Generic Delivery Functions

draft-zzhang-intarea-generic-delivery-functions

Jeffrey Zhang, Ron Bonica, Kireeti Kompella

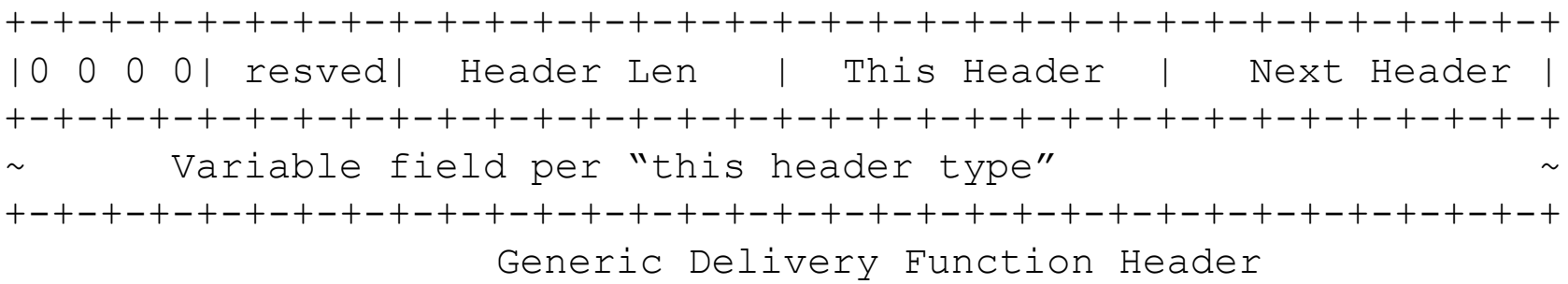
Juniper Networks

IETF 110

Observation & Proposal

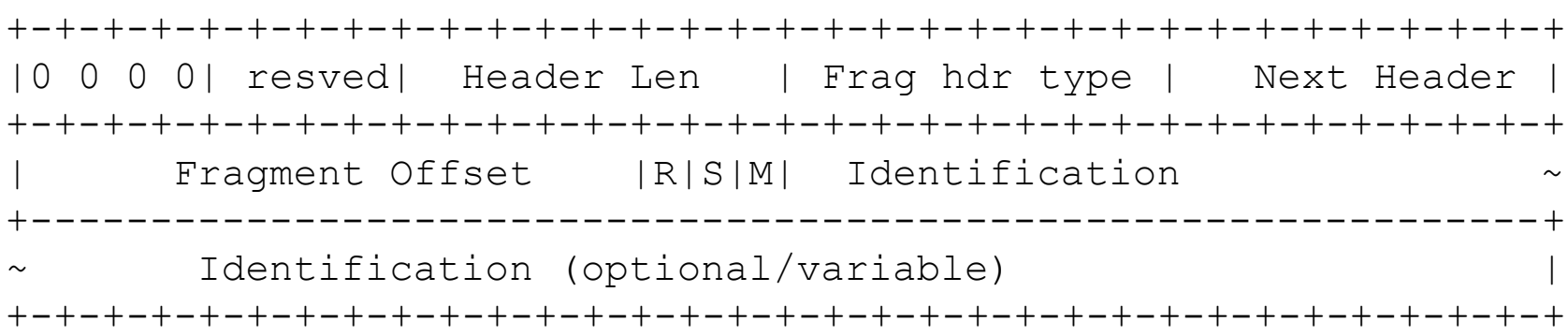
- Some IP Functions can be viewed as independent of IP
  - Fragmentation/reassembly
  - ESP/AH
  - In-Situ OAM?
- What if we extract them out and apply to any layer?
  - IP, MPLS, BIER, Ethernet
  - “Generic Delivery Functions”
    - Between two points at a L2/L2.5/L3/whatever layer
      - Two Ethernet nodes
      - LSP ingress/egress
      - BIER ingress/egress
      - IP source/destination nodes
        - For future GDFs that are applicable to both IP and other layers

GDFH

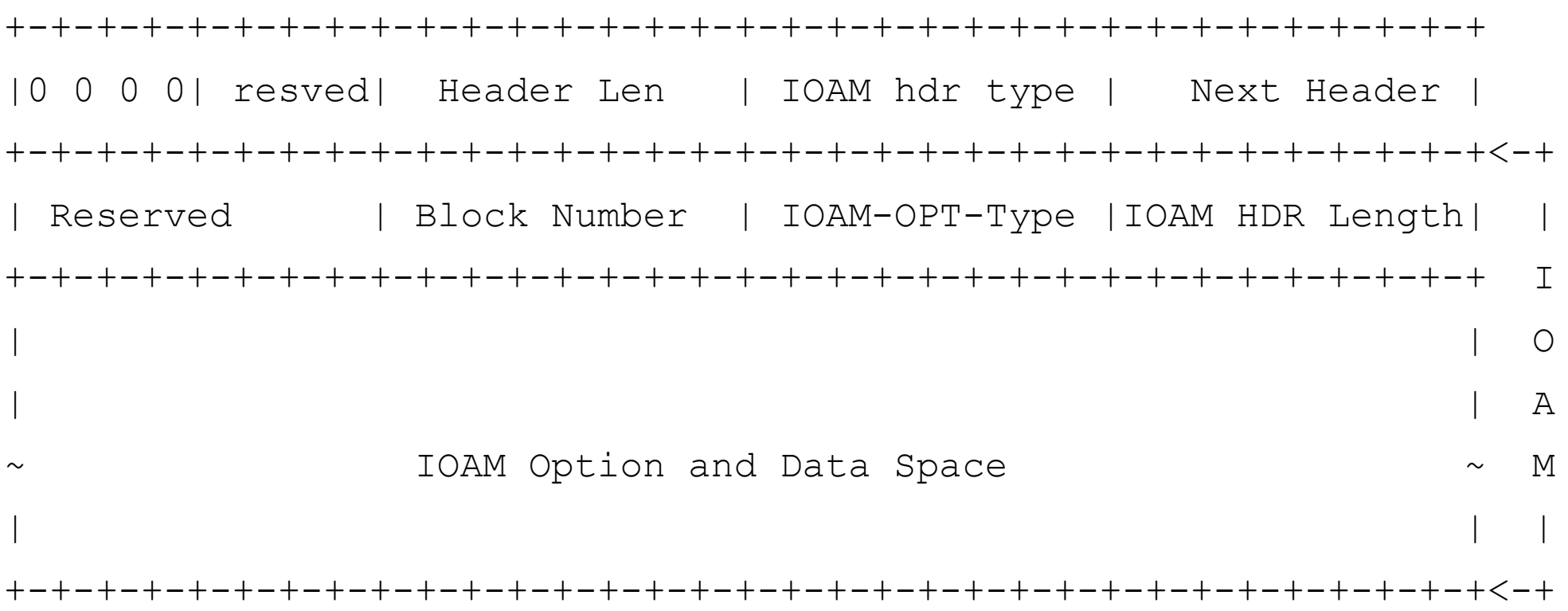


- “This header” uses its own number space – for different GDFs
- “Next header” comes from “IP Protocol” number space
  - It could point to another GDFH
- Outer header indicates that a GDFH follows
  - MPLS label, BIER proto field, IP “next header”, EtherType
- In case of MPLS:
  - 0000 nibble prevents it from being mistaken as IP header
  - Currently the GDFH indicator label is a signaled regular label
  - A special label may be warranted if the GDF concept is accepted

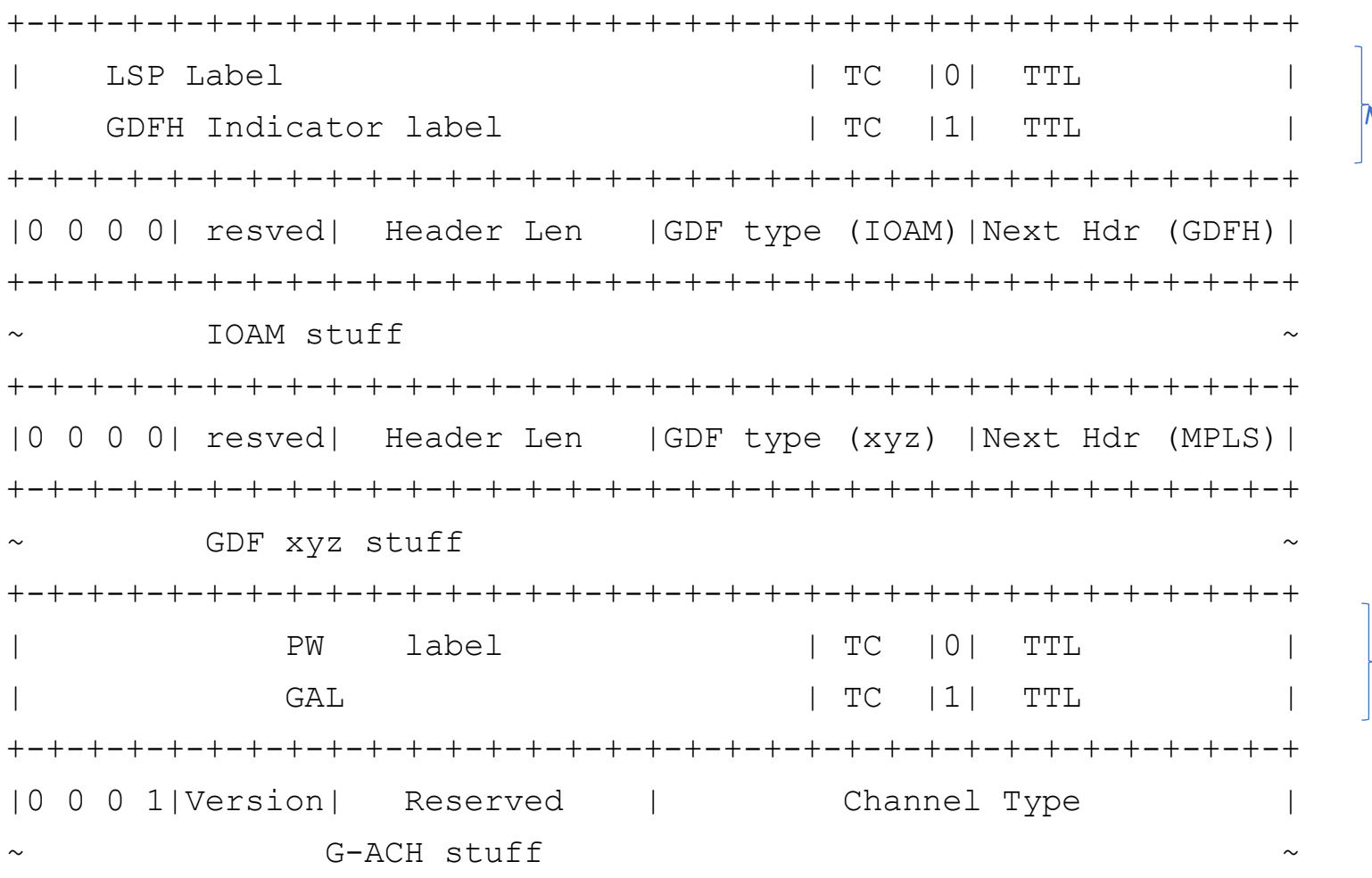
Generic Fragmentation Header



IOAM (implemented as GDF)



MPLS + IOAM + GDF + PW w/ G-ACH



Two independent label stacks *separated by GDFHs*

Having two independent label stacks is nothing new

- A BIER header could separate transport/bier labels and payload labels
- An MPLS network on top of PWs implemented on another infrastructure MPLS network

GDF and G-ACh

- GDF is for Generic Delivery Functions
  - Over different layers – MPLS is just one use-case
  - Supporting different stackable functions
  - Applicable to both user and control traffic

- G-ACh was designed for MPLS control channel purpose
  - GAL and G-ACh are not to be used for user traffic
  - G-ACh structure does not have “next” concept

What if G-Ach/GAL is allowed for user traffic?

- *Note: we're not promoting this – this is just a "what if"*

- The first GDFH could be treated as a G-ACh "channel"
  - Just to make use of GAL in case of MPLS
  - GDFH structure would not change
    - "this header" and "next header" concept is critical for extensibility
    - Especially for non-MPLS case
- What if we extend G-ACh to provide GDF?
  - Keeping old name does not make sense
    - Not even for MPLS
    - Let alone for BIER/Ethernet/other layers
  - Developing GDFH is a better option and it is not re-inventing wheels