Registering Self-generated IPv6 Addresses using DHCPv6

draft-ietf-dhc-addr-notification-05

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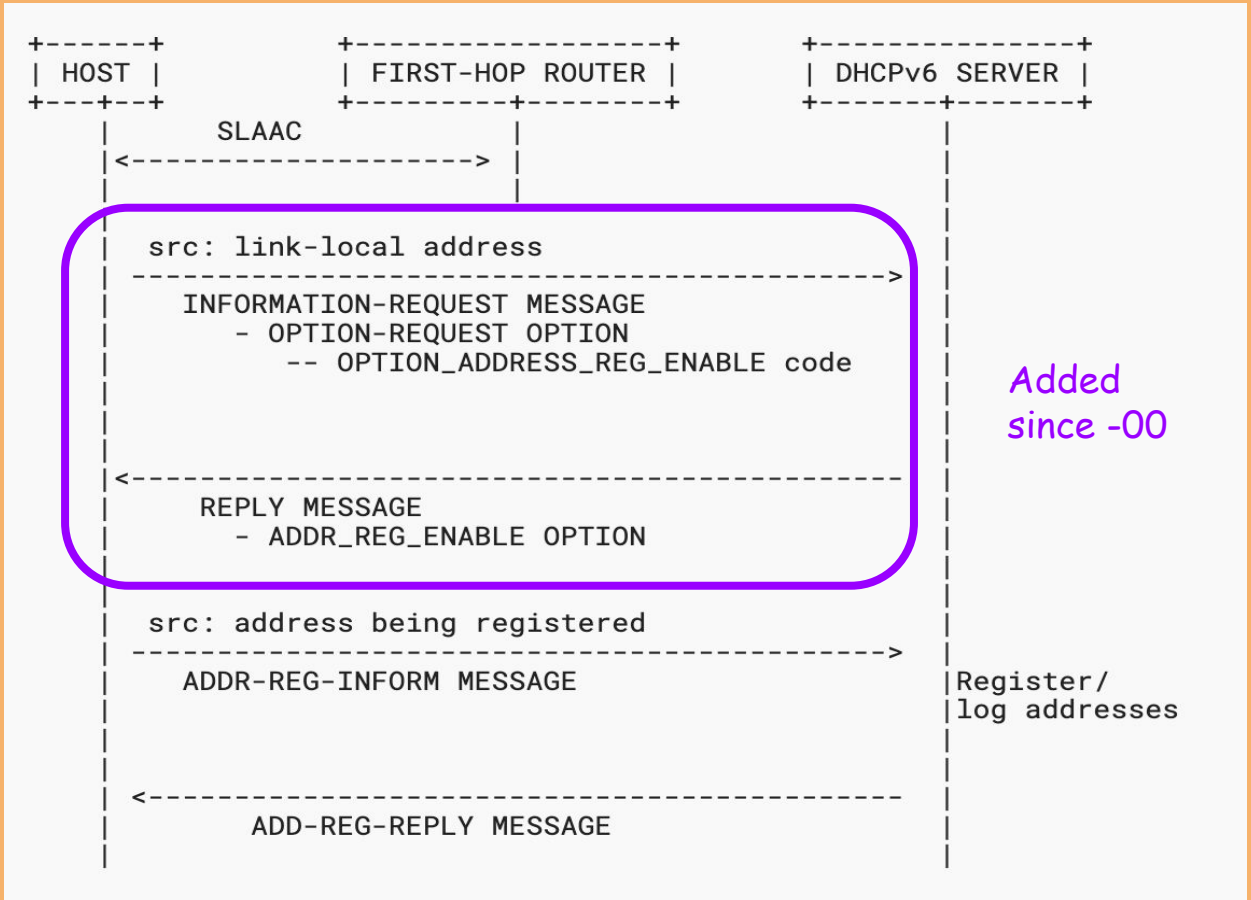
Since IETF-117

- 5 new document versions (-00 -> -05)
- Better registration refresh logic (already in -04)
- One WGLC: support, one concern (excessive multicast)
    - New version
        - Network signals support for registration
        - One new DHCP option code

Signalling Registration Support



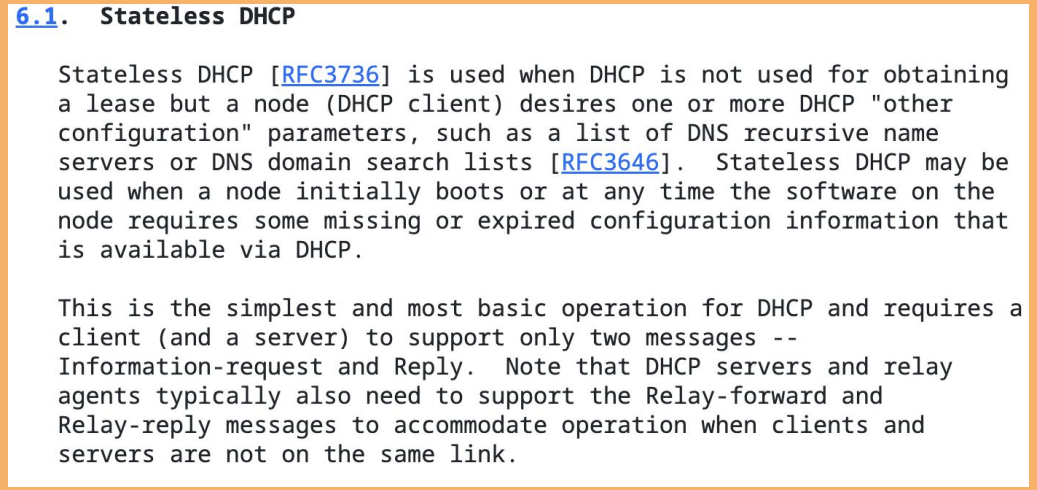
Using Information-Request

The client MUST NOT send Registration Requests until it receives ADDRESS_REG_ENABLE in response to the **most recent** Information-Request message

- If no servers support the mechanism (no response): no noise
- If all servers support the mechanism:
  - They respond with ADDRESS_REG_ENABLE option
  - The client starts sending registration messages
- If some servers support the mechanisms (incremental rollout or misconfiguration)
  - The client sends registration messages, some servers drop them

Benefits of Using Address_Reg_Enable

A single multicast packet /1 RTT to discover if the network supports address registration. instead of keep sending multicast packets for each address.



6.1. Stateless DHCP

Stateless DHCP [RFC3736] is used when DHCP is not used for obtaining a lease but a node (DHCP client) desires one or more DHCP "other configuration" parameters, such as a list of DNS recursive name servers or DNS domain search lists [RFC3646]. Stateless DHCP may be used when a node initially boots or at any time the software on the node requires some missing or expired configuration information that is available via DHCP.

This is the simplest and most basic operation for DHCP and requires a client (and a server) to support only two messages -- Information-request and Reply. Note that DHCP servers and relay agents typically also need to support the Relay-forward and Relay-reply messages to accommodate operation when clients and servers are not on the same link.

Rejected Alternative: Information-Request Containing Registration Info

Discarded because:

- Information-Request MUST contain a lot of options (RFC8415)
- Network devices might block Information-Request sent from global sources
- Rate-limiting would trip if client registers multiple addresses
- Registration refresh timers depend on the address lifetime: might conflict with INF_MAX_RT.

Refreshing registrations

Goal: network never believes an address not valid if it is

Tricky because RAs can increase/decrease lifetime

- Refresh scheduled for <80% of lifetime> in the future
- Whenever RA creates address or changes lifetime by >1%:
  - If no refresh scheduled, register and schedule refresh
  - If refresh scheduled, reschedule if refresh needs to happen sooner than previously scheduled
- To save battery, client MAY refresh multiple addresses if they expire within 60s of each other

Next Steps

- More text cleanup (TBD this week)
- More comments, suggestions?
- Another Working Group Last Call?