

DHCPv4 over DHCPv6 Source Address Option

(draft-fsc-software-dhcp4o6-saddr-opt-06)

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DHC, ietf97, Nov 2016

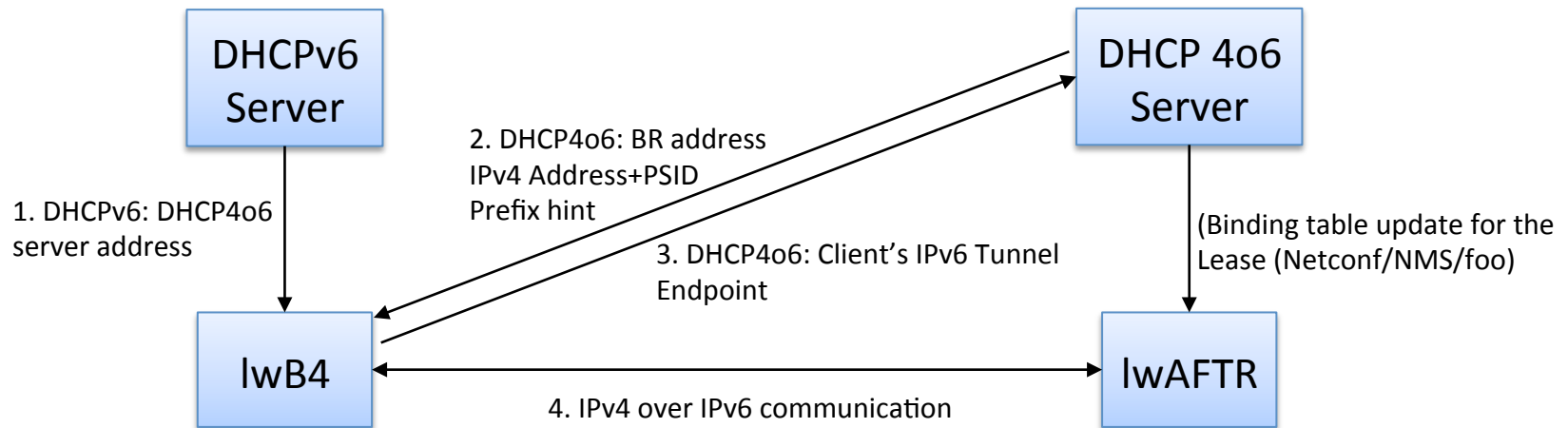
Motivation

- Deterministic 4over6 mechanisms require coupling IPv4 and IPv6 addresses
 - A Softwire has to be sourced from a specific IPv6 address
 - Addresses are pre-allocated (blocked out) for clients
 - Results are address wastage and lack of flexibility
- This proposal allows the client to signal its v6 binding source address to server using DHCPv4 over DHCPv6 (RFC7341) and Dynamic Allocation of Shared IPv4 Addresses (RFC7618)
 - The DHCPv4o6 then holds all of the client's binding information so this can be used to provision lwAFTRs
- The final standards track draft needed for the architecture described in draft-liu-softwire-lw4over6-dynamic-provisioning
 - Enables the dynamic set up of softwires v4/v6 bindings
 - More efficient v4 usage (pools only need to be big enough for active clients)
 - Flexible source v6 address choice
 - Any routable v6 address is OK

History

- The draft has been worked on in Softwire for some time
- But all of the described functions need to be implemented in the DHCPv4 over DHCPv6 client and server
- DHCPv4 over DHCPv6 (RFC7341) and Dynamic Allocation of Shared IPv4 Addresses (RFC7618) were worked on in DHC
- So (hopefully) DHC is the right place for it!

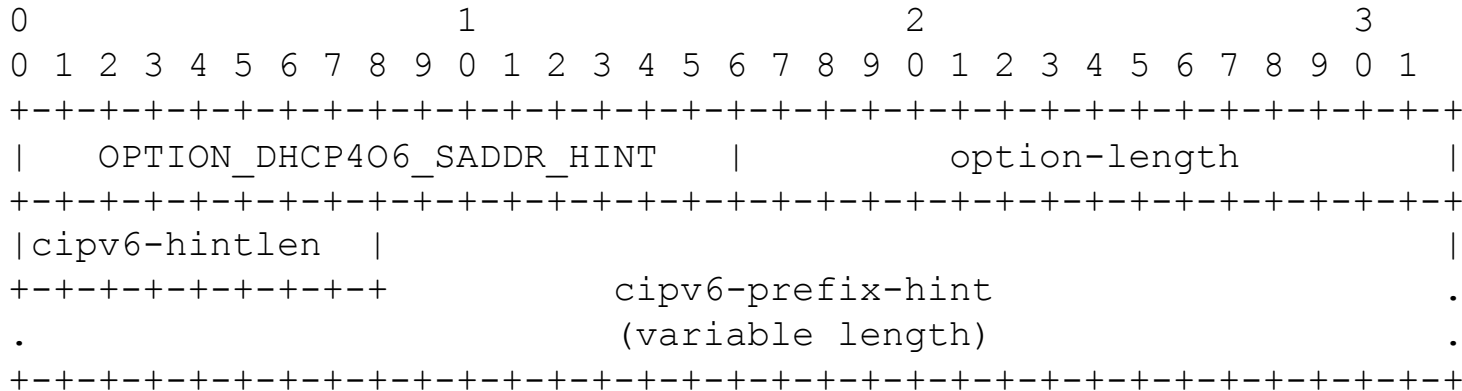
Dynamic Provisioning Overview



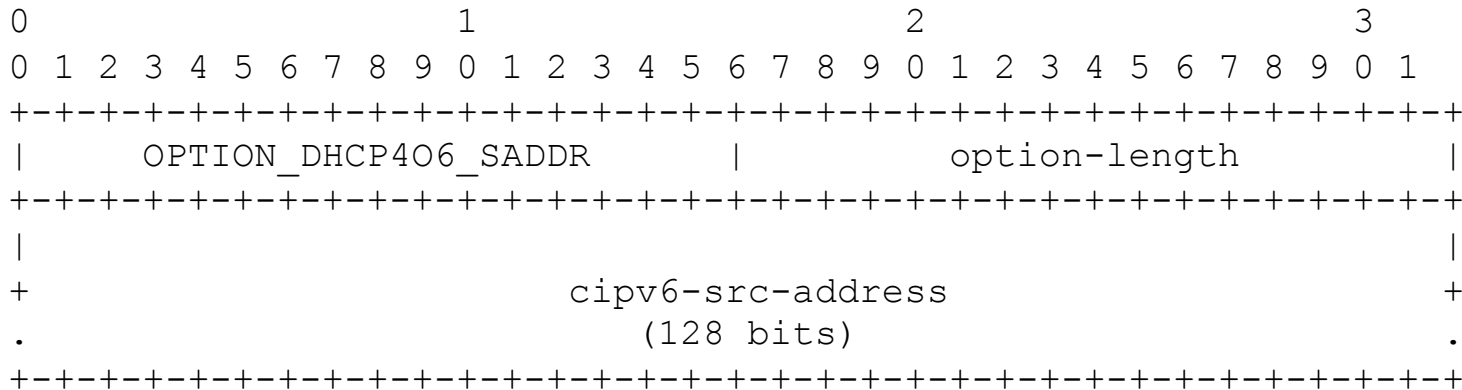
- (2&3) are carried by the new source address options within the normal DHCP4o6 message flow (two arrows shown, but normal DHCP4o6 4 messages)

Two New DHCP4o6 Options Defined

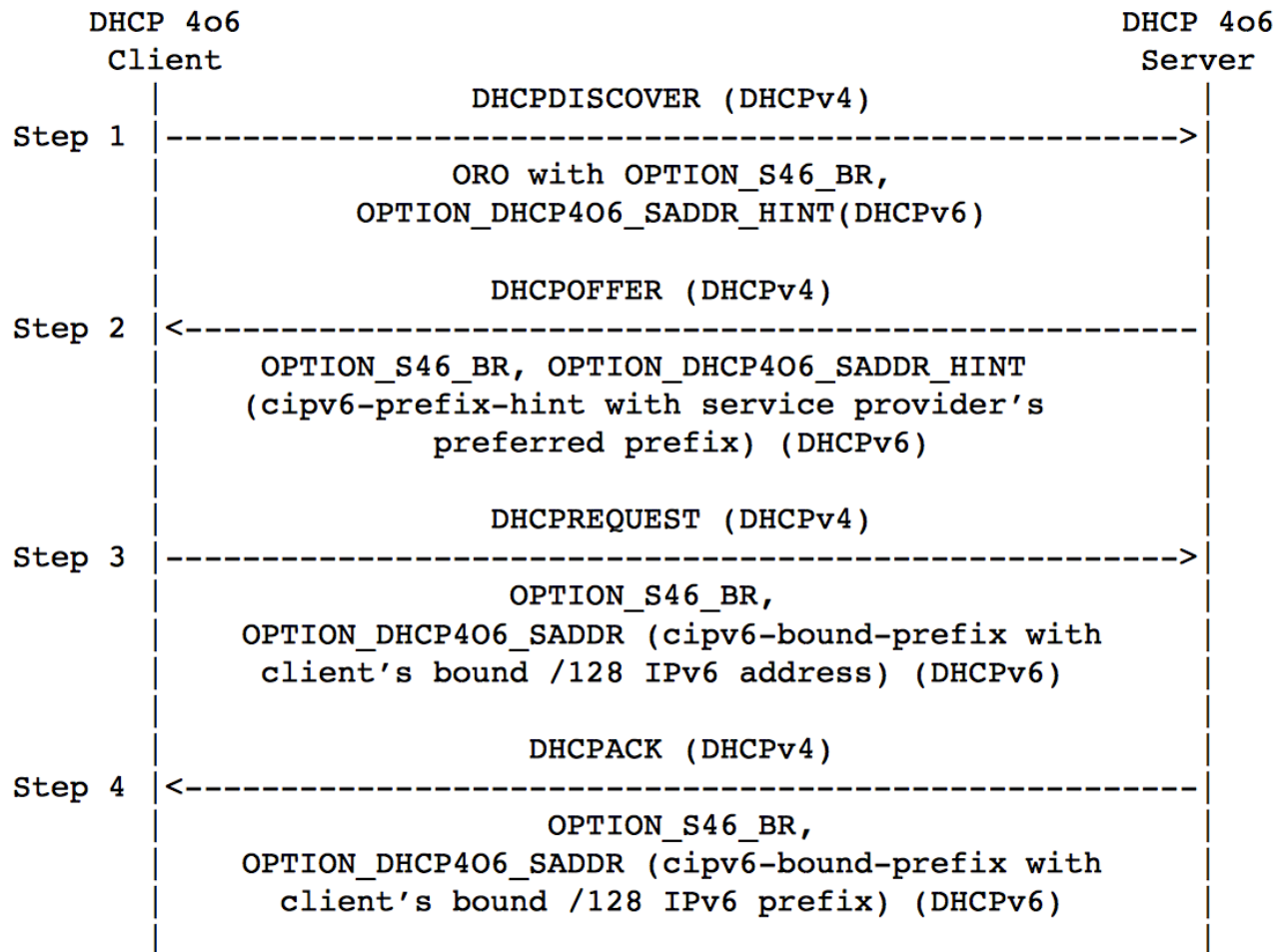
- DHCPv4 over DHCPv6 Source Address Hint Option (guides the client to select the best prefix to construct the softwire from)



- DHCPv4o6 Source Address Option (informs the server of the /128 softwire source address that the client will use)



Dynamic Provisioning Overview



Implementation Experience

- Currently implementing this in
- DHCP4o6 OpenWRT Client (alongside RFC7341(done) and RFC7618)
- Kea DHCP4o6 Server
- Implementation not completed yet, but a race condition in the message flow (requesting DHCPv4o6 configuration before a suitable prefix is configured on the client)
- Draft will be updated with this and any additional findings as the implementation proceeds

Next Steps

- Please review / comment
- Move the draft to DHC?
- Call for adoption?

Thank you!

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