Motivation

- It is known that the Internet is not transparent to some IPv6 extension headers.
- Firewalls are not updated for new extensions until they are widely deployed. New extensions cannot be widely deployed until firewalls are updated.
- This is a perfect Catch-22 preventing deployment of new extensions.
- Also, firewall developers cannot readily identify the current set of defined extension headers.
What we can’t do in 6man

• We can’t prevent middleboxes from performing deep packet inspection and sometimes breaking connectivity.

• We can’t re-engineer firewalls

What we can do in 6man

• Clarify the specifications to minimise breakage.
Steps to take

• Define a uniform format for future extension headers (RFC 6564)

• Alleviate the risk of excessive header chains (draft-ietf-6man-oversized-header-chain)

• Update RFC 2460 to clarify middlebox behaviour (this draft)

• Properly document the list of extension headers for the future (IANA considerations)
Requirement to transmit extension headers

• Any node that forwards IPv6 packets SHOULD do so regardless of extension headers.

• If not, a firewall
  – MUST recognise all defined IPv6 extension header types.
  – The discard policy for each defined type of extension header MUST be individually configurable.
  – The default configuration SHOULD allow all defined extension headers.
  – It MUST be configurable to allow packets containing unrecognised extension headers, but such packets MUST be dropped by default.
Requirement to handle Hop-by-Hop options

• The Hop-by-Hop Options header SHOULD be processed by intermediate nodes as in RFC 2460.

• However, designers are warned that some routers will ignore it, or put it on a slow path.
IANA Considerations

• IANA is requested to replace the empty IPv6 Next Header Types registry by an IPv6 Extension Header Types registry, subsidiary to the existing Protocol Numbers registry.
  – It will contain only those protocol numbers which are also IPv6 Extension Header types.

• Future IPv6 Extension Header types will be added to this registry as well as the Protocol Numbers registry.
Questions? Discussion?

- Does 6man want to adopt this draft?
- If not, what is the future for extension headers?