RPL Option for Carrying RPL Information in Data-Plan Datagrams
(draft-ietf-6man-rpl-option-00)

Jonathan Hui
JP Vasseur

6man WG Meeting
78th IETF Meeting
Maastricht, Netherlands
Background

- **ROLL** (Routing over Low-Power and Lossy nets)
  - RPL - DV-based routing protocol for IPv6

- **Problem**
  - How to manage control overhead with reactivity to link state changes?

- **Solution**
  - Slow proactive process - allow routing inconsistencies
  - Include routing info in data-plane packets to detect inconsistencies
  - React to inconsistencies when routes are used

- **Operate on data-plane timescales**
Updates Since Anaheim

- Use IP-in-IP to insert/remove RPL Option
- Processing rules to enforce requirement that all datagrams in the RPL network contain RPL Option
- Processing rules to enforce constraint that RPL Option must be contained within a RPL domain
- Just adopted as WG doc
RPL Option Payload

• Container for TLVs (1-octet each for Type and Len)
  • Request a new IANA registry

• First RPL Option Type (draft-ietf-roll-rpl-11)

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| O | R | F | Flags | RPLInstanceID | SenderRank |

• O: packet forwarded up/down on routing topology
• R: rank-error if packet previously encountered a SenderRank conflict
• F: forwarding-error indicates that the previous hop has no route
• Flags: unused for now
• RPLInstanceID: indicates routing topology to use for forwarding
• SenderRank: rank value of forwarding node
Next Steps?

- Comments/suggestions