Layer 3 Quantized Congestion Notification (L3QCN)

draft-yu-tsvwg-l3qcn-00

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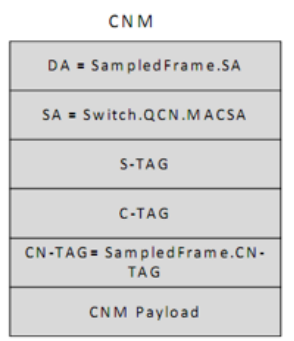
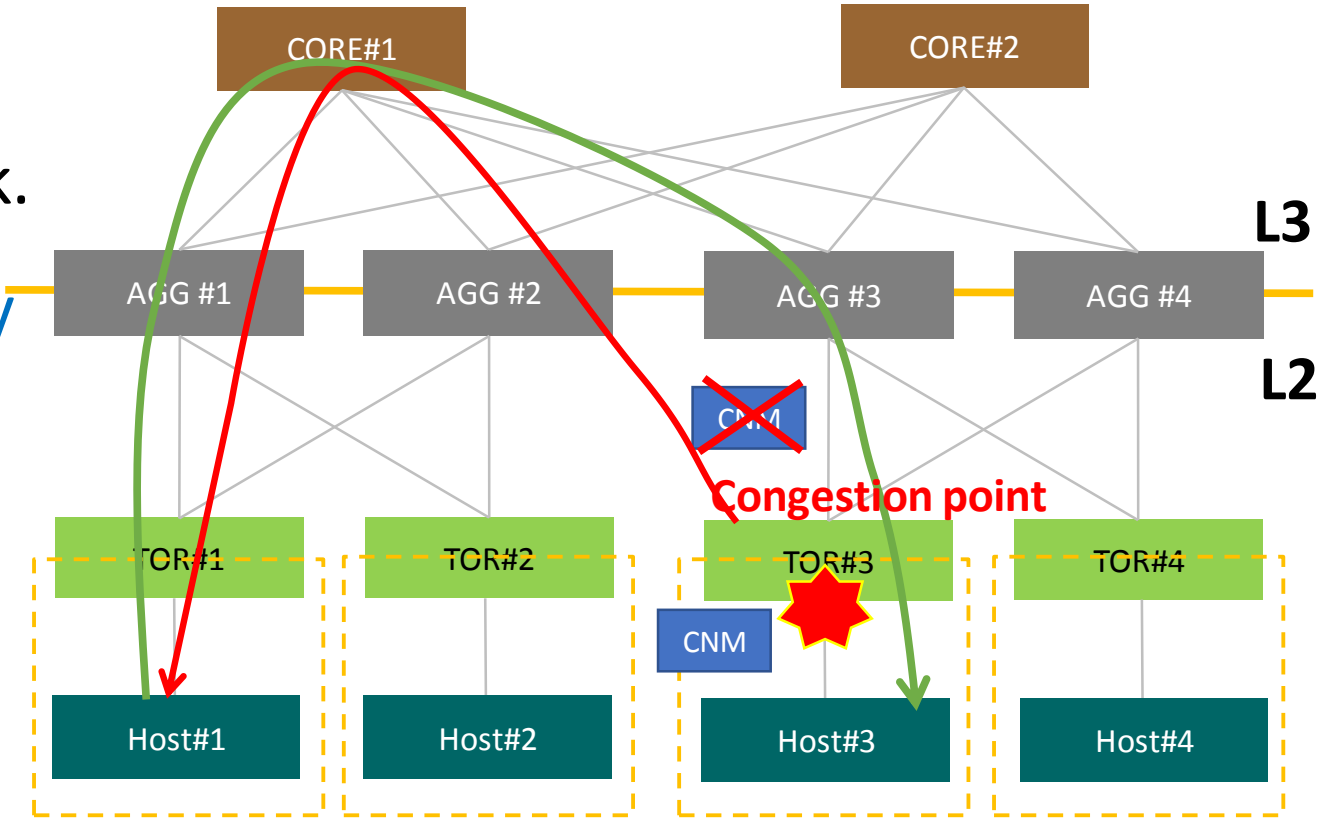
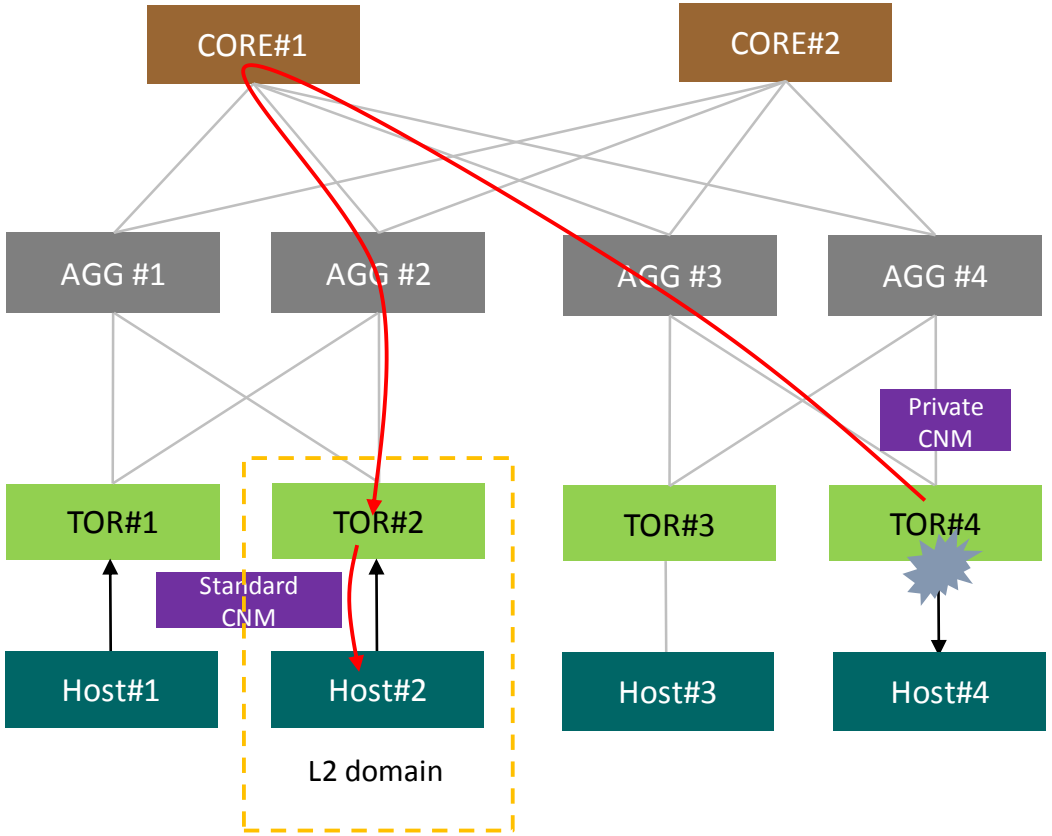
Problem Statement

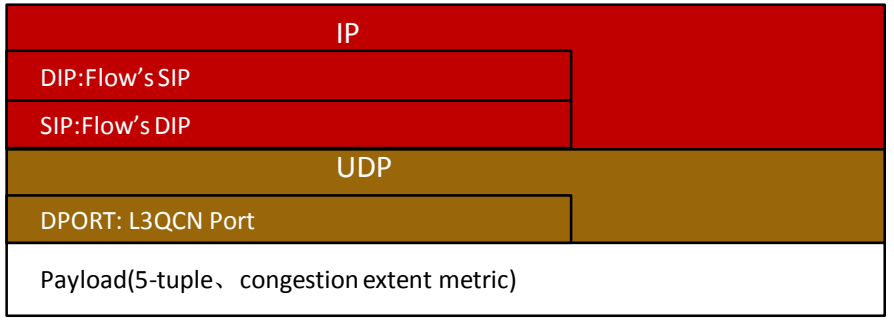
- The essential of IEEE 802.1 Qau (Congestion Notification) is to early alarm the potential congestion, QCN could not be used on the L3 network.
- Due to the requirement of extremely high throughput, the multi-path L3 network is normally used in DC.
- Could we extend the QCN into the L3 network? L3QCN
- What scenario should we consider?
  - Nested Tunnel
  - Different network topologies



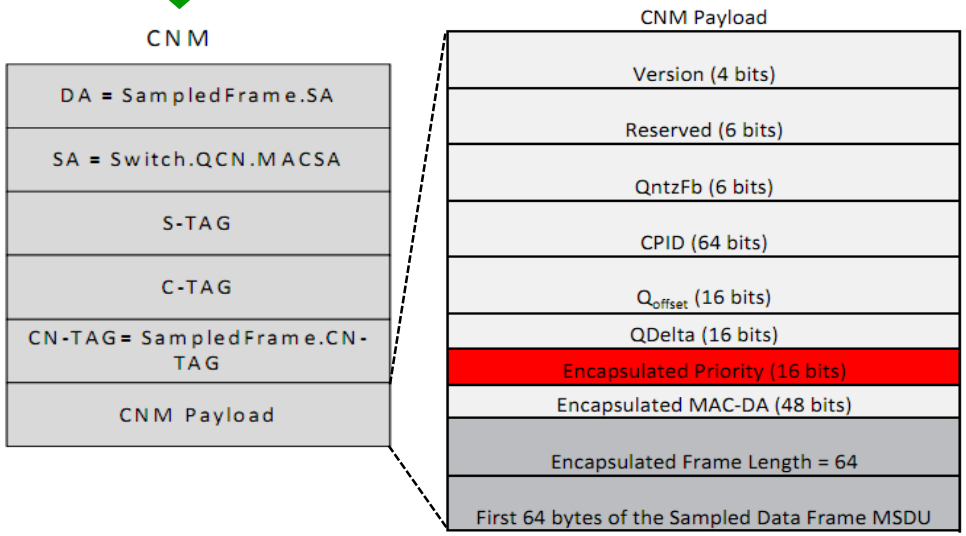


L3QCN in a certain scenario





Private CNM → Standard CNM



- T4 detected the congestion on the port of T4->H4， judge the congested stream. Constructed the private CNM (5-tuple、congestion extent metric). Encapsulate in IP+UDP. Use the specific UDP port. Set the Dec IP as the Src IP of the stream to make sure the CNM could be routed to the origin TOR.

More Generic L3QCN

Think about a More Generic CN in L3 Network

1. Tunneling is common used in DC network which may make this scenario more complex, such as VxLAN, NVGRE, GPE MAC-in-MAC
2. Nested tunneling may even increase the complexity.
3. Different network topologies, such as Fat tree, CLOS, …