Generic Delivery Functions

draft-zzhang-intarea-generic-delivery-functions

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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

| 0 0 0 0| resved| Header Len | This Header | Next Header |

~ Variable field per “this header type” ~

Generic Delivery Function Header

- “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

Indicating MPLS payload type – as a by-product
• If agreed as useful, a new “this header” could be defined to save 2-octets

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IOAM (implemented as GDF)

+------------------------------------------+
| 0 0 0 0| resved| Header Len | IOAM hdr type | Next Header |
+------------------------------------------+
| Reserved | Block Number | IOAM-OPT-Type | IOAM HDR Length | |
+------------------------------------------+
| I | O | A |
~ IOAM Option and Data Space ~ M
| |
+------------------------------------------+<-->
MPLS + IOAM + GDF + PW w/ G-ACH

Two independent label stacks \textit{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
Relation to draft-song-mpls-extension-header

• draft-song-mpls-extension-header proposes a similar MPLS specific stackable extension headers
• GDFH is for generic functions applicable to any layers
  • MPLS, BIER, IP, Ethernet
  • Ideally, any non-MPLS-specific functions would be done with GDFH
Seeking Comments & Suggestions

- Payload type indication?
- IOAM function?
- G-ACH?
- Label for GDFH?
- E2E vs HbH?