DHCPv6 Basis

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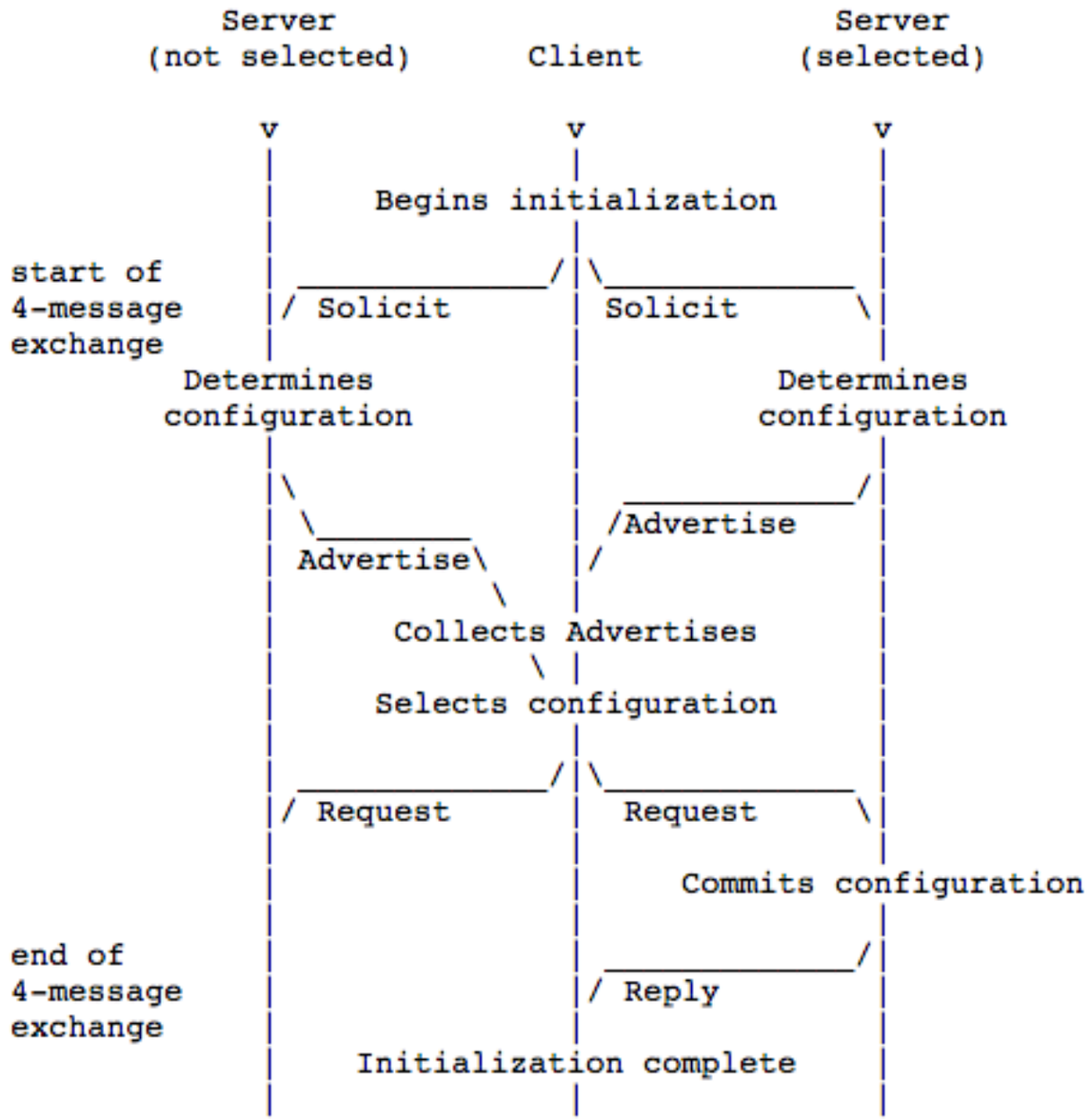
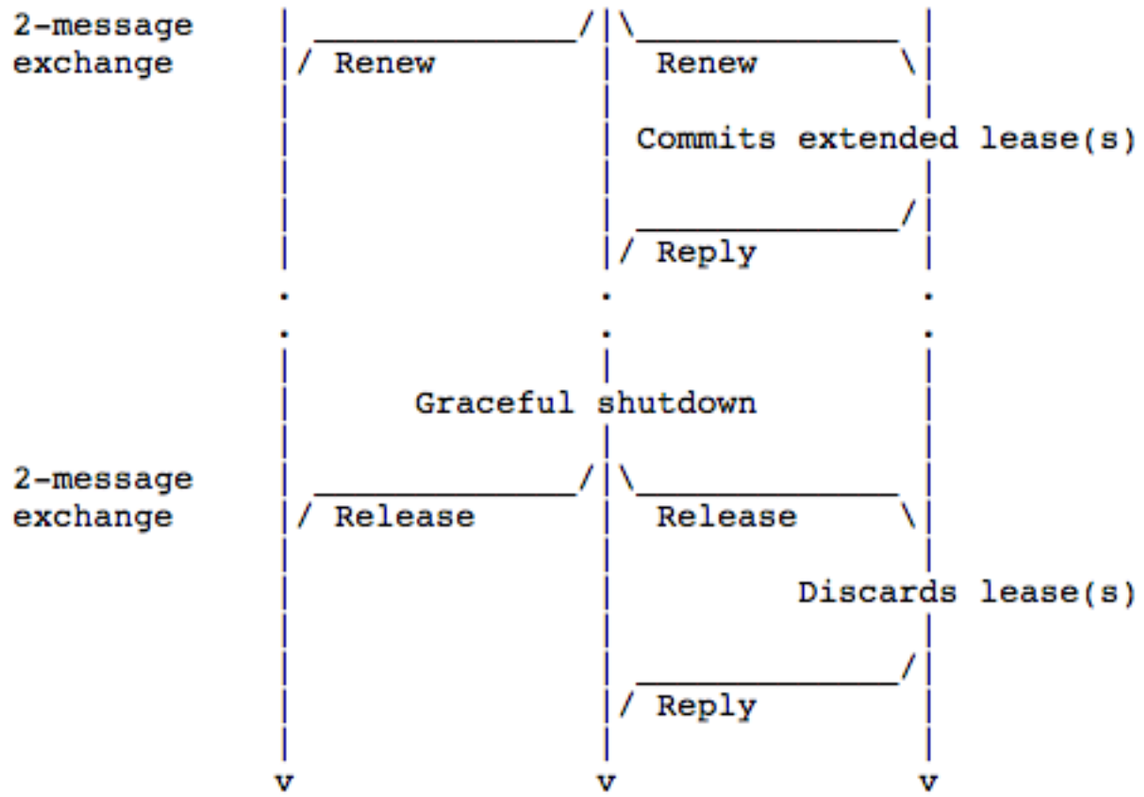
Message Exchanged

- four-message-exchanged



Message Exchanged

- 2-message-exchanged



Message Types

- SOLICIT (1): A client sends a Solicit message to locate servers.

- ADVERTISE (2): A server sends an Advertise message to indicate that it is available for DHCP service, in response to a Solicit message received from a client. it will preallocation address and configuration parameters.

- REQUEST (3): A client sends a Request message to request configuration parameters, including addresses and/or delegated prefixes, from a specific server.

- CONFIRM (4): A client sends a Confirm message to any available server to determine whether the addresses it was assigned are still appropriate to the link to which the client is connected.

Message Type

- RENEW (5): A client sends a Renew message to the server that originally provided the client's leases and configuration parameters to extend the lifetimes on the leases assigned to the client and to update other configuration parameters.

- REBIND (6): A client sends a Rebind message to any available server to extend the lifetimes on the leases assigned to the client and to update other configuration parameters; this message is sent after a client receives no response to a Renew message.

- REPLY (7): A server sends a Reply message containing assigned leases and configuration parameters in response to a Solicit, Request, Renew, or Rebind message received from a client. A server sends a Reply message containing configuration parameters in response to an Information-request message. A server sends a Reply message in response to a Confirm message confirming or denying that the addresses assigned to the client are appropriate to the link to which the client is connected. A server sends a Reply message to acknowledge receipt of a Release or Decline message.

Message Types

- RELEASE (8): A client sends a Release message to the server that assigned leases to the client to indicate that the client will no longer use one or more of the assigned leases.

- DECLINE (9): A client sends a Decline message to a server to indicate that the client has determined that one or more addresses assigned by the server are already in use on the link to which the client is connected

- RECONFIGURE (10): A server sends a Reconfigure message to a client to inform the client that the server has new or updated configuration parameters and that the client is to initiate a Renew/Reply, Rebind/Reply, or Information-request/Reply transaction with the server in order to receive the updated information.

- INFORMATION-REQUEST (11): A client sends an Information-request message to a server to request configuration parameters without the assignment of any leases to the client.

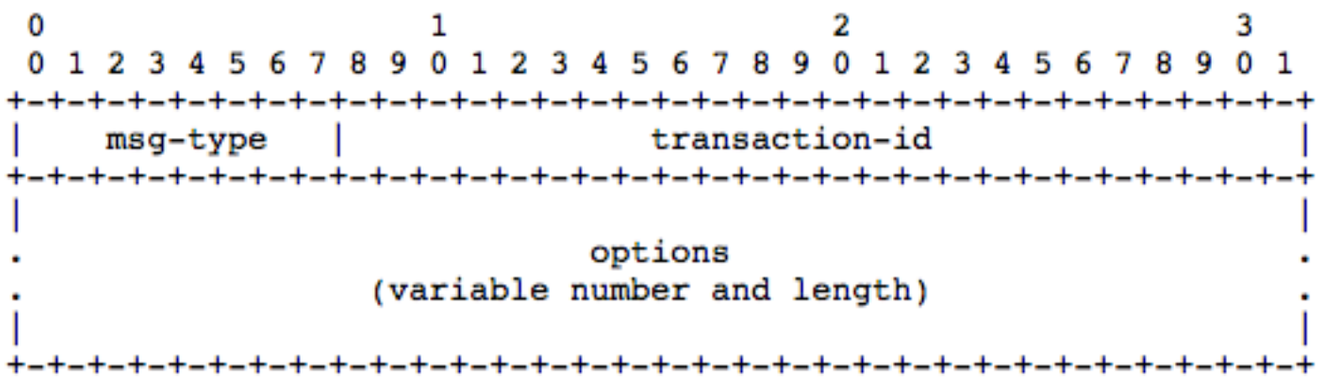
Message Types

- RELAY-FORW (12): A relay agent sends a Relay-forward message to relay messages to servers, either directly or through another relay agent. The received message -- either a client message or a Relay-forward message from another relay agent -- is encapsulated in an option in the Relay-forward message.

- RELAY-REPL (13): A server sends a Relay-reply message to a relay agent containing a message that the relay agent delivers to a client. The Relay-reply message may be relayed by other relay agents for delivery to the destination relay agent. The server encapsulates the client message as an option in the Relay-reply message, which the relay agent extracts and relays to the client.

Message Formats

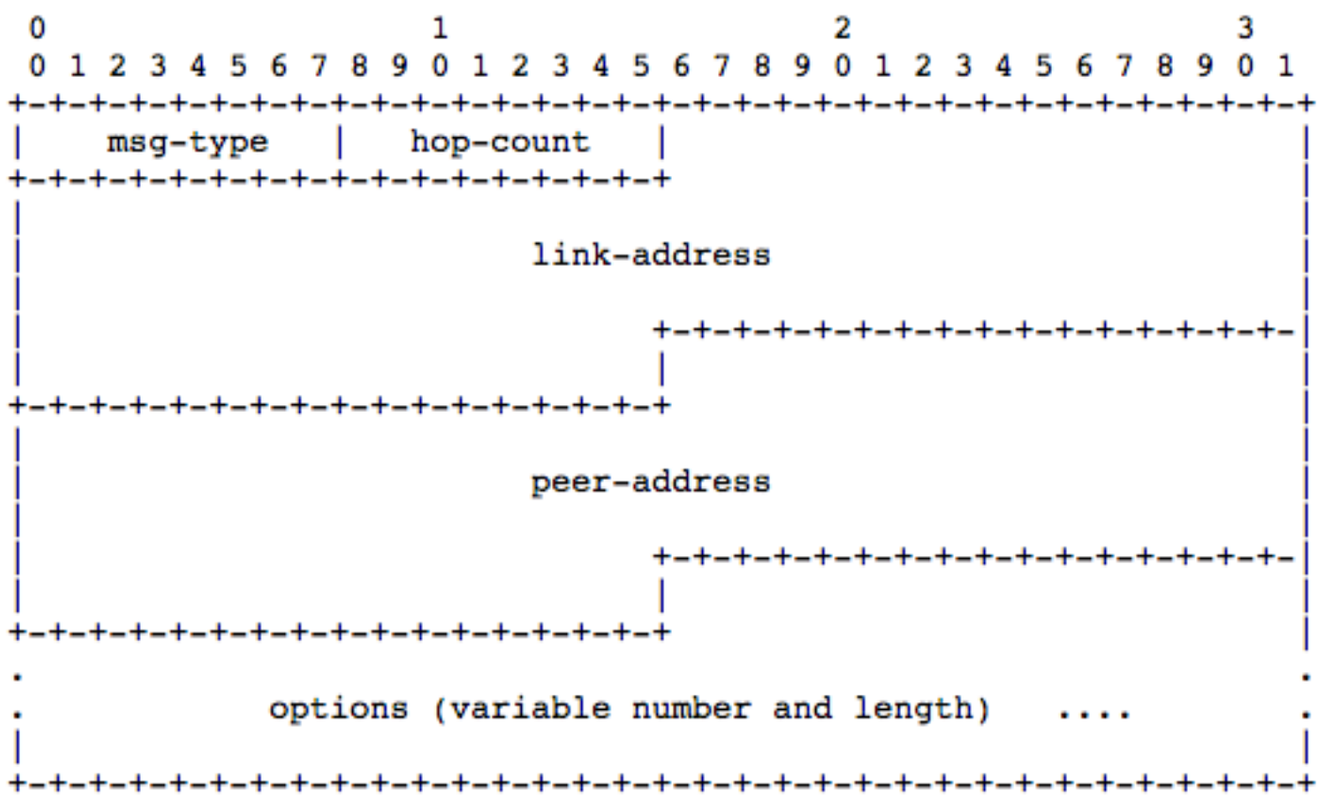
- Client/Server Message Formats



  - msg-type: Identifies the DHCP message type, A 1-octet field.
  - transaction-id: The transaction ID for this message exchange, A 3-octet field.
  - Options carried in this message

Message Formats

- Relay Agent/Server Message Formats



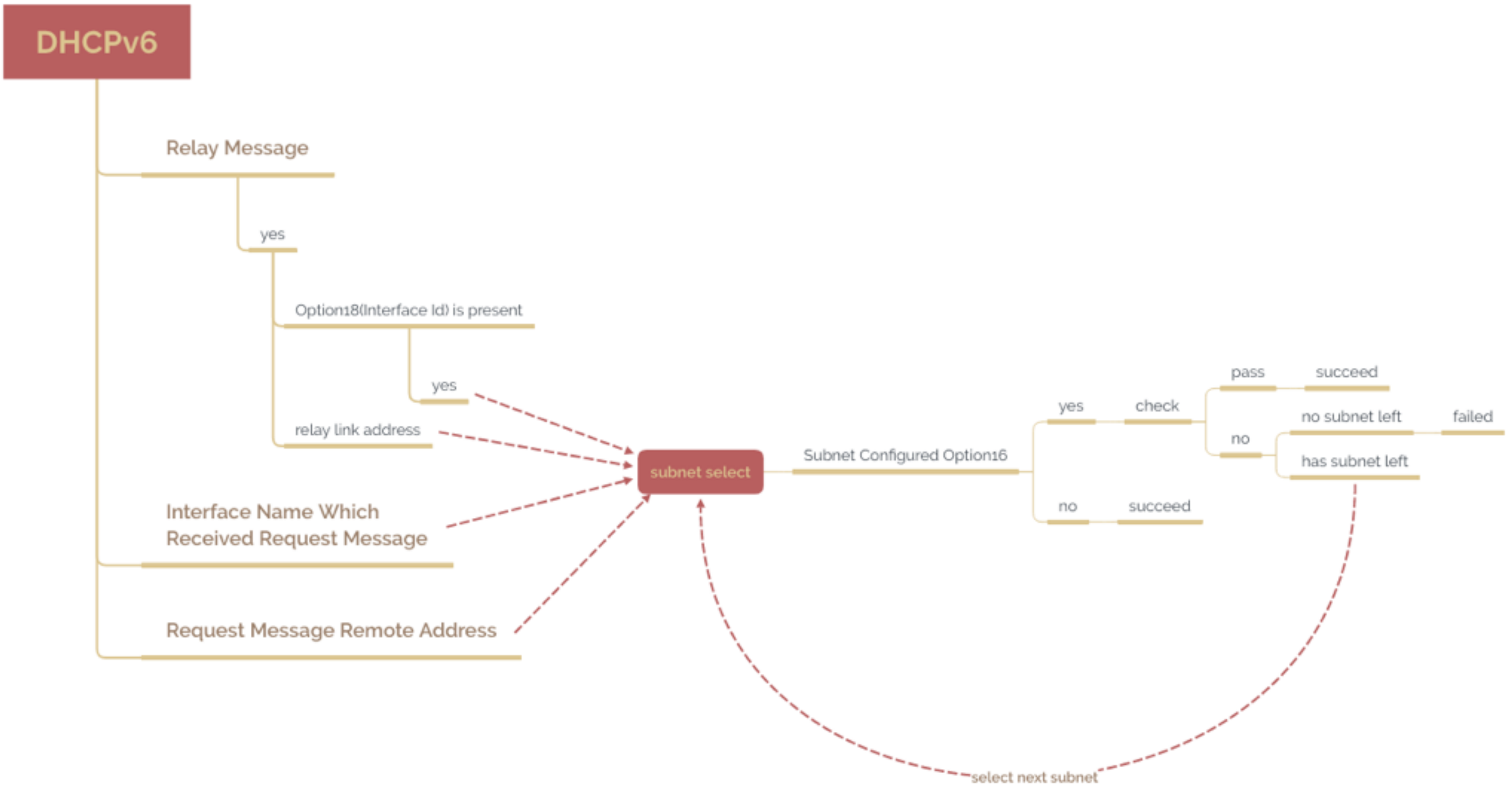
Message Formats

- Relay Agent/Server Message Formats
    - hop-count: Number of relay agents that have already relayed this message. A 1-octet field.
    - link-address:
        - An address that may be used by the server to identify the link on which the client is located. This is typically a globally scoped unicast address (i.e., GUA or ULA), This address will be used by the server to determine the link from which the client should be assigned leases and other configuration information.
            - If such an address is not available, the relay agent may set the link-address field to a link-local address from the interface on which the original message was received. and the relay agent must append Interface-Id option(option 18: Interface-id option to identify the interface on which the client message was received) to request message
        - A 16-octet field.
- peer-address: The address of the client or relay agent from which the message to be relayed was received. The relay agent copies the source address from the header of the IP datagram in which the message was received into the peer-address field of the Relay-forward message. A 16-octet field

Subnet Select

- If relay agent link address is set
  - select subnet using Option18(interface id option)
  - if Option18 no matched for any subnet, try the relay agent link address
- If relay agent link address is set to zero
  - if interface name which request message is received is known, try select subnet configured it
  - if interface name no matched, try request message remote address

Subnet Select



Reference

- [RFC3315]: Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- [RFC4291]: IP Version 6 Addressing Architecture
- [RFC4862]: IPv6 Stateless Address Autoconfiguration
- [RFC4861]: Neighbor Discovery for IP version 6 (IPv6)
- [RFC7969]: Customizing DHCP Configuration on the Basis of Network Topology

Thanks