Propagating ECN across IP tunnel
Headers Separated by a Shim

draft-ietf-tsvwg-rfc6040update-shim-04

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Recap

Problem (#1) unique to ECN

- Both Diffserv (traffic class) and ECN have to propagate across layers
  - DS propagates 'requirements' down
  - ECN propagates...
    - ECN field down (copy)
    - congestion experienced (CE) up
- forwarded ECN constructed from inner and outer on decap [RFC6040]
- If ECN decap behaviour absent, encap MUST zero ECN outer

- Non-RFC6040 implementations still have to follow this MUST (e.g. by operator config)
- Implementations MUST decouple ECN & DSCP config
Problem #2

- RFC6040 “Tunnelling of ECN”; scope was “all IP-in-IP tunnels”
- 6040update-shim clarifies
  - scope of RFC6040 includes cases with shim(s)
  - most feasible to propagate ECN with 'tightly coupled shim'
    (added in same procedure as IP outer)

```
IPv4 or v6

shim

IPv4 or v6
```

```
IPv4 or v6

L2

shim

IPv4 or v6
```

```
?

L2

shim

IPv4 or v6
```

“IP - shim - (L2) - ?IP”

- 6040update-shim is standards track, so it can update standards track RFC6040 and shim tunnel RFCs
## Survey of IP-shim-(L2)-?IP encaps

<table>
<thead>
<tr>
<th>Protocol</th>
<th>RFC</th>
<th>STDs or widely deployed</th>
<th>AOK</th>
<th>NOK: 6040shim updates</th>
<th>NOK: non-IETF: update recommended</th>
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Status and Next Steps
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• 4 revs in last IETF cycle
• Thank you Tom Herbert, Joe Touch, Mohamed Boucadair, Carlos Pignataro and Ignacio Goyret, Praveen Balasubramanian
• Milestone: tsvwg WGLC Oct 2017
  • joint with int-area and l2tpext. Any other WG?
• Been pushing to meet that, still feasible

• Open issues
  1) Is SFC really “not applicable”?
  2) Is it true that there are no automated GRE tunnel set-up protocols?
  3) Teredo open issue: mtg next week to close off
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Q&A
Updates text for standards track tunnel RFCs

- General ACKs: Alia Atlas for helping to widen then narrow the list
  Tom Herbert, Joe Touch and Mohamed Boucadair

- L2TPv2 & L2TPv3
  - discussed at length on l2tpext list
  - ACK: Carlos Pignataro and Ignacio Goyret
  - written update text to refer to RFC 6040
  - defined and written IANA registry text for L2TP attribute-value-pair (AVP) for tunnel initiator to agree ECN capability with remote tunnel endpoint

- GRE
  - update text refers to RFC 6040
  - no response to questions on int-area list
  - “is it true that there are no automated GRE tunnel set-up protocols?”

- Teredo
  - update text refers to RFC 6040
  - ACK: Praveen Balasubramanian (Christian Huitema was original author, but just left company)
  - open question on tunnel setup – resolution in progress