

Transmission of IPv6 Extension Headers

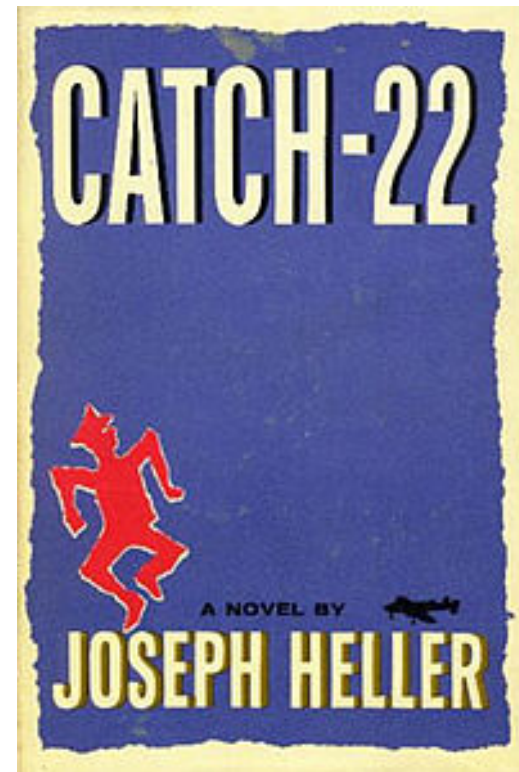
draft-carpenter-6man-ext-transmit-02

Brian Carpenter
Sheng Jiang

IETF 86
March 2013

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?