

# Echo Request/Reply for DetNet Capability Discovery

draft-tan-detnet-cap-discovery-01

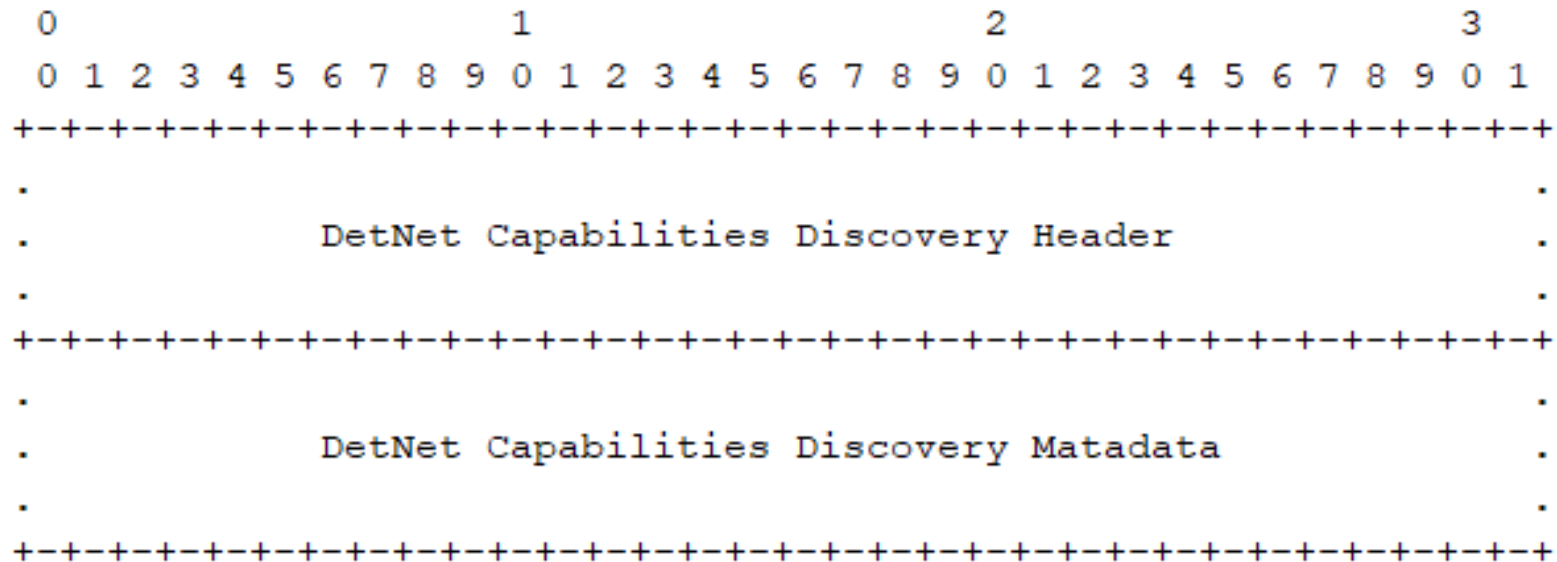
**Li Zhang**, Tianran Zhou, Hongyi Huang @HUAWEI

# Background

- As per RFC8655, DetNet provides a capability to deliver data flows with extremely low packet loss rates and bounded latency.
- As per RFC 9551:
  - DetNet OAM MUST support the **discovery of DetNet relay nodes**.
  - DetNet OAM MUST support the **discovery of Packet Replication, Elimination, and Order preservation sub-functions locations** in the domain.
  - DetNet OAM MUST support the **collection of the DetNet service sub-layer specific** (e.g., configuration/operation/status) **information** from DetNet relay nodes.
- I.D.varga-detnet-service-sub-layer-oam introduces “DetNet PING” mechanism, used to collect the service sub-layer specific information(configuration and status).
- This document extended DetNet Ping to **discovery the enabled DetNet capabilities**.

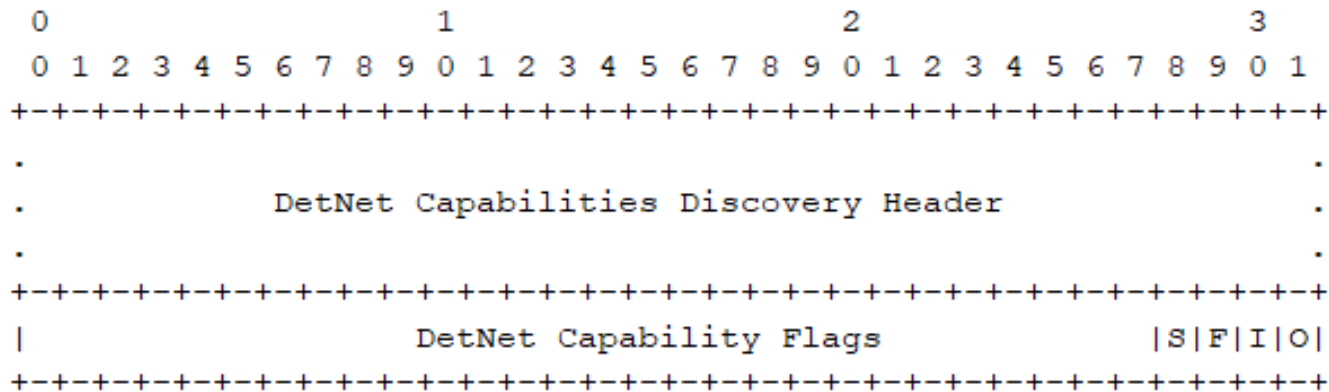
# DetNet Echo Request/Reply Extension

- This draft introduce **DetNet Capabilities Discovery Objects** to deliver DetNet capabilities of relay nodes.
- The object is consist of an **DetNet Capability Metadata** and an **abstract object Header**
  - **The abstract object header** has the corresponding format depending on the specific type of DetNet data plane (e.g., MPLS/IP).
  - **The DetNet Capabilities Discovery Metadata** includes the detail information of DetNet capabilities, with varied length and format depending on the DetNet capability type.



# DetNet Capability Object

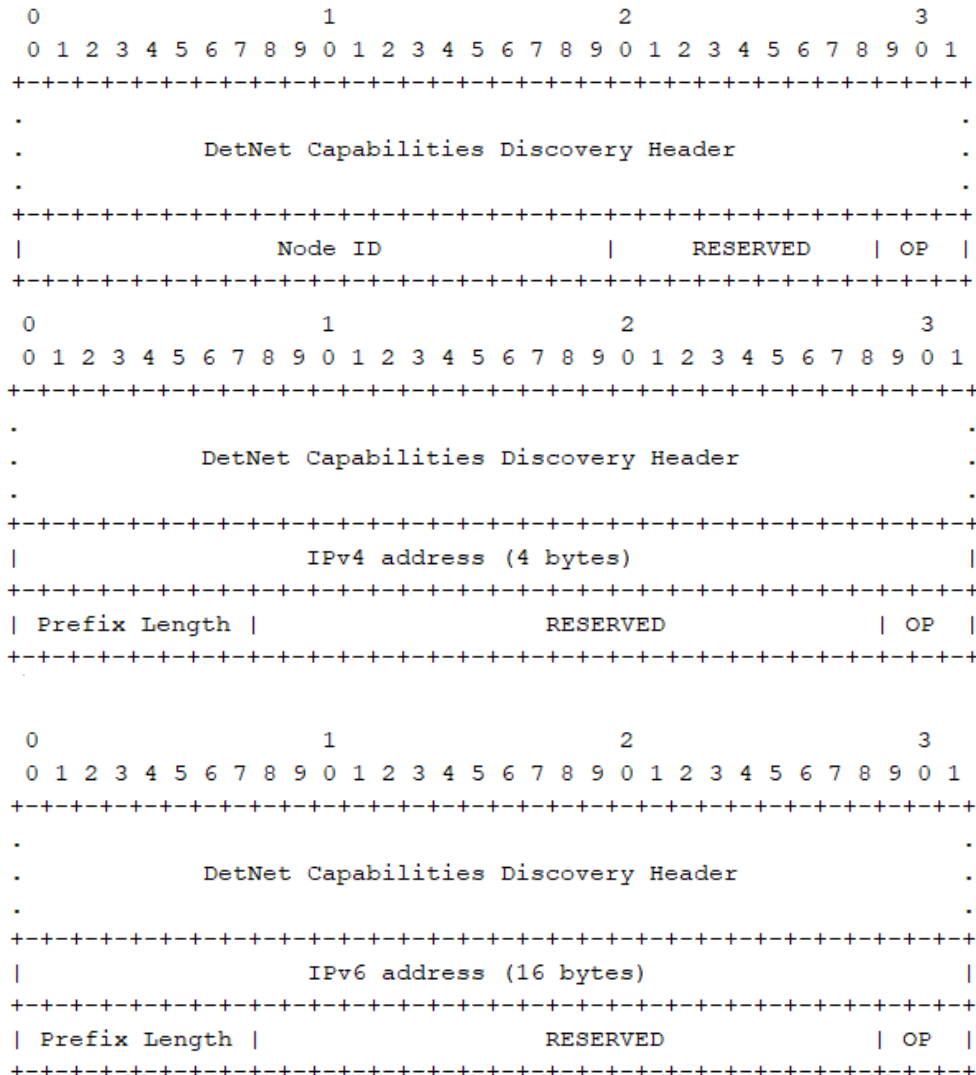
- **In Echo-Request:** indicating which capabilities the DetNet Ping initiator are requested;
- **In Echo-Reply:** indicating which capabilities the relay node are enabled.



Flags (4 bytes): DetNet Capability Flags

- S: Service sub-layer capability
- F: Forwarding sub-layer capability
- I: Incoming flow configuration
- O: Outgoing flow configuration

# DetNet Relay Node ID Object

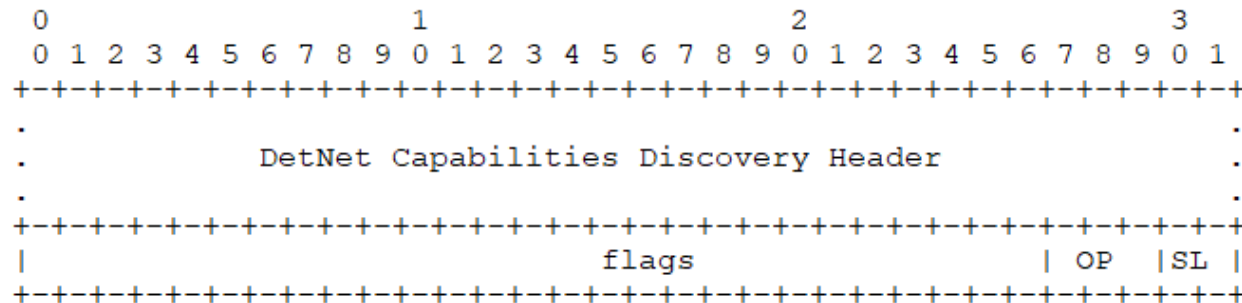


- Node ID: DetNet node id (MPLS)
- IPv4 addr: DetNet node id (IPv4)
- IPv6 addr: DetNet node id (IPv6)
- OP: Service operation on node
  - 0x00: No operation of service
  - 0x01: Initiation of service
  - 0x02: Termination of service
  - 0x03: Relay (Swap) of service

# DetNet Service Protection Function Objects

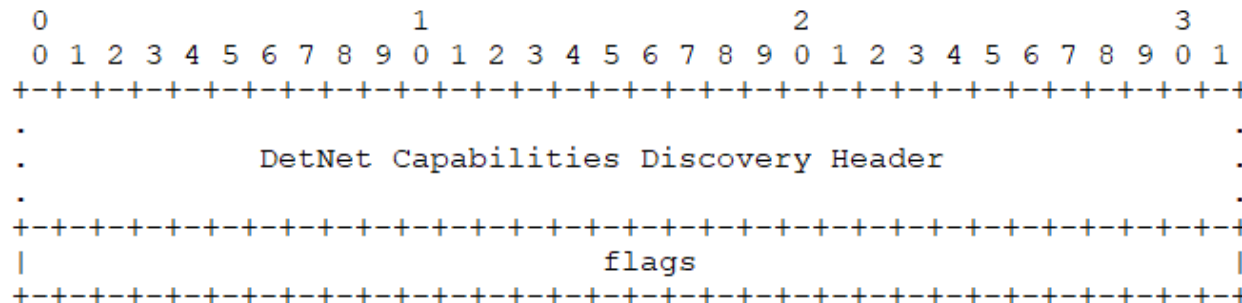
- Service Protection Object

- Used in the echo-reply packet to indicated the supported Service Protection Function.



- Flags (4 bytes): service protection flags.
  - SL (2 bits): Sequence number length.
    - 0b00/01/10: 0/16/28 bits
  - OP (3 bits): Service protection functions.
    - 0b001/010/100: Replication/Elimination/Ordering

- Replication/Elimination/Ordering Capability Sub-Object

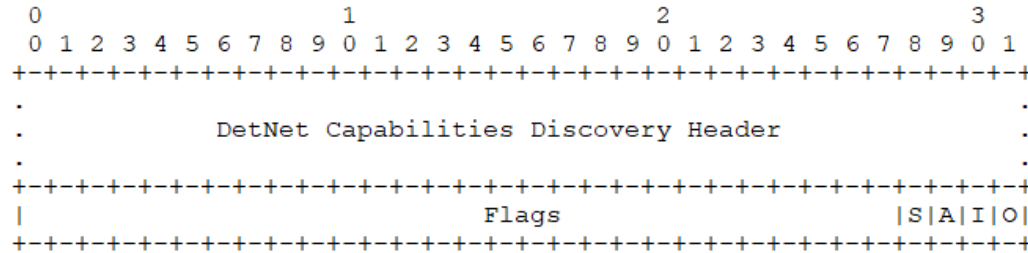


- Flags (4 bytes): unused



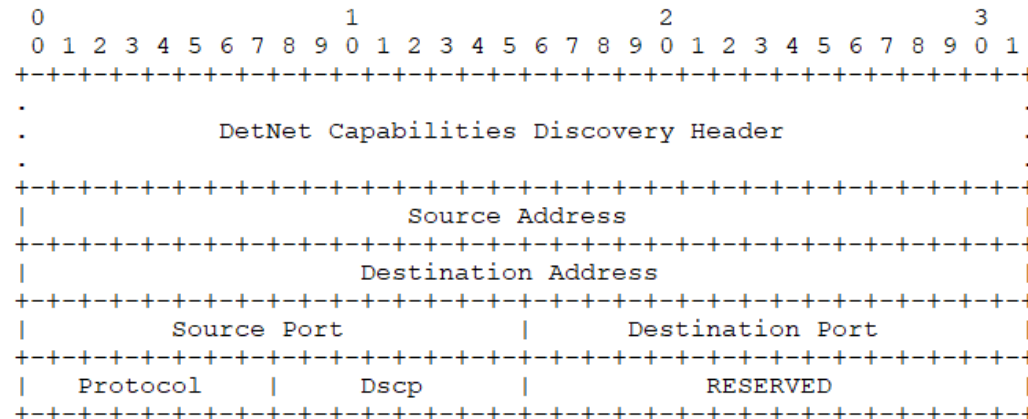
# DetNet Service Flow Information Objects (IPv4)

- DetNet Service Flow Information Object (IPv4)

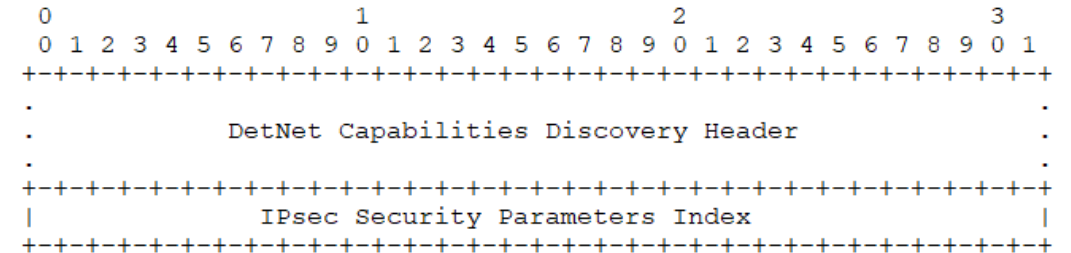


- Flags (4 bytes):
  - I: Incoming flow
  - O: Outgoing flow
  - A: IPv4 header identifier (6-tuple)
  - S: IPsec Security Parameters Index (IPSec-SPI)

- IPv4 Header Identifier Sub-Object



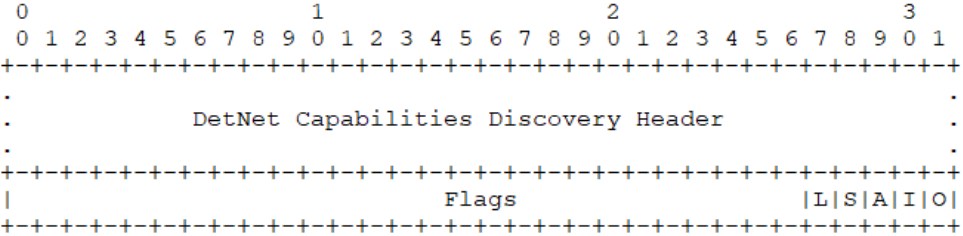
- IPSec-SPI Sub-Object





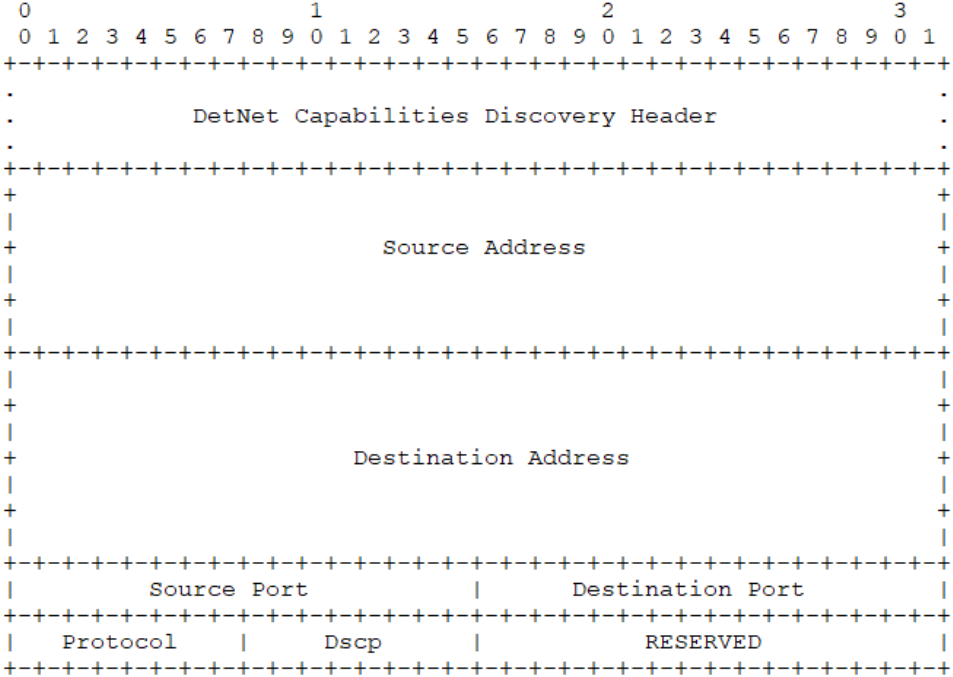
# DetNet Service Flow Information Objects (IPv6)

- DetNet Service Flow Information Object (IPv6)

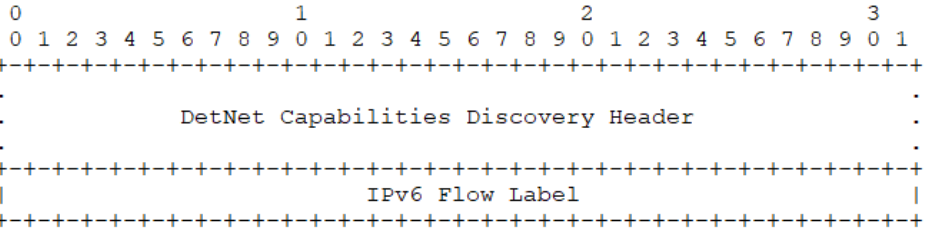


- Flags (4 bytes):  
 I: Incoming flow  
 O: Outgoing flow  
 A: IPv6 header identifier (6-tuple)  
 S: IPsec Security Parameters Index (IPSEC-spi)  
 L: IPv6 flow label

- IPv6 Header Identifier Sub-Object



- IPv6 Flow Label Sub-Object



# Next Steps

- Collecting comments and improving the draft.

Thank you