

# **Usecases for IPv6 Extension Headers - Let's Do Some Marketing**

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IPv6 Working Group

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# The Problem

- IPv6 Extension Headers get filtered
  - In Transit Networks
  - In Destination Networks
- Presentation by Jen Linkowa @RIPE69
- Work by Fernando Gont
  - [draft-ietf-v6ops-ipv6-ehs-in-real-world](#)

# The Problem

- We do not know why
- Lack of Knowledge
- Security concerns
  - Real
  - Bad Feeling
- Business requirement

# The Problem

- We do not know why
- Slow Hardware
  - IPv6 is not processed in hardware
- RFC 6564 defines a uniform format for EH
  - Maybe this helps in the future
  - Hardware Forwarding

# The Problem

- We do not know why
- Middleboxes
  - Loadbalancer
  - Security appliances
  - Firewalls
    - some do not know about IPv6 EH (RFC 7045)

# IPv6 Extension Headers

- 2 Groups of Header
- Obvious Usecases
- Not so Obvious Usecases

# Fragmentation

- Pretty obvious
- Everyone understands the use case
- Just one usecase

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- Everyone understands the use case
- Just one usecase
  
- Today we need fragmentation
- Potential Security Issue



# ESP and AH

- Used for IPSec
- Encryption is fundamentally important
- Business
- Trust
- Data Protection

# Hop-By-Hop Header

- RSVP
- As a Provider, I would filter this
- My customers may not reserve Bandwidth

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- RSVP
- As a Provider, I would filter this
- My customers may not reserve bandwidth
- The customers of my customer may not reserve bandwidth
- ISP can choose to ignore the header

# Hop-By-Hop Header

- Multicast
- Used by MLD in the local network

# Destination Option Header

- Mobile IPv6
- Transit ISP should not care, just forward
- Filtering is extra work
- If no mobile IPV6 is deployed, destination AS could filter

# Routing Header

- Option 0 was deprecated
- Option 2 is for mobile IPv6
  - As a Provider, I would filter this
- Option 4 is for Segmentation Routing
  - As a Provider, I would filter this today
  - Wait for further developement

# Extension Headers

- Many usecases are internal for a network
- Bandwidth reservation
- Multicast
- Mobile IPv6
- Don't expect them for be forwarded

# More Usecases?

- Usecases have to solve a business case
- Providers run a business
- If we cannot provide a usecase, everyone will filter



# Conclusion

- Many Extension Headers are mostly unused
- They are used internally
- Providers filter, but should just forward
- We need more usecases, then the ISPs will learn to use EH