Exposing Source IP Address Type Requirements with DHCPv6

draft-moses-dmm-dhcp-ondemand-mobility-00

D. Moses, A. Yegin

Purpose

Enhance DHCPv6 to enable:

- Mobile hosts to state the type of the required source IP address (in terms of continuity support), when requesting a new source IP address
- Networks to convey to the mobile hosts, the type of IP address that was assigned to them

When?

The DHCP client may be triggered to request an IP address when:

- The mobile host initially connects to a network
- After handoff to a different LAN (a LAN with a different IP prefix)
- After an application requests a specific type of source IP address (as specified in draft-yegin-dmm-ondemand-mobility-03) and the IP stack in the mobile host does not already have one

How IP addresses are Communicated?

IP addresses are communicated in DHCPv6 using the IA Address Option which is encapsulated in either the IA_NA or IA_TA options (which may encapsulate several IA Address options in their IA_NA-options or IA_TA-options field).

The IA_NA (or IA_TA) options are carried in several DHCP messages such as:

- Request – when a client requests IP address(s)
- Reply – when a serer replies with the required address(s)
- Renew – when a client whishes to extend the lifetime of addresses

IA – Identity Association

IA_NA – IA for non-temporary addresses

IA_TA – IA for temporary addresses

The IA Address Option

The IA Address option carries an IP address that is associated with an IA.

- When used by the client, it can ‘hint’ to the server its preferred address, or to specify which IP address’s lifetime to extend.
- When used by the server, it specifies the assigned source IP address

The IA Address Option (cont)

The IA Address Option includes an IAaddr-options field which encapsulates options that are associated with the specific IA Address.

the Status Code Option is an example of an option that can be encapsulated in the IAaddr-option field to convey status information associated with the IA Address.

The IPv6 Continuity Service Option

The draft-moses-dmm-dhcp-ondemand-mobility draft proposes a new DHCPv6 option – IPv6 Continuity Service Option that describes the type of continuity service associated with the IA Address.

When used by the DHCP client in a Request, it indicates the type of continuity service the client desires.

When used by the DHCP server in a reply, it indicates the type of continuity service that is committed by the network with the associated IA address.

The IPv6 Continuity Service Option (Cont)

The IPv6 Continuity Service Option must be encapsulated in the IAaddr-options field of the IA Address Option it is associated with.

Possible values represent:

- Nomadic address – not valid after a handoff to a LAN with a

- Sustained address – Valid throughout the IP session
- Fixed address – Valid as long as the IP address is defined
- Don't care – no guarantee of the continuity service

Usage Rules

- The server MUST never encapsulate an IPv6 Continuity Service Option in an IA Address Option if the client had not used it first.
- Once the IPv6 Continuity Service Option was encapsulated in an IA Address Option, in both requests and replies, it MUST be used in all subsequent usages of that specific IA Address Option in any message

Backwards Compatibility

Service Option

IPv6 Continuity

and retry without encapsulating it in the

Service Option

IPv6 Continuity

– It MAY record this knowledge about the server and avoid using the IPv6 Continuity Service Option

and retry without encapsulating it in the IPv6 Continuity

– If stopping the usage of the in subsequent communication with that server.

IPv6 Continuity Service Option when

period of time (with a specific server, the client SHOULD try after a

• Both DHCPv6 clients and servers MUST support the legacy

IA Address

Option

(with no encapsulated IPv6 Continuity Service Option)

Option (with no encapsulated IPv6 Continuity Service Option)

Next steps

1. Complete the draft
2. Receive comments from the group
1. Complete the draft
2. Receive comments from the group

dmc

WG for further work