redhat

IKEv2 Multi SA

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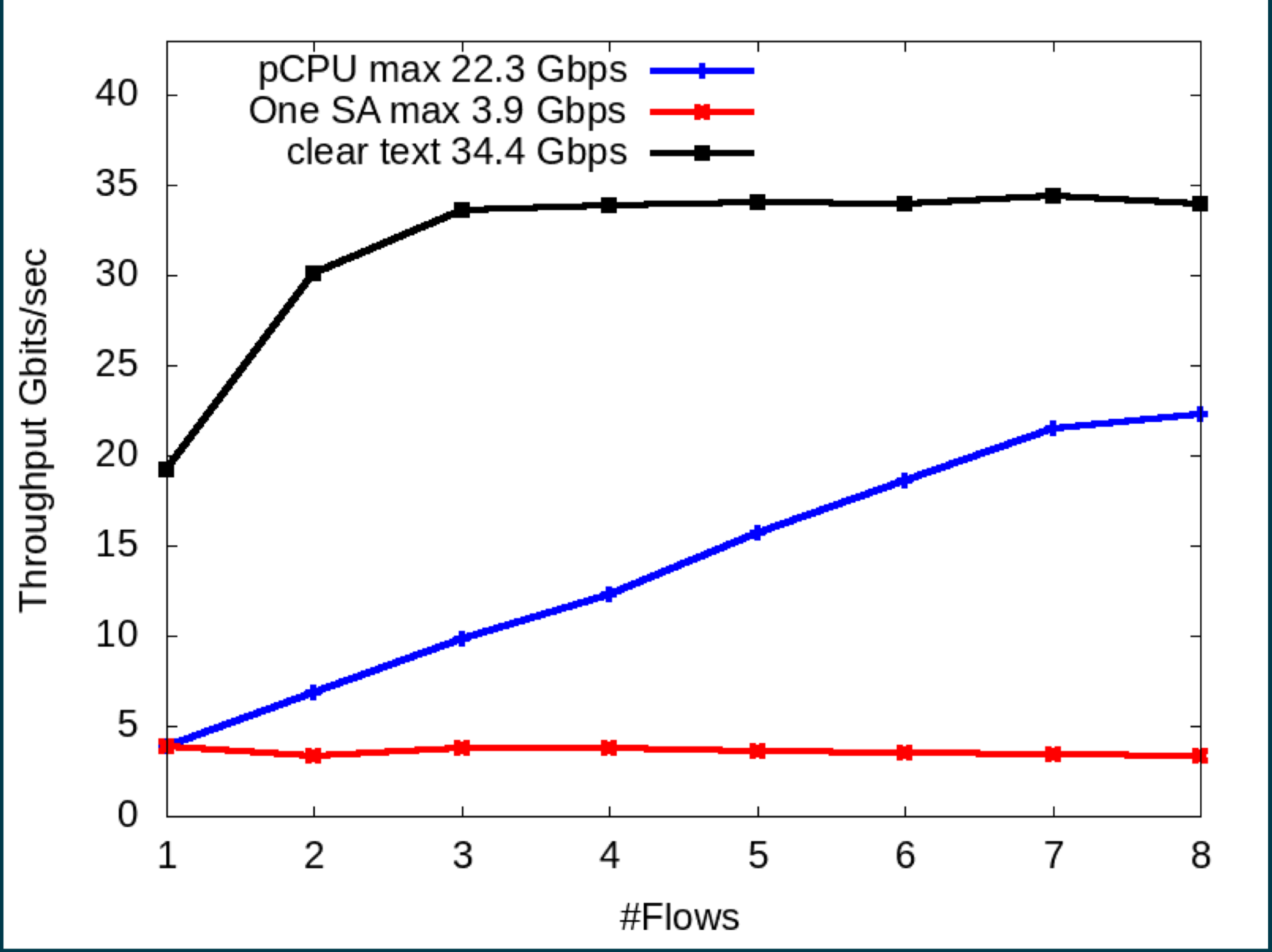
Resolving limitations

- Give implementation advise on how to handle multiple IPsec SA’s with identical Traffic Selectors
- https://tools.ietf.org/html/draft-pwouters-multi-sa-performance-01
- Install multiple IPsec SA - one per CPU
- Two new NOTIFY payloads for IPsec SA
  - NUM_QUEUES(max)
  - QUEUE_INFO(opaque)

Benchmarks


pCPU max 22.3 Gbps
One SA max 3.9 Gbps
clear text 34.4 Gbps
Throughput Gbits/sec
0
5
10
15
20
25
30
35
40
1
2
3
4
5
6
7
8
#Flows

Changed in -01

- NUM_QUEUES(minimum) – takes one argument instead of two
- Signal CPU identifier send via QUEUE_INFO
  - Does not need to be the actual hardware CPUID
- Readability improvements

RSS for ESP is rarely supported

- RSS usually only supports UDP/TCP port hashing selector
- We want to use UDP encapsulation so RSS for UDP can be used
- But multiple Child SAs would all use the same UDP port
  - We would like Child SAs on different source ports
  - Without affecting IKEv2 channel
  - OS does not always make that easy
  - Can’t negotiate source port, because of NAT
  - How to do NAT port updates ?

Suitable as WG item ?

- Solves a real world problem (performance)
- We have running code
- We have measured positive results (with specific hardware)
- Solving the UDP source port issue would make this work on all existing (virtual and real) network cards
- Please adopt ☺