Layer2 DHCP Relay Agents

draft-miles-dhc-dhcpv6-ldra-02

draft-ietf-dhc-l2ra-04

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IETF 74 – DHC Working Group

Problem Statement

- Insert Relay-Agent Options on non-routing devices
- No IP configuration (suitable for wholesale DSLAMS)
- Minimal Footprint and interaction with clients (avoid ND, ICMPv6, etc)
- For DHCPv4 and DHCPv6
- Minimal changes to client, existing L3 relays or server

Subnet A

Subnet B

Client   L2 Device   Relay   Network   Server
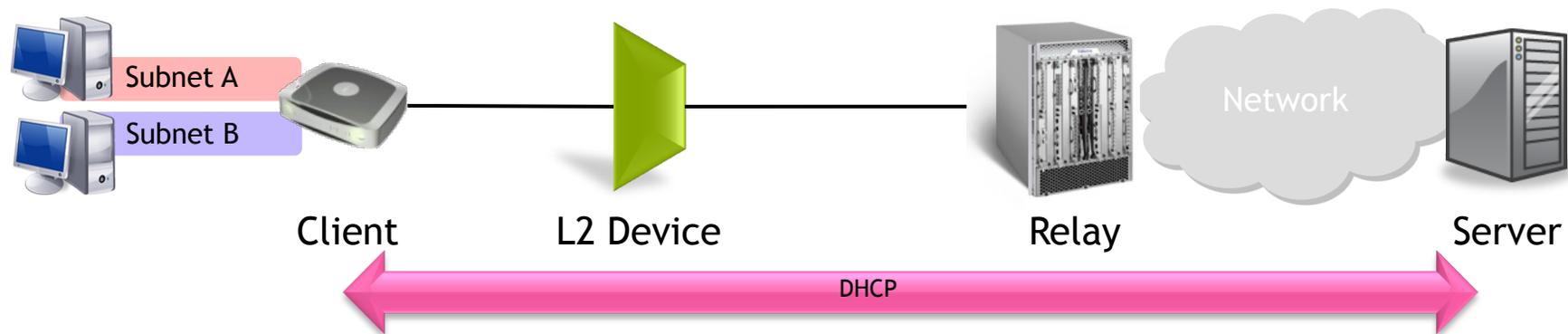
DHCP

Layer 2 and Layer 3 Relay Agent Comparison

Layer 2 Relay Agents	Layer 3 Relay Agents
Adds relay options without updating giaddr (DHCPv4) or link-address (DHCPv6)	Updates giaddr and link-address with the IP interface address
Is not explicitly configured with DHCP server location	Is typically configured with DHCP server location
Broadcasts upstream DHCP messages to another relay	Typically unicasts upstream DHCP messages to a server
Is not an IP host	Is an IP host
Use the IP/link-layer address of the client	Use the IP/link-layer address of the Relay Agent

DHCPv4 (BOOTP) Relay Agent Behaviour (RFC 1542)

Client

Src Client	Dst 0xffffffffffff	DISCOVER
giaddr 0.0.0.0	Option1	OptionX

BOOTP Relay
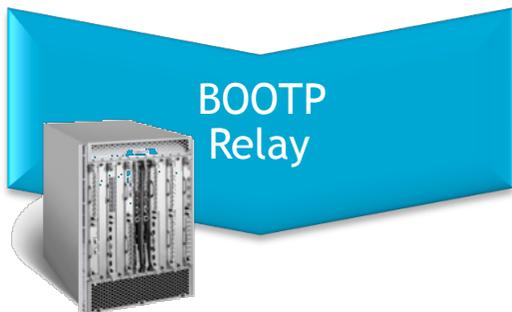
Src Relay	Dst Server	DISCOVER
giaddr Relay IP	Option1	OptionX

Relay Agent Options

Option1	Option2	OptionX

Server
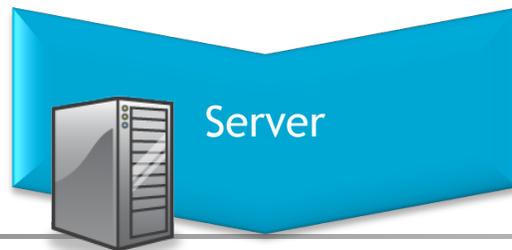
Layer 2 Relay Agent Behaviour (draft-ietf-dhc-l2ra-04)
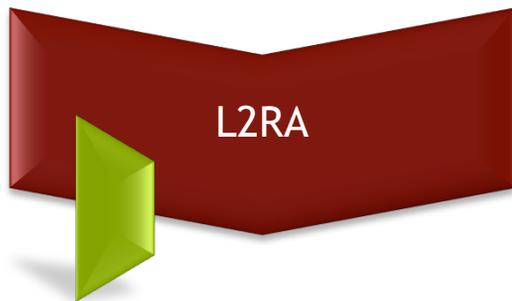
Client

Src Client	Dst 0xffffffffff	DISCOVER
giaddr 0.0.0.0	Option1	OptionX

L2RA

Src Client	Dst 0xffffffffff	DISCOVER
giaddr 0.0.0.0	Option1	OptionX

Relay Agent Options

Option1	Option2	OptionX

BOOTP Relay

Layer 2 Relay Agent

client side

| DA | SA | Etype | IPv4 | Dest | Src | UDP | giaddr | ... | options |

network side

| Link Layer | IPv4 | client msg | relay options |
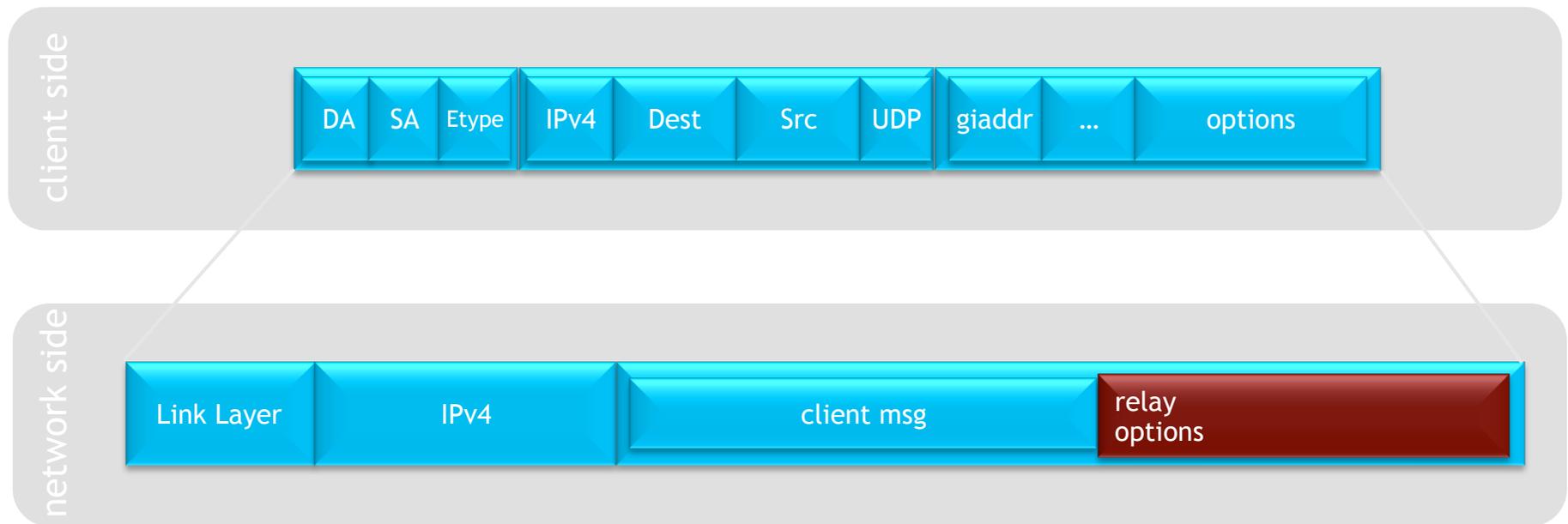
DHCPv6 Relay Agent Behaviour (RFC 3315)

Client

Src Client	Dst All_DHCP	SOLICIT
Option1	Option2	OptionX
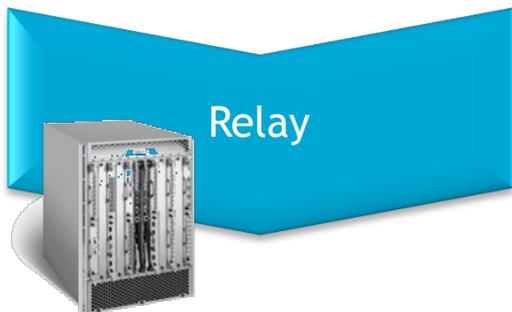
Relay

Src Relay	Dst Server	RELAY_FWD
Hop Count	Link Addr	Peer Addr
Relay Option1	Relay Option2	Relay OptionX
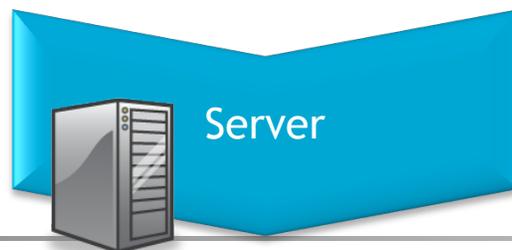
Relay-Message Option

		SOLICIT
Option1	Option2	OptionX

Server

Lightweight DHCPv6 Relay Agent

Client

Src Client	Dst All_DHCP	SOLICIT
Option1	Option2	OptionX

LDRA
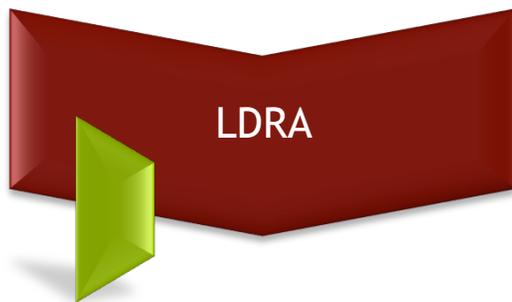
Src Client	Dst All_DHCP	RELAY_FWD
Hop Count	Link Addr	Peer Addr
Interface ID	Relay Option1	Relay OptionX
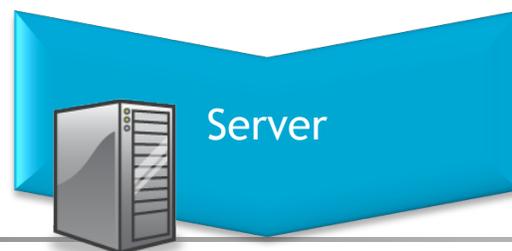
Relay-Message Option

		SOLICIT
Option1	Option2	OptionX

Server

Lightweight DHCPv6 Relay Agent

client side

DA	SA	Etype		IPv6	Dest	Src	UDP

msg type	trans id	options

network side

Link Layer	IPv6

relay fwd	hop	link addr	peer addr	intf id	relay msg	client msg
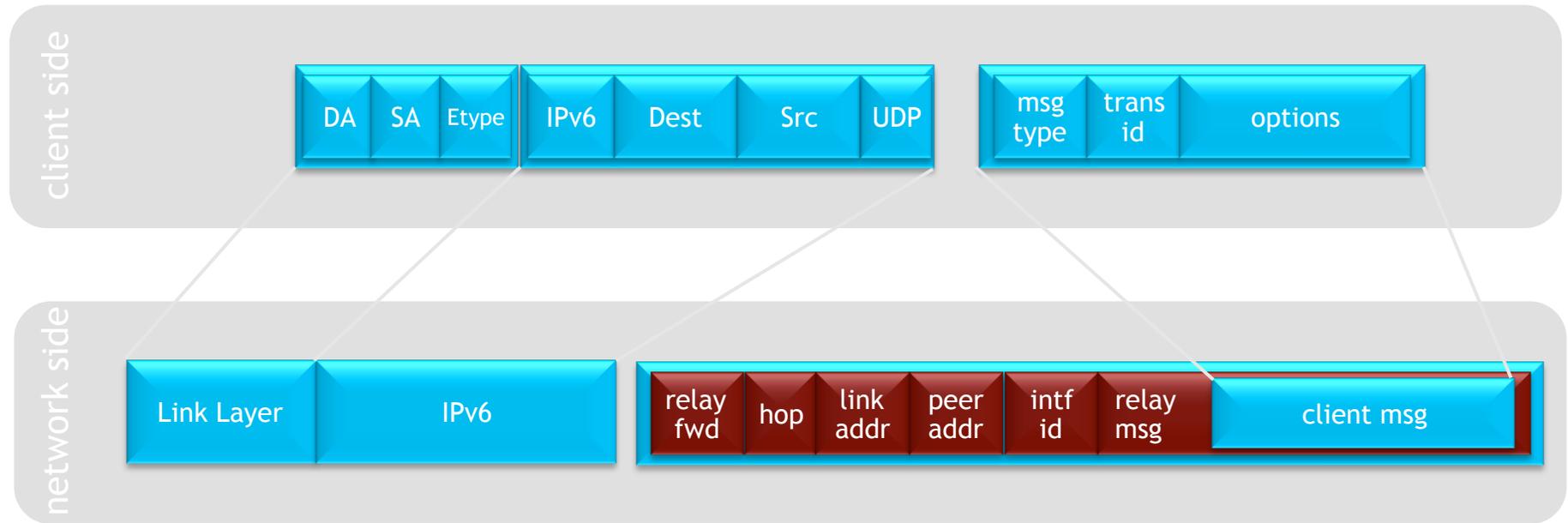
msg type	RELAY_FORW(12)

link addr	unspecified (::)

intf id	opaque value

hop	0 (or hop-count+1)

peer addr	client address

Closing

- Layer 2 Relay Agents (draft-ietf-dhc-l2ra-04) draft – Working group last call

- Lightweight DHCPv6 Relay Agents (draft-miles-dhc-ldra-02) draft – Working group adoption.