

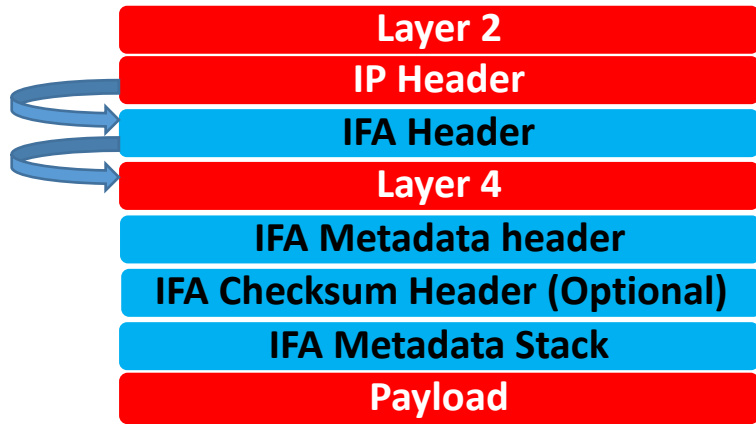
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IETF-105

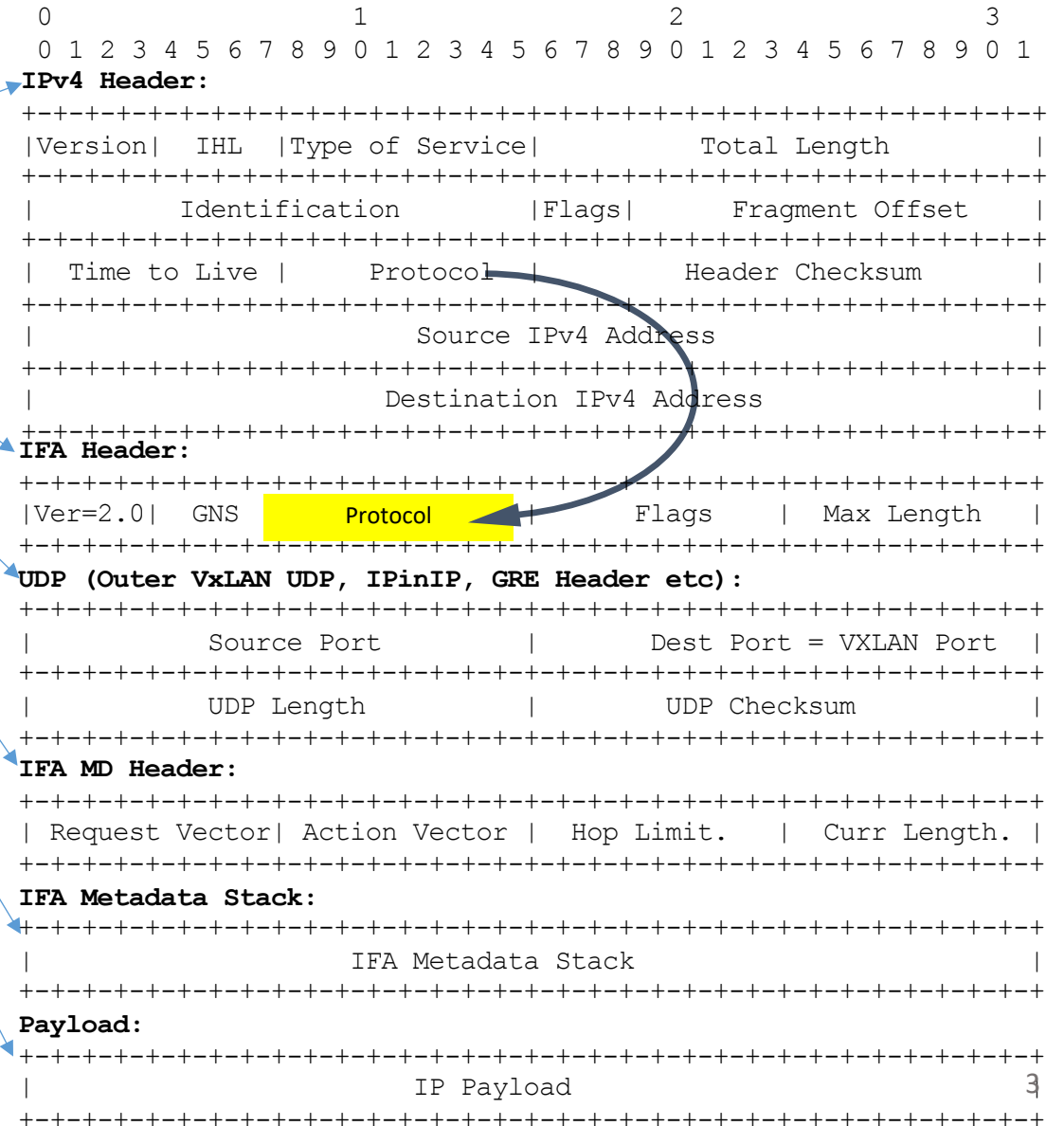
# Agenda

- *Recap*
- *Deployment*
  - *Usecases*
  - *Challenges*
- *Next Steps*

# IFA – L3 Protocol Extension Header



- Use 1 experimental IP protocol type (143 – 252): PROTO\_IFA
- Original IP->proto is copied in IFA->proto
- IFA header is treated as L3 extension header
- Metadata is treated as L4 information
- Metadata is treated as foreign object
  - L4 length and checksum is not updated
  - This is to ease load on hw to strip and forward



# Deployment - Usecases

- ✓ Deployed in 3 MSDCS and 2<sup>nd</sup> largest cloud services provider
- ✓ Deployment and technology paper published in IEEE
- ✓ Traffic Profile
  - TCP/UDP/VxLAN'/GREinGRE Flows
    - Live Flows (1in1 or 1inN sample)
    - Cloned Flow Packets (1inN samples are cloned)
    - Probe Packets (Synthetic packets)
- ✓ Feature Profile
  - Layer 4 ACL
  - Policy Based Routing
  - NAT (SNAT/DNAT/Hairpinning)
- ✓ Hierarchical Analysis of Metadata (to reduce load on collector)
  - Threshold based report for queue depths, per hop latency
  - Route change detection via nexthop/egress RIF monitoring
  - Per flow drop detection
  - Per flow congestion avoidance using path latency data (paper publish in sigcomm 2019)

# Deployment - Challenges

- ✓ Very large hops in a path
  - Introduced a concept of metadata fragmentation
- ✓ Legacy device not able to understand IFA protocol CP in IP header
  - Flow path changes (use User Defined Fields to be picked for hash computation)
  - Unknown IP protocol (Install an override rule to accept unknown IP proto)
  - Some devices just can not be supported

## Next Steps

- ✓ IFA deployment for IPv6 domain
- ✓ IFA deployment for AH/ESP tunnels
- ✓ Work with IOAM authors to align the IFA learnings

Thank You