

# UDP Traceroute Message Extension

[draft-shen-udp-traceroute-ext-01](#)

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# Problem Space

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- Context

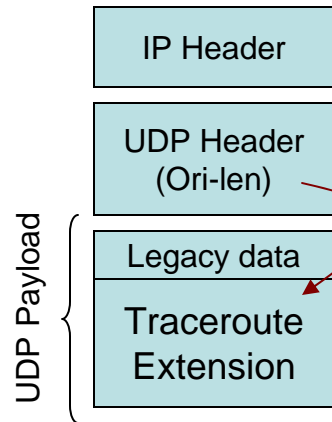
- There's no "Options" in the UDP Hdr
- More ICMP Extensions [[RFC4884](#)] are being defined and used (MPLS, Intf, NH, routing, etc)
- There is no mechanism to request (or deterministic method to decide) which extensions to be included, and to whom
- There is no authentication of a traceroute Probe

- Goal

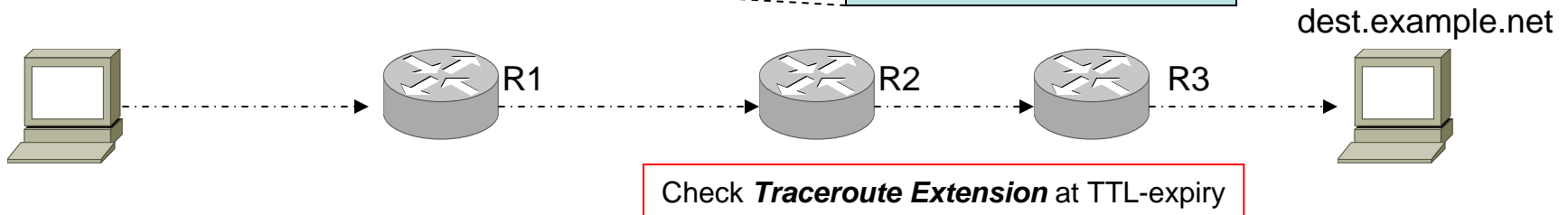
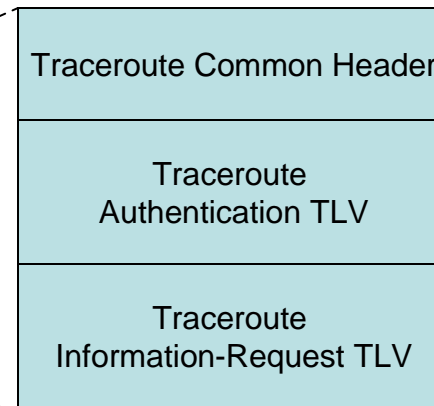
- Provide a method so that UDP traceroute probes can be authenticated (by intermediate and target nodes)
- Provide a method to request specific extension information
- Do that in a backwards-compatible way (dport ident probes, sport ident thread)

# Basic Idea

## UDP Traceroute Probe



## Traceroute Extension



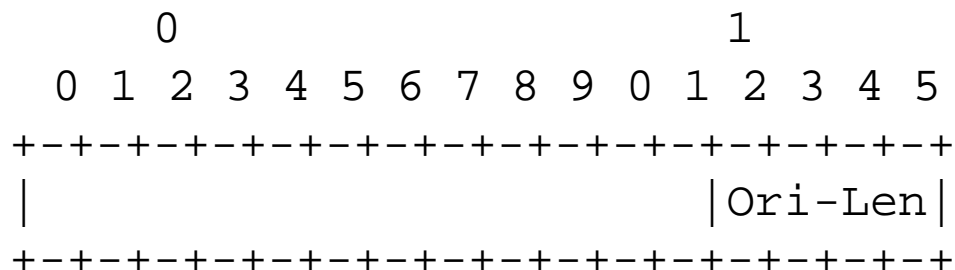
```
#  
#traceroute -v -u -x all dest.example.net  
traceroute to dest.example.net (192.0.2.1), 64 hops max,  
Extended payload [auth; req ip, int, mpls]  
...  
10 gige.example.net (192.0.2.100)  
    [if: blah, mpls label 123 tc 6] 80 ms [New TOS=0!] !M=1476  
    [if: blah, mpls label 123 tc 6] 92 ms [New TOS=0!] !M=1476
```

# Mechanics

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## 1. Reserve the lowest 4 bits in the UDP Source Port

- Add an “Original Length Field” as the lowest nibble
  - Points to the start of the UDP traceroute struct (0 .. 56 octet)
  - Represents (numerically) 32-bit words
  - 0xF is reserved
- The remaining 12 bits to use (shifted) task PID | 0x8000 as usual



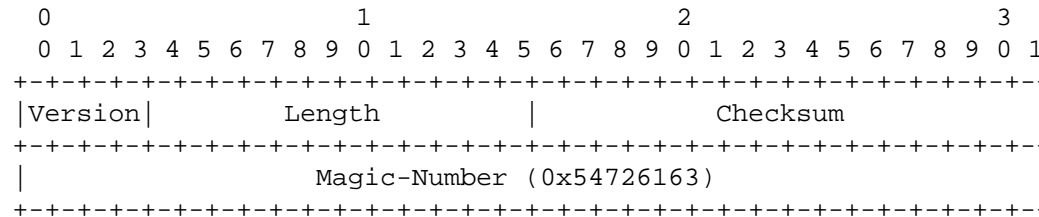
# Mechanics

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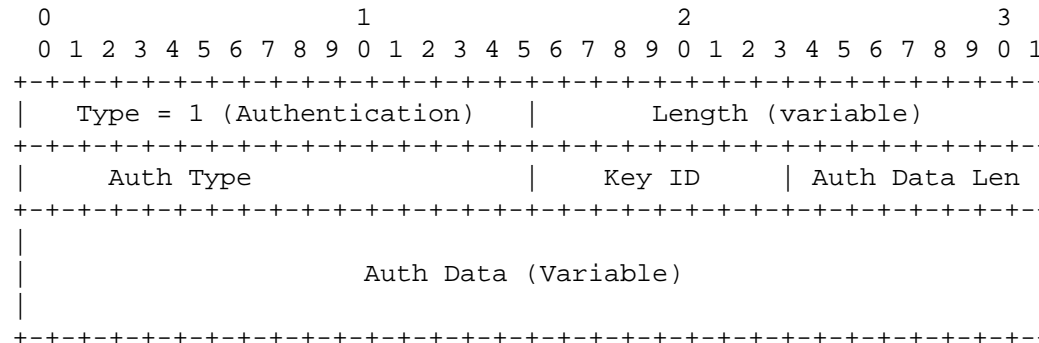
2. Add a traceroute structure within the UDP data
  - At *Ori-len* offset for backwards compat (ip\_payload.udp\_probe.seq|ttl|tv)
  - One Traceroute Common Header
  - One or more Traceroute TLVs
    - Type 1 = Traceroute Authentication TLV
    - Type 2 = Traceroute Information-Request TLV
      - Bit-flag of attributes (MPLS Label, Interface, IPv4/IPv6 Address, Routing)
      - Need Next-Hop?
    - Need “Padding TLV”?

# Packet Formats

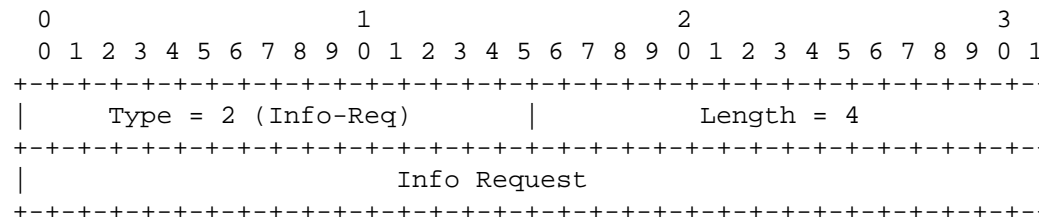
## Traceroute Common Header



## Traceroute Authentication TLV



## Traceroute Information-Request TLV



# Status

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- Status
  - Referenced from [I-D.atlas-icmp-unnumbered](#)
- Next Steps
  - We'd like to get feedback !
  - Update the doc after MN (got some feedback already :-)
  - We'd like to advance the document as PS as “Int-area work item”
- Questions?
- Thanks ! {naiming, carlos, rajiv, enke}