Route Information Options in Neighbor Discovery Messages

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Draft History

• First posted on 6man list 1/9/2017 as Draft -00
• Comments on the list resulted in Draft -01 update posted 1/31/2017
• More comments received – pending second update
• Draft -01 presented at IETF98 3/30/2017
• Major revision drafts -02 and -03 posted to incorporate comments and include RIOs in all IPv6 ND messages (i.e., and not just Redirects)
Common Redirection Scenario (RFC4861)

![Diagram showing a router connected to source, target, and IoT devices through links.]

- **Source**
- **Target**
- **Router**
- **Link**
- **IoT Devices**

IPv6 address: 2001:db8:1:2::/64
Route Information Options (RFC4191)

• Included in Router Advertisement (RA) messages
• Informs recipient of routes that are reachable via the router that sent the RA message
• RFC4191 identifies 3 types of hosts (Type A, B, C):
  – Type A and B both ignore RIOs
  – Type C processes RIOs in RA messages
• This document introduces a new Type “D” host
  • same behavior as Type "C", but also process RIOs in Redirect and other IPv6 ND messages.
RIO Redirection Scenario

- Source sends packet toward destination via Router
- Router forwards packet to Target, and also sends Redirect to Source
- Redirect contains:
  - Target Address set to target addr
  - TLLAO with target link-layer
  - \texttt{RIO w/prefix 2001:db8:1:2::/64}
Testing the Path with NS/NA

• After Redirection, continue to send data packets via Router until direct path is tested
• To test path, Source sends NS with desired RIOs directly to Target
• Target sends NA back to source with RIOs that match the ones it received in the NS
• Source populates its routing table based on NA RIOs and allows future packets to flow directly to Target without involving Router
Use Cases and Next Steps

• Enterprise mobile devices (e.g., cell phones, tablets, etc.)
• Aeronautical communications (e.g., airplanes, air traffic control, etc.)
• Unmanned Air System (UAS) networks (vehicle to vehicle)
• Home networks with multiple subnets [HOMENET]
• Next steps:
  • 6man WG item?