



# Inband Network Telemetry Extensions

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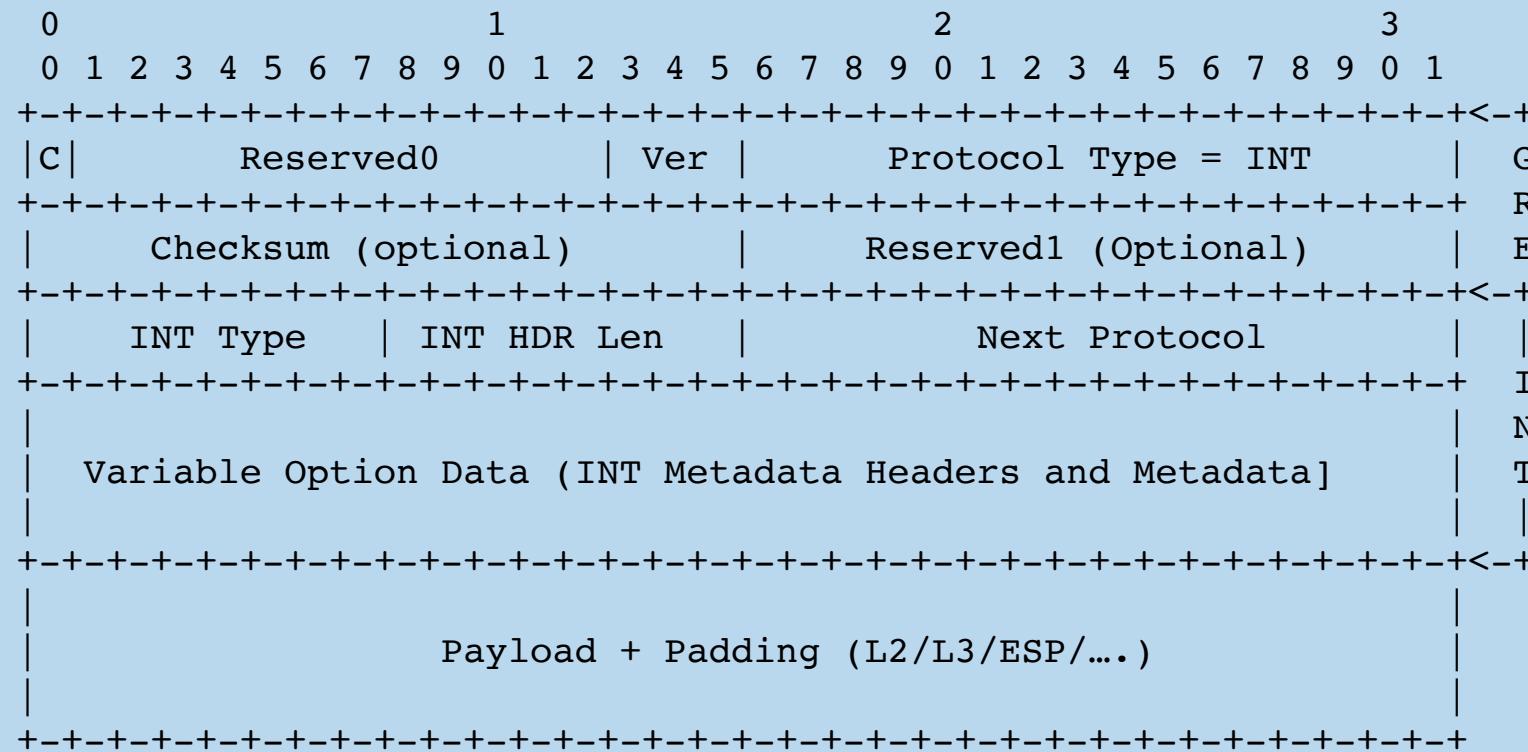
# INT – IPv4 GRE

# INT in IPv4 (GRE)

- GRE encapsulation is defined in [RFC2784].
- The GRE Protocol Type value is TBD\_INT.
- The INT Header is defined as follows:
  - **INT Type:** 8-bit field defining the INT Header type, as defined in
    - INT Hop-By-Hop Type
    - INT Destination Type
  - **INT Hdr Len:** 8-bit Length field contains the length of the variable INT data octets in 4-octet units.
  - **Next Protocol:** 16 bits Next Protocol Type field contains the protocol type of the packet following IOAM protocol header. When the most significant octet is 0x00, the Protocol Type is taken to be an IP Protocol Number as defined in [IP\_PROT]. Otherwise, the Protocol Type is defined to be an EtherType value from [ETYPES]. An implementation receiving a packet containing a Protocol Type which is not listed in one of those registries SHOULD discard the packet.

# INT in IPv4 (GRE) - contd

**INT Metadata following GRE Header:**



# INT – IPv6 Extension Header

# INT in IPv6

## IPv6 HbyH header Option:

The diagram illustrates the structure of an IPv6 header across four fields (0, 1, 2, 3), each containing 128 bits (indicated by the number 128). The fields are separated by vertical lines and contain the following information:

- Field 0:** Contains the Version (4 bits, 4), Traffic Class (8 bits), and Flow Label (24 bits).
- Field 1:** Contains the Payload Length (16 bits) and the **Nxt HDR = HbyH** field (4 bits).
- Field 2:** Contains the Hop Limit (8 bits).
- Field 3:** Contains the Source IPv6 Address (32 bits) and the Destination IPv6 Address (32 bits).
- Field 4:** Contains the **Nxt HDR = UL** field (4 bits), the **HbyH Data Len** field (12 bits), and the Padding (MBZ) field (80 bits).
- Field 5:** Contains the Option Type (8 bits), the Opt Data Len (12 bits), and the Reserved (MBZ) field (80 bits).
- Field 6:** Contains the Variable Option Data (INT Metadata Headers and Metadata) (variable length).
- Field 7:** Contains the Payload + Padding (L4/ESP/...) (variable length).

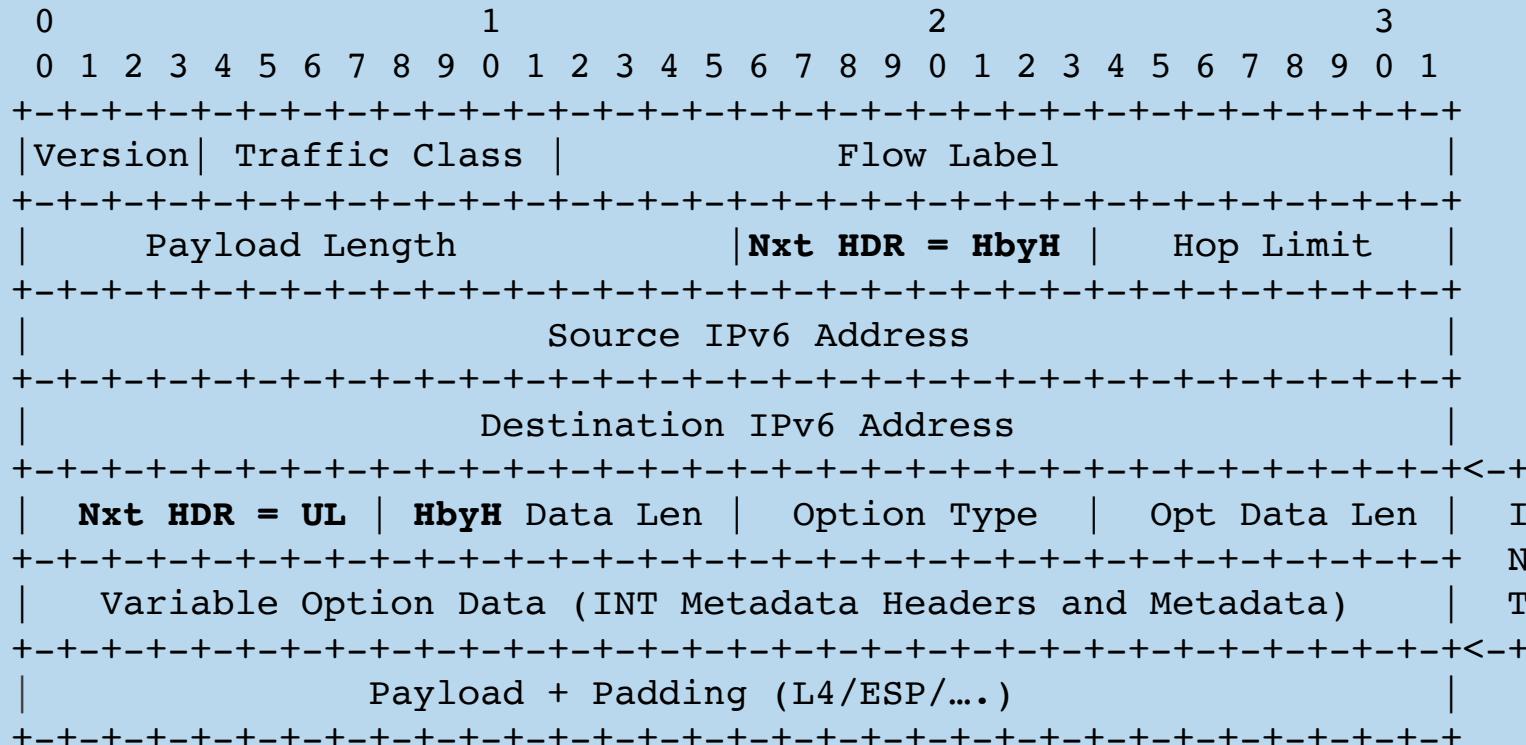
Below the fields, horizontal lines with '+' signs indicate the bit boundaries between fields.

- Option Type: 8-bit identifier of the type of option.
    - 001xxxxx 8-bit identifier of the type of option.  
xxxxxx=TBDIANAINTHOPBYHOPOPTIONIPV6.
    - 001xxxxx 8-bit identifier of the type of option.  
xxxxxx=TBDIANAINTDESTINATIONOPTIONIPV6
    - .
  - Opt Data Len: 8-bit unsigned integer.  
Length of the Reserved and Option Data field of this option, in octets.
  - Reserved (MBZ): 16-bit field MUST be filled with zeroes.



# INT in IPv6

## IPv6 HbyH header Option:



- Option Type: 8-bit identifier of the type of option.
  - ❑ 001xxxxx 8-bit identifier of the type of option.  
xxxxxx=TBD\_IANA\_INT\_HOP\_BY\_HOP\_OPTION\_IPV6.
  - ❑ 001xxxxx 8-bit identifier of the type of option.  
xxxxxx=TBD\_IANA\_INT\_DESTINATION\_OPTION\_IPV6 .
- Opt Data Len: 8-bit unsigned integer. Length of the Reserved and Option Data field of this option, in octets.

