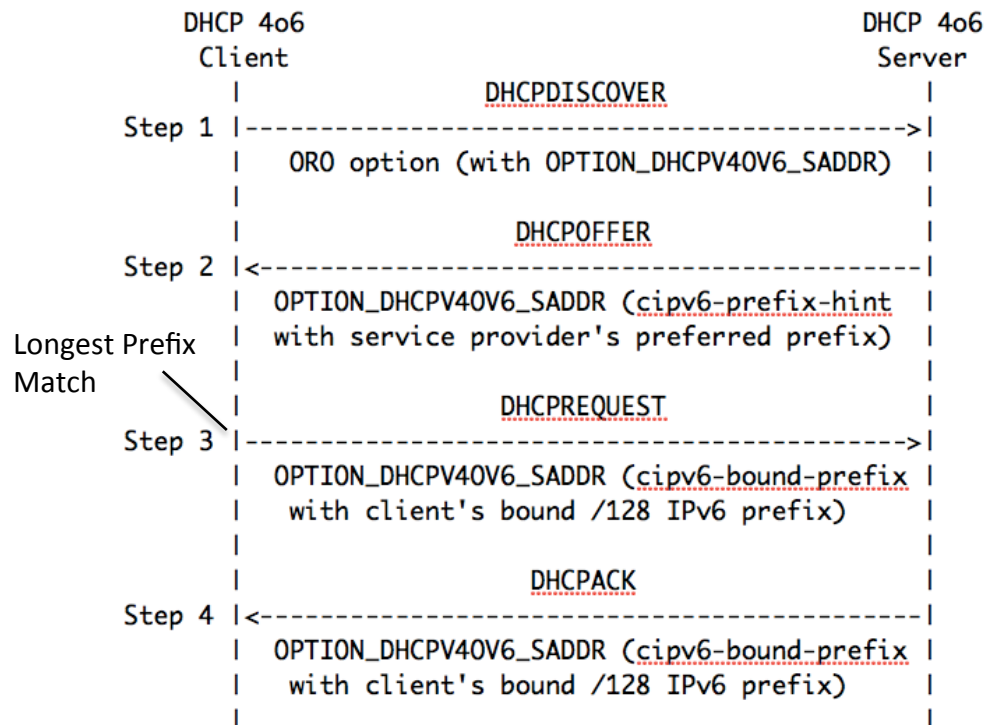# Motivation

- Current 4over6 technologies place limitations on the tunnel endpoint
  - DHCP Server allocates v4/v6 according to the pre-configured v6<->v4+port mapping
  - Tunnels source from a pre-determined v6 prefix
  - Only a single tunnel may be created from a single homenet v6 allocation (e.g. /56)
- Client communicates to the server the /128 v6 addr to which it binds v4
  - Client may have multiple IPv6 prefixes
  - A tunnel can source from any IPv6 prefix
  - Enables Server to hold the accurate and up-to-date v4-v6 binding info

Source Address Option Usage

- A DHCPv6 option to signal client's binding v6 address (/128) to the server

- MUST used alongside the DHCPv4 address allocation procedure

- A two-way communication process

```
          DHCP 4o6                                              DHCP 4o6
          Client                                                Server
             |                 DHCPDISCOVER                       |
Step 1  |----------------------------------------------------->|
             |     ORO option (with OPTION_DHCPV4OV6_SADDR)       |
             |                                                    |
             |                  DHCPOFFER                          |
Step 2  |<-----------------------------------------------------|
             |    OPTION_DHCPV4OV6_SADDR (cipv6-prefix-hint      |
Longest Prefix  |    with service provider's preferred prefix)    |
Match        |                                                    |
             |                 DHCPREQUEST                         |
Step 3  |----------------------------------------------------->|
             |    OPTION_DHCPV4OV6_SADDR (cipv6-bound-prefix      |
             |       with client's bound /128 IPv6 prefix)        |
             |                                                    |
             |                  DHCPACK                            |
Step 4  |<-----------------------------------------------------|
             |    OPTION_DHCPV4OV6_SADDR (cipv6-bound-prefix      |
             |       with client's bound /128 IPv6 prefix)        |
             |                                                    |
```

Source Address Option Format

- Option format
  - cipv6-prefix-hint: Server's indication of the binding IPv6 prefix.
  - cipv6-bound-prefix: The v6 prefix that client actually bind v4 configuration to. (/128)

```
 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_DHCPV4OV6_SADDR      |           option-length      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| cipv6-hintlen |                                               |
+-+-+-+-+-+-+-+-+              cipv6-prefix-hint                 .
.                             (variable length)                 .
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|cipv6-boundlen |                                               |
+-+-+-+-+-+-+-+-+              cipv6-bound-prefix                .
.                             (variable length)                 .
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

3

Next step

- Adopt it as a WG item?