

# DHCPv4 Behavior over IPv6 transport

(was “DHCPv4 Behavior over IP-IP tunnel”)

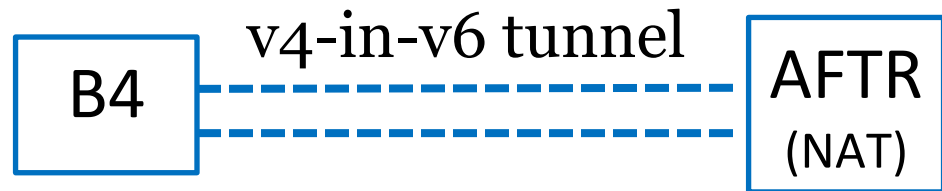
draft-cui-software-dhcp-over-tunnel-01

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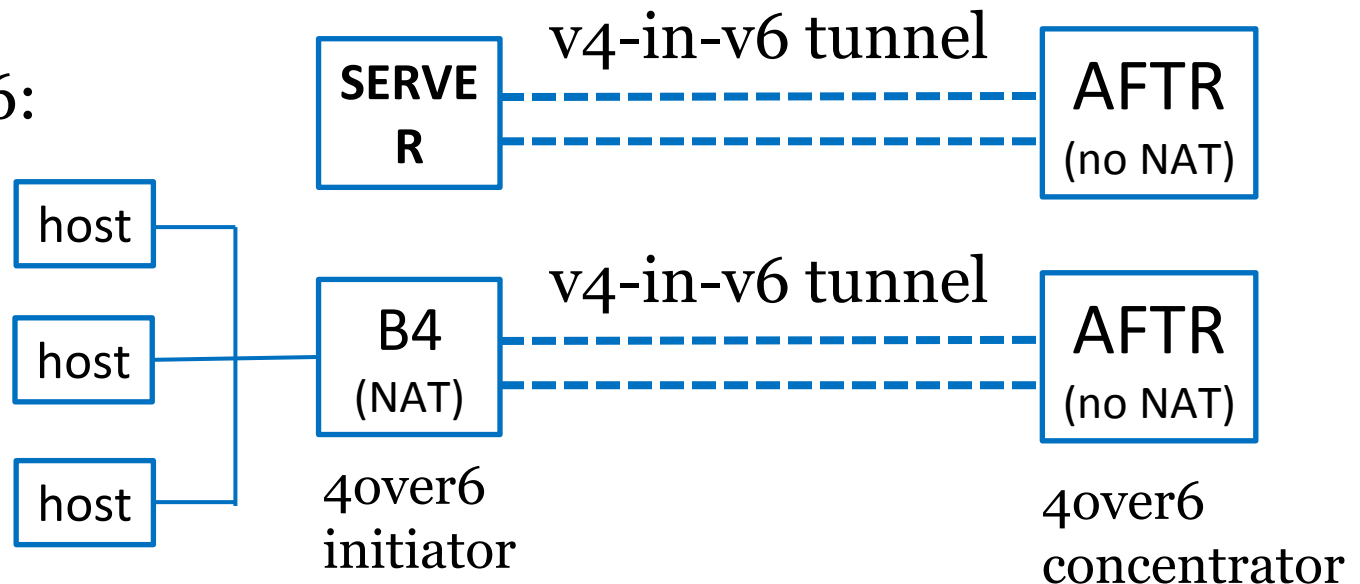
# Original use case: public 4over6

Dual-stack lite:



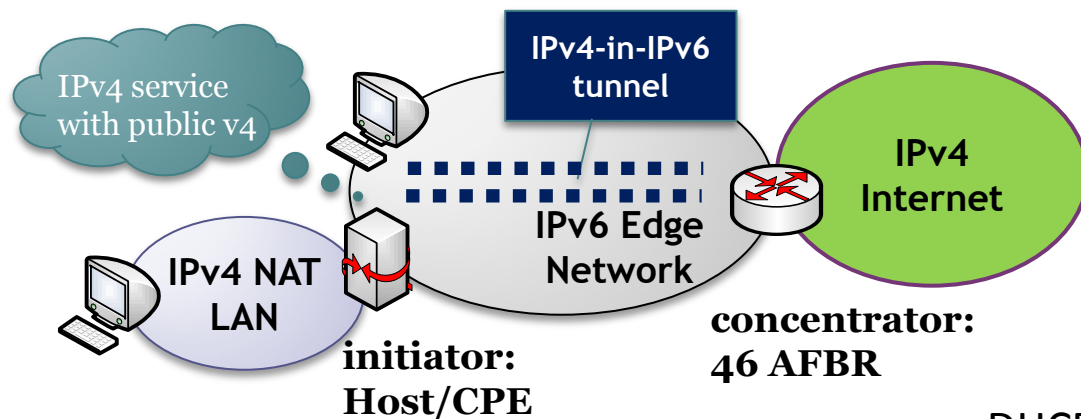
If we can allocate public address to B4...

Public 4over6:

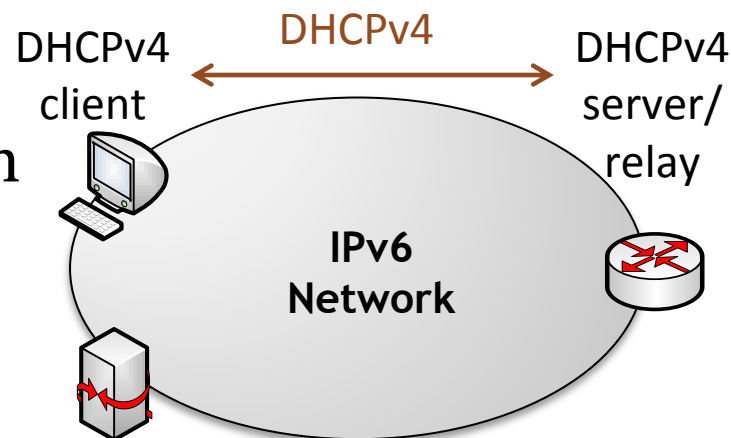


# Public 4over6

- draft-cui-softwire-host-4over6-06
- Softwire has decided to adopt it as WG item



- Key issue: IPv4 address allocation (**DHCPv4**) from concentrator to initiators, **over IPv6 network**



# Tunneling DHCPv4 by IPv4-in-IPv6?

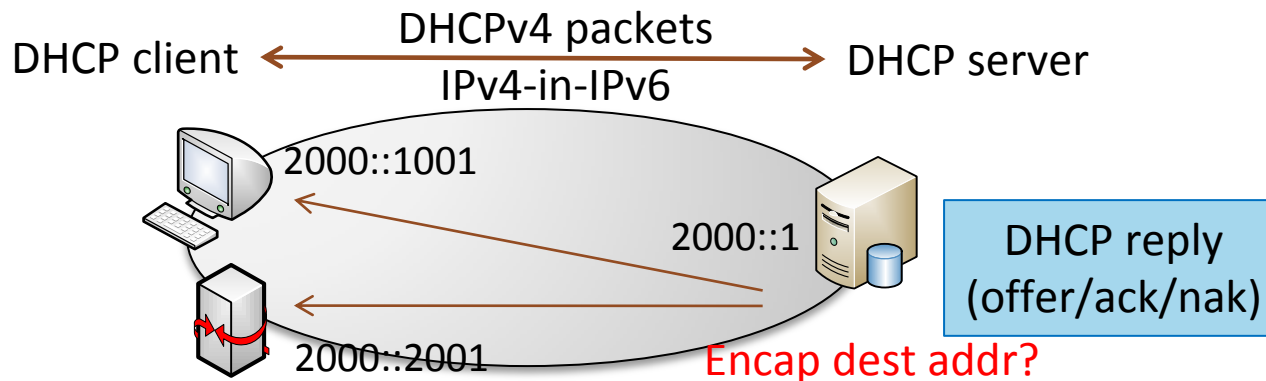
- Tunnel all DHCP packets between clients and server

- Main issue

- Encapsulation destination of DHCP packets

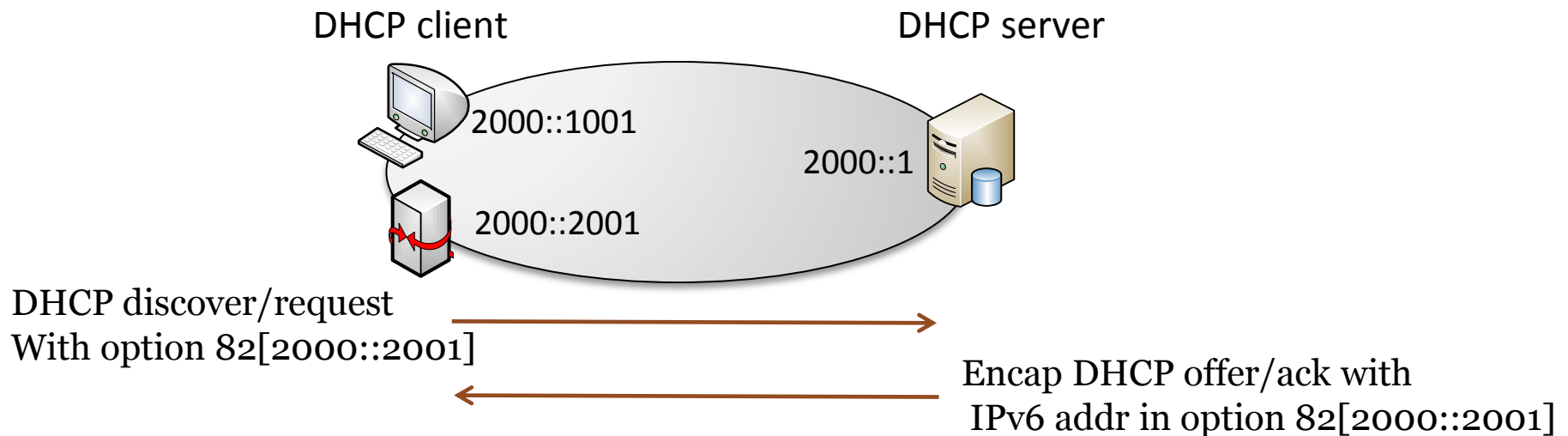
- Client side: static, IPv6 server address
    - Server side: Must know IPv6 encapsulation destination addresses for different clients

DHCPv4
UDP
IPv4
IPv6



# Server-side encapsulation

- Leveraging Relay Agent option to carry the IPv6 encapsulation address
  - Client includes its IPv6 address in Option 82 (new suboption)
  - Server uses it as destination address when perform encapsulation

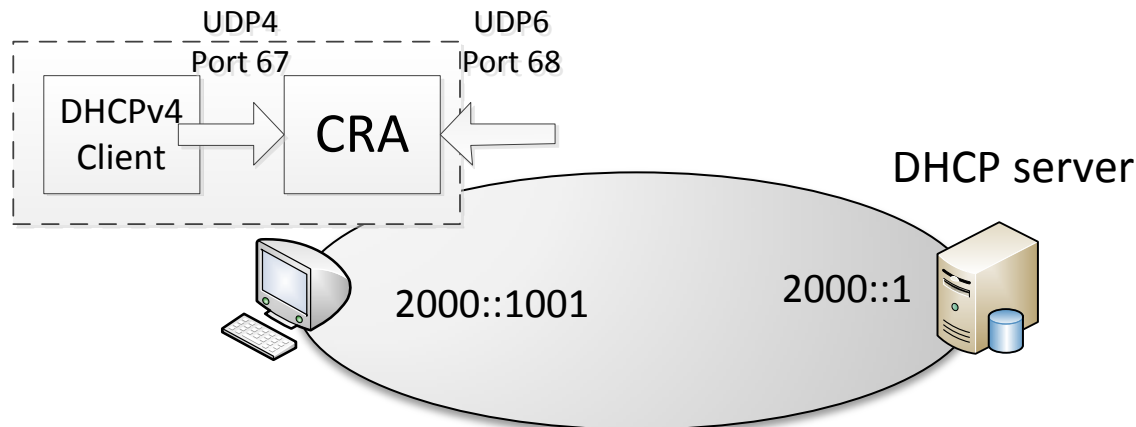


- **Misuse of option 82 & enforce a tunnel**

# Transport DHCPv4 with IPv6

- Enable DHCPv4 to be transported by IPv6
- A “Client Relay Agent” sites on client machine
  - Client->server: listens on IPv4 port 67 and forwards packet over UDPv6, without option 82
  - Server->client: listens on IPv6 port 68 and forwards packet over UDPv4

DHCPv4
UDP
IPv6



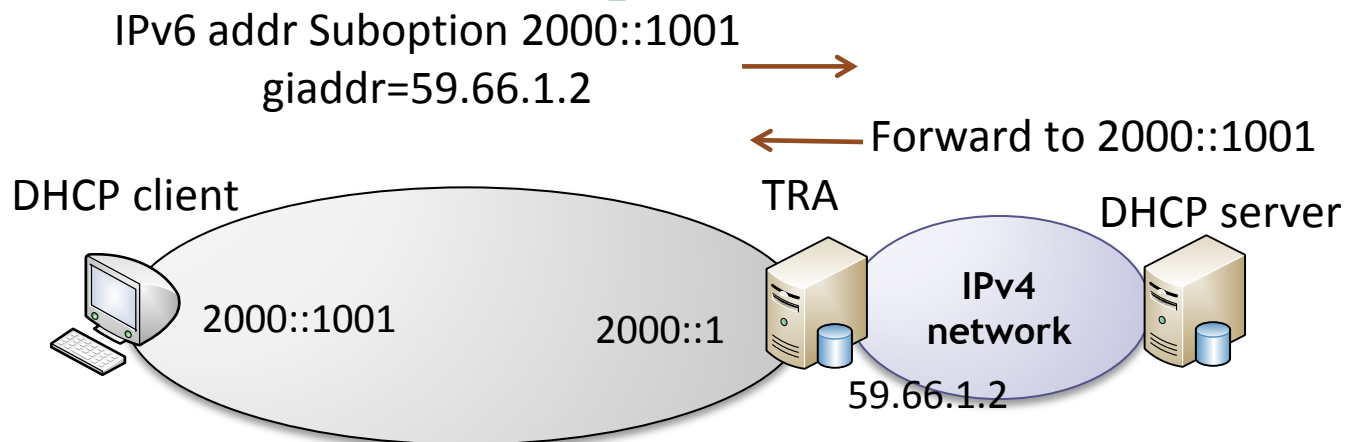
# Server behavior

- listening on UDPv6 port 67
- Record the IPv6 source address when receives a DHCP packet from IPv6
- Send DHCP replies to **recorded IPv6 address of the client**, if it received DHCP packet from that client by IPv6 earlier



# Relay case: A “Tunnel Relay Agent”

- CRA->server
  - Receive DHCP packets from CRA
  - Add option 82 with *Client Relay Agent IPv6 Address* suboption and set giaddr field
- Server->CRA
  - forwards the packet to the IPv6 address in Client Relay Agent IPv6 Address suboption.





# Achievement & Protocol extensions

- Achievement
  - DHCPv4 over IPv6 transport
- Extensions
  - Define CRA behavior
  - Define TRA behavior
  - Define a new Client Relay Agent IPv6 Address suboption in option 82

# Document Status

- Originally submitted to Softwire as part of public 4over6 mechanism
- Presented in DHC meeting, IETF 80
- Become a dedicated document after IETF 80
- On Softwire meeting yesterday, AD asked us to come here since it's a generic DHCP problem
- Will this WG accept this document?