DHCPv6 Prefix Delegating Relay
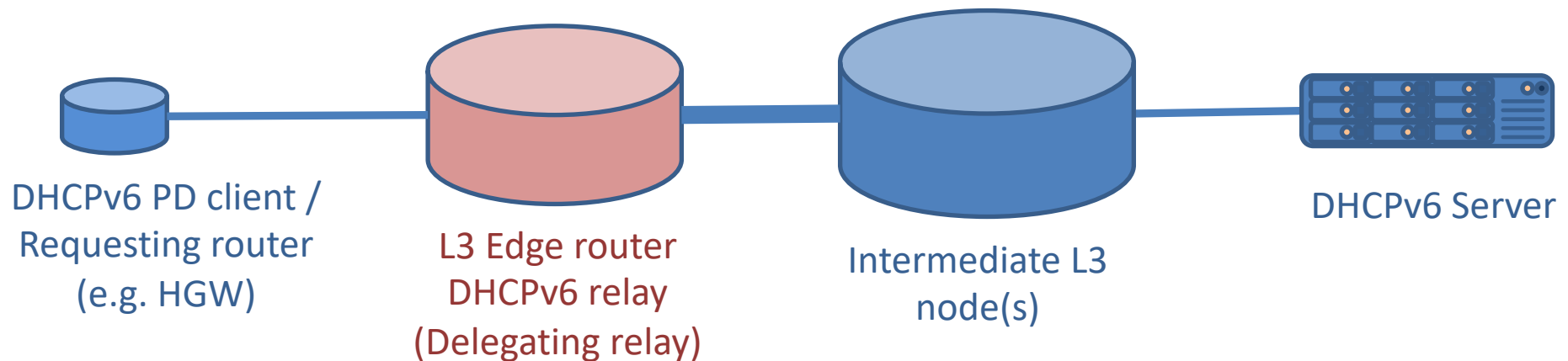
draft-fkhp-dhc-dhcpv6-pd-relay-requirements-02

I. Farrer, N. Kottapalli, M. Hunek, R. Patterson

IETF106 Singapore

Introduction

- Operational experience of mainstream commercial relay/router implementations have shown a number of problems when the delegating router/relay function is separated from the DHCPv6 server

DHCPv6 PD client /
Requesting router
(e.g. HGW)

L3 Edge router
DHCPv6 relay
(Delegating relay)

Intermediate L3
node(s)

DHCPv6 Server

- The draft uses the term 'delegating relay' to describe this device

What Problems have we seen?

- Messages not being forwarded by the relay
  - Relay decides if the message will be forwarded or not
- Relay generating messages/errors on behalf of server
- Loss of PD state on reboot
  - The relay loses PD state and client traffic can't be forwarded
- Multiple PD leases by a single client
  - Relay will only create a single prefix binding per-DUID
- Dropping messages with duplicate MAC or DUID received on different interfaces

What has RFC8415 got to say about it?

- RFC8415 is sketchy on how this is meant to work (section 19.1.3):

```
A relay agent forwards messages containing prefix delegation
options in the same way as it would relay addresses (i.e., per
Sections 19.1.1 and 19.1.2).
```

```
If a server communicates with a client through a relay agent
about delegated prefixes, the server may need a protocol or
other out-of-band communication to configure routing
information for delegated prefixes on any router through which
the client may forward traffic.
```

- This is true, but incomplete – the relay needs to implement a state machine synchronized with the server and client

- The lack of existing specification makes it difficult for to get implementations with

- This draft describes problems that and defines a set of requirements

Requirements

- Follows the RFC7084 approach of an Informational document with RFC2119 requirements language (changed in -v02)
- 4 categories of requirements
  - General
    - Message forwarding, multiple prefixes, lease/timer maintenance
  - Routing
    - Only deals with routing between relay and client, prefix re-distribution is not covered
  - Service continuity
    - PD persistent storage, lease query and client link failures
  - Operational
    - PD state and maintenance

Next Steps…

- Some comments have been received
  - v02 incorporates these
- Any additional reviews or feedback welcome!
  - Especially interested in any additional problems that have been observed in operator deployments
  - Suggestions for additional requirements

- Call for WG adoption?