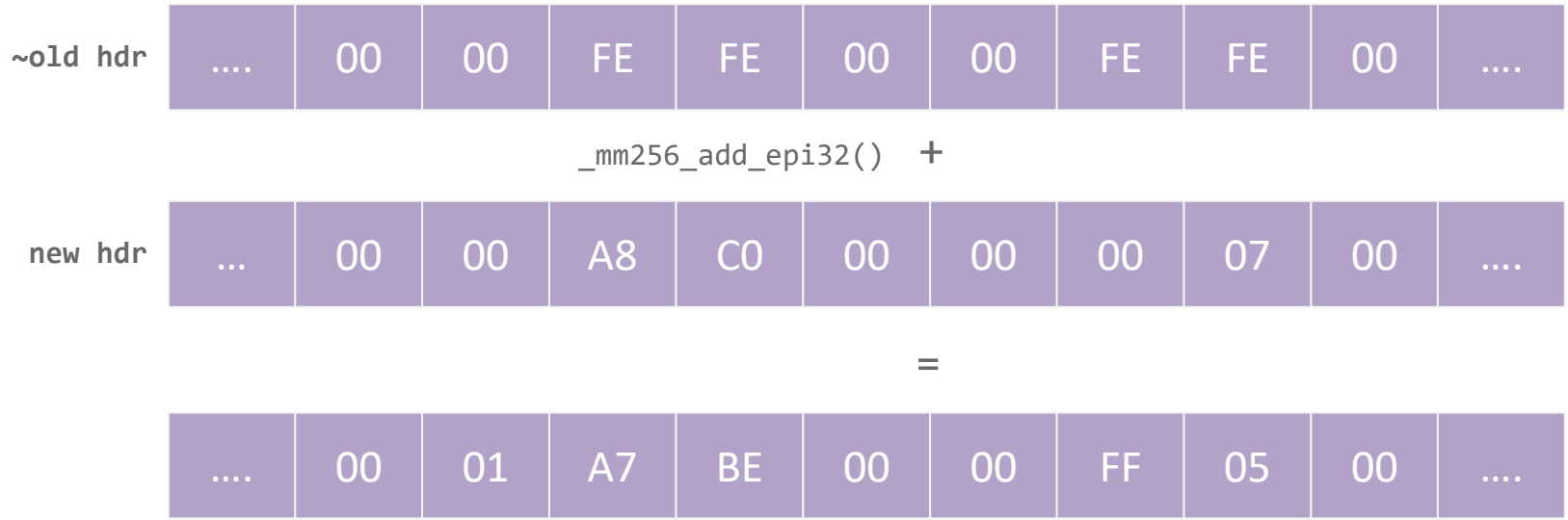
recalc_csum16()

csum_finish()

10-16 times

SIMD “get delta” Checksum

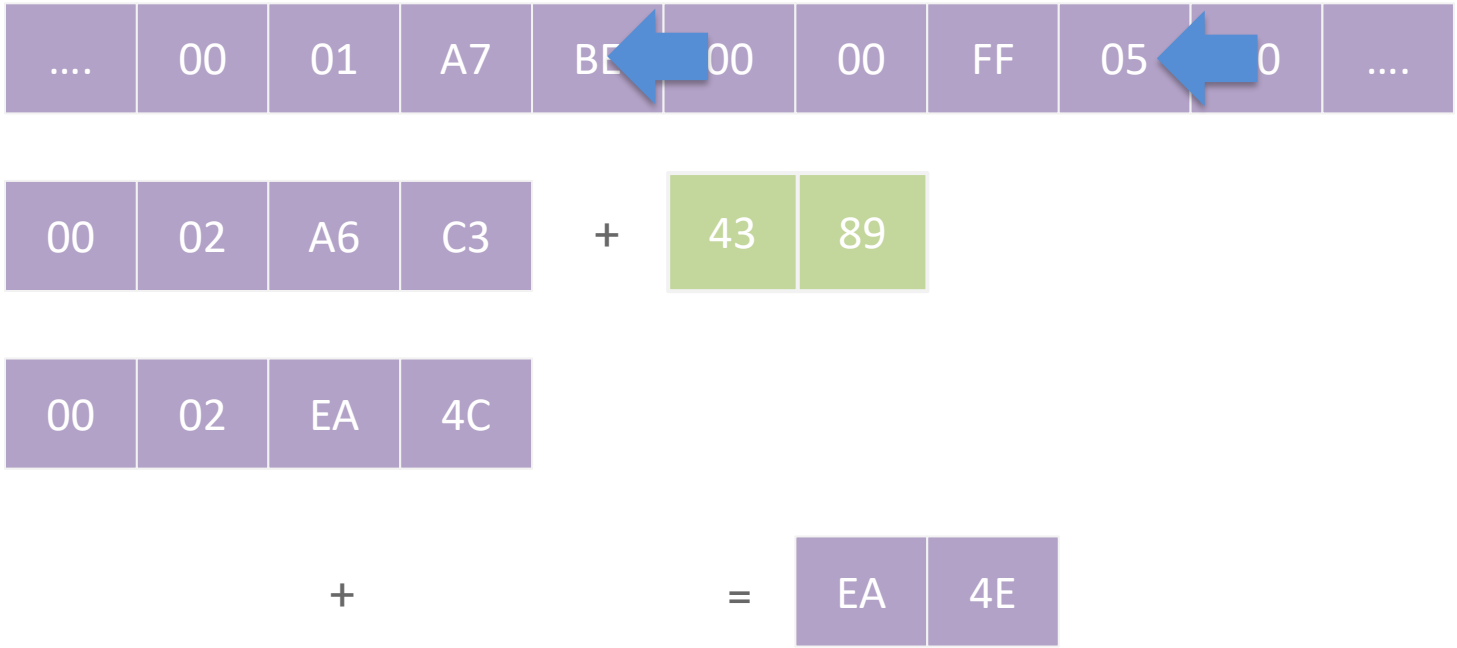
avx512_get_delta()



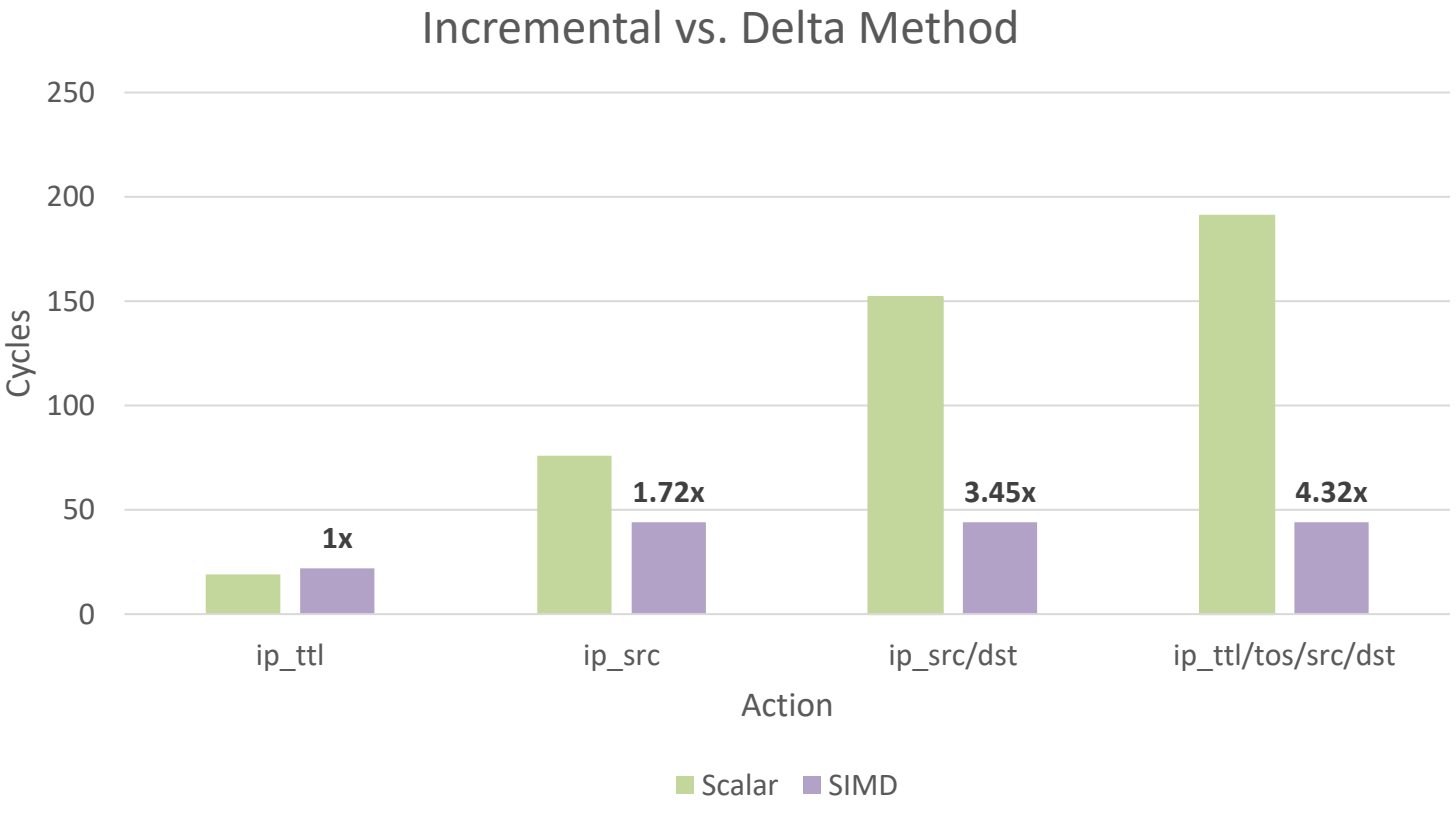
SIMD “get delta” Checksum

avx512_get_delta()

_mm256_add_epi32()



Performance Benefits



? Questions ?

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IPv6 patch - https://patchwork.ozlabs.org/project/openvswitch/list/?series=320103

Aaaand Action! Using AVX512 to optimize OVS packet modifications