

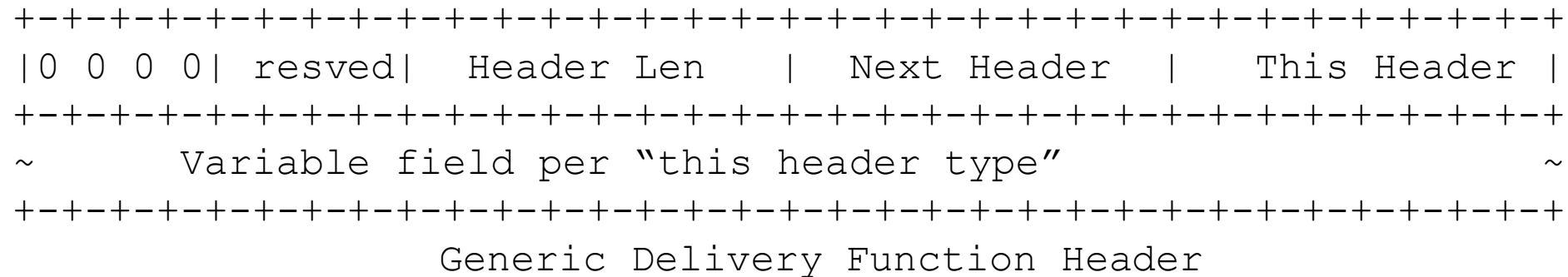
Generic Delivery Function via MPLS/BIER Extension Headers

PALS/MPLS/DetNET/Spring Joint Session, IETF111

GDF Recap

- Presentation at IETF110:
<https://datatracker.ietf.org/meeting/110/materials/slides-110-mpls-11-generic-delivery-functions-00>
- 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

Previous GDFH – FYI only

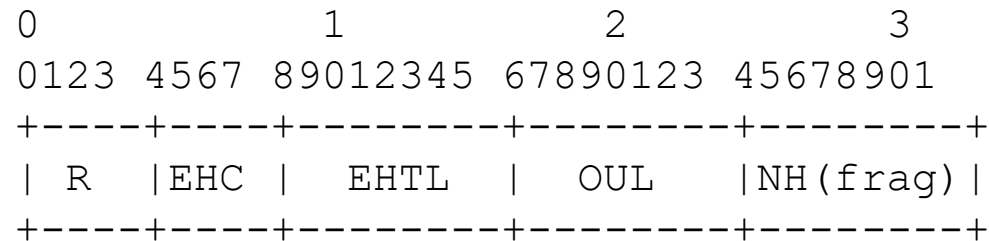


- “Next header” comes from “IP Protocol” number space
 - It could point to another GDFH or IP “next header”
- “This header” uses its own number space – for different GDFs
 - No need to take one number from IP “next header” space for each GDF
- Outer header indicates that a GDFH follows
 - MPLS label, BIER proto field, IP “next header”, EtherType

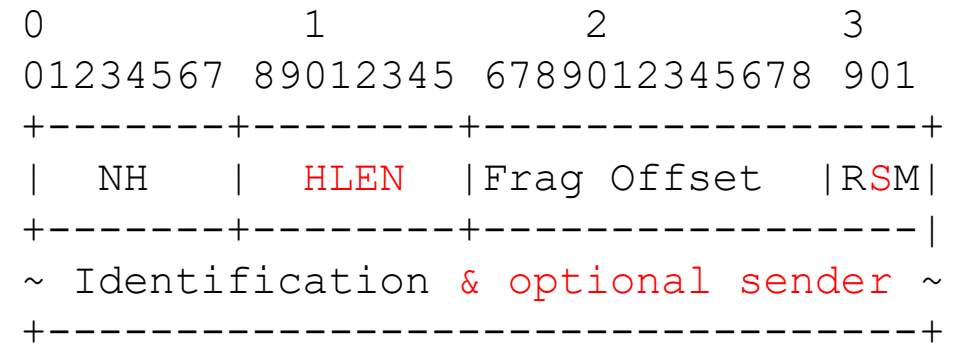
New Thoughts on GDF Types

- A GDF, being generic, is likely to be applicable to IP as well
 - Therefore, there is no need to have “This Header”
 - Just use certain IP extension headers for other layers
 - Maybe with small enhancements (when applied to other layers)
 - No need for IP Next Header code point for GDF either
 - Unless in future we need some GDFs that are truly not applicable to IP
 - We could then define a GDF container with an IP Next Header code point for GDF
- MPLS/BIER header needs a way to point to an IP EH
 - MPLS HEH serves that purpose
 - BIER needs something similar/simpler

New GDFH - as an MPLS EH



MPLS HEH

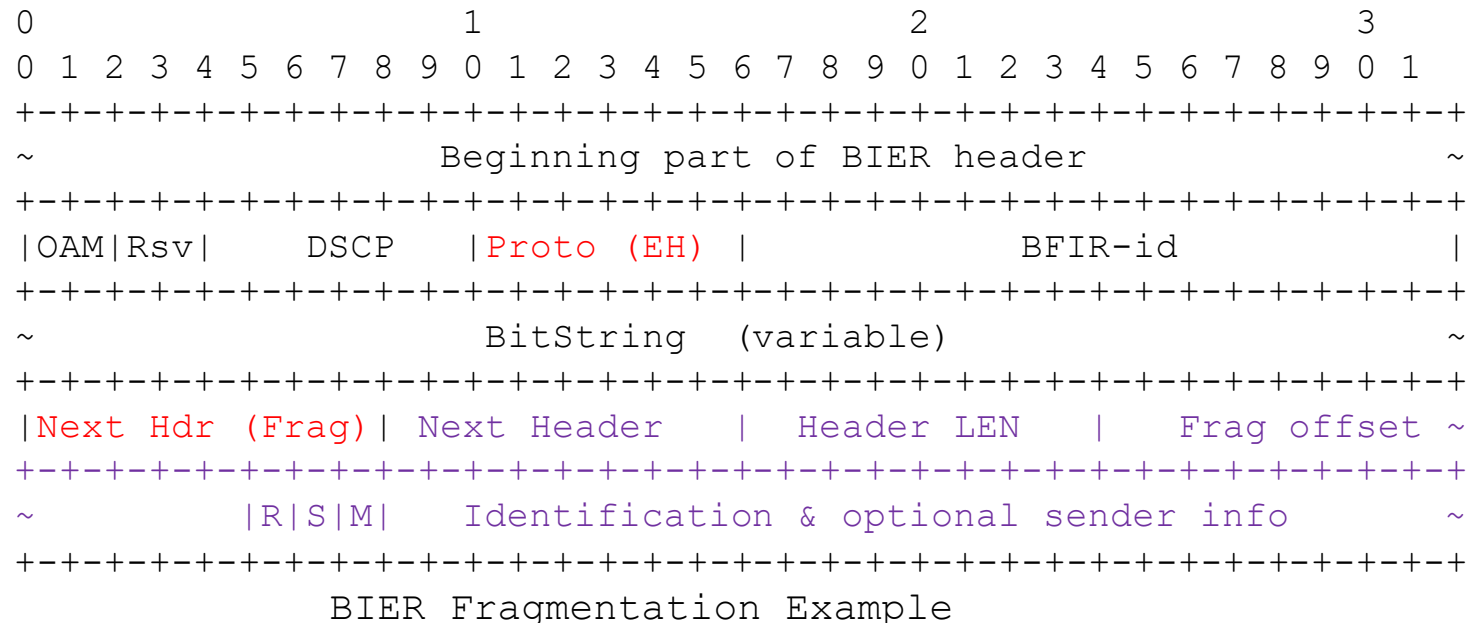


IPv6/GDF Fragmentation Header

- Fragmentation uses extended IPv6 Fragmentation EH
 - S-bit indicates sender info is included along with identification
 - HLEN replaces “reserved” field in IPv6 Frag EH
 - If S-bit is set
- Other generic functions like ESP/AH/IOAM

GDFH for BIER

- Assign a codepoint for “proto” field in BIER to indicate BIER EH:
 - An 8-bit IP Next Header number (e.g. 44 for Fragmentation) follows BIER header
 - In stead of an HEH for BIER
 - Alternatively, MPLS HEH could be generalized for BIER (and other layers) as well
 - An IP Extension Header follows the above mentioned 8-bit field or HEH



BIER Fragmentation Example
 (S-bit and sender info not mandated because of BFIR-id)

Next Steps

- Update the draft and seek more comments