DHCPv6 class based prefix
(draft-bhandari-dhc-class-based-prefix-01)

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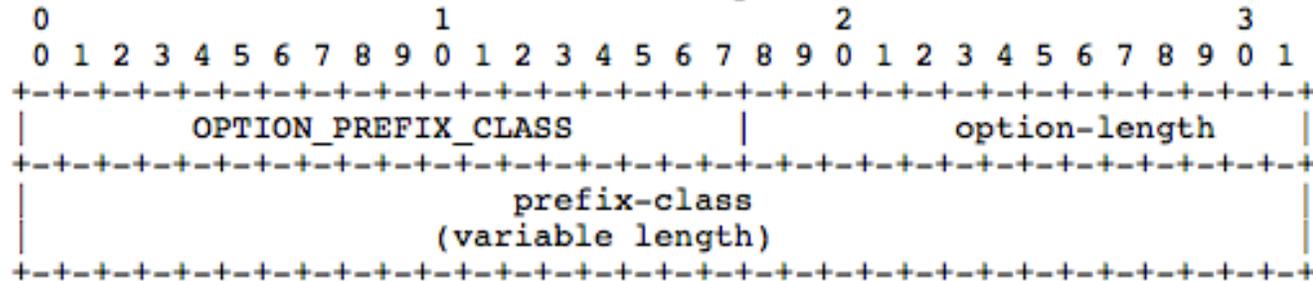Hui Deng (China Mobile)

Problem Statement

- DHCPv6 Server - can delegate longer prefixes and IA_NA assignments from shorter prefix learnt via DHCPv6 PD (RFC 3633)
  - Further delegation of a delegated prefix– DHCPv6 PD client assuming the role of DHCPv6 Server needs to delegate prefix or assign IA_NA based on prefix property.
- DHCPv6 PD Client – Can request for prefix with specific properties
- DHCPv6 IA_NA Client – Can request for IA_NA from a prefix range with specific properties
- Applications - can use prefix with specific properties/color

DHCPv6 Prefix delegation – DHCPv6 PD provides no semantics to request and associate prefix with specific properties today

Proposed Extension

- New DHCPv6 option to associate Prefix with its properties:

```
The format of the DHCPv6 Prefix Class option is shown below.
     0                   1                   2                   3
     0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |         OPTION_PREFIX_CLASS          |         option-length        |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
    |                            prefix-class                            |
    |                          (variable length)                        |
    +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

    option-code:    OPTION_PREFIX_CLASS (TBD)
    option-length:  length of prefix-class
    prefix-class:   Prefix class (binary string).
```

- DHCPv6 PD client – To include OPTION_PREFIX_CLASS in DHCPv6 Solicit message

- DHCPv6 IA_NA client – To include OPTION_PREFIX_CLASS in DHCPv6 Solicit message

- DHCPv6 Server to include OPTION_PREFIX_CLASS in:
  - OPTION_IAPREFIX option in Advertise messages for Prefix delegation
  - OPTION_IA_NA option in Advertise message for IA_NA assignment

Motivation/Use cases

- **Mobile Network**

  - Mobile gateway as a DHCPv6 PD client and a DHCPv6 Server serving DHCPV6 clients attached to it

  - **Prefix coloring - Prefix with different properties.** Example:

    - **Prefix is from local access network, non-mobile properties**
      - This prefix does not support mobility

    - **Global home agent assigned, chained mobility** - This prefix is topologically anchored in the mobile node's home network. It has mobility properties.

    - **Low latency -** suitable for Voice applications

Example: Mobile network

- Prefix color in mobile network: To support offload function for certain traffic in chained mobility scenario, the UE needs to use the right source address for the right application flows.

Changes since -00

- Clean up of use-cases

Next Steps

- Authors appreciate feedback from the WG
- WG draft?