Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Option for Lightweight 4over6
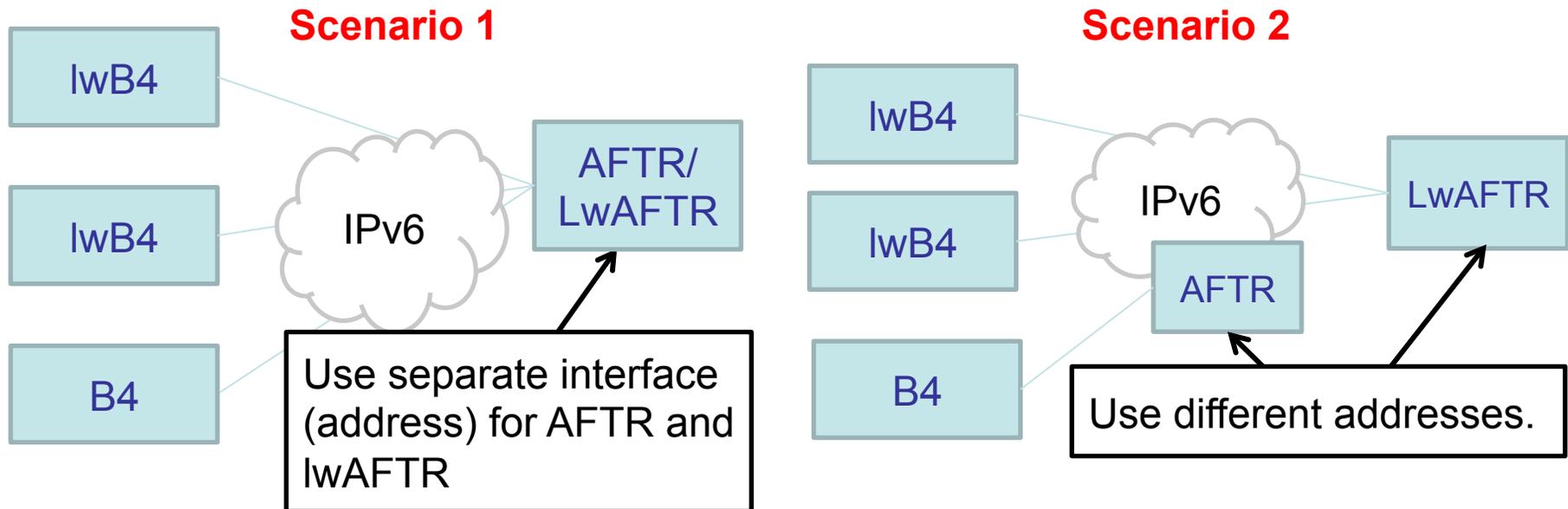
draft-sun-softwire-Lw4over6-dhcpv6-00

IETF 87-Berlin, July 2013

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Motivation

- Lw4over6 may be deployed in a DS-Lite network to gradually reduce the load of Carrier Grade NAT in the AFTR

Scenario 1

lwB4

lwB4

B4

IPv6

AFTR/ LwAFTR

Use separate interface (address) for AFTR and lwAFTR

Scenario 2

lwB4

lwB4
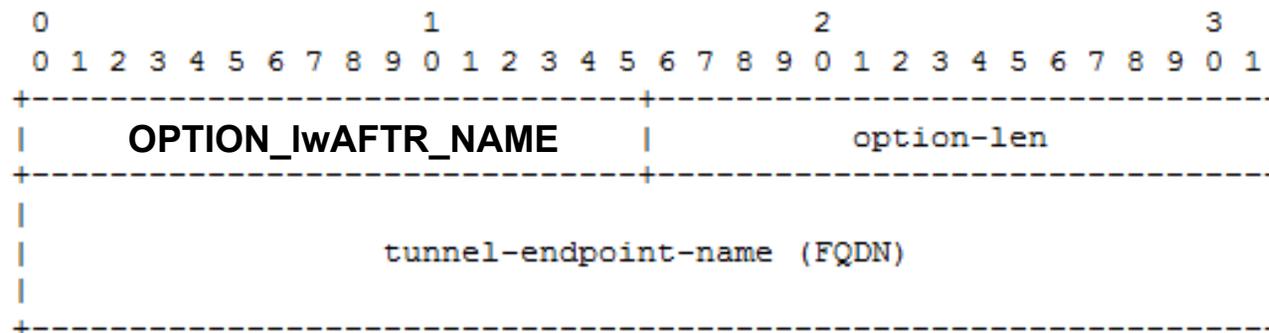
B4

IPv6

AFTR

LwAFTR

Use different addresses.

- B4 and lwB4 must be configured with different tunnel endpoint addresses.

Motivation

- AFTR/LwAFTR's address is provisioned using AFTR-Name DHCPv6 Option (RFC6334)

- DHCPv6 server should be able to distinguish between DS-Lite and Lw4over6 subscriber
  - It's better if the B4/LwB4 could tell the DHCPv6 server what type of device it is

- **We define a new DHCPv6 option for lwB4 element to request the lwAFTR's IPv6 address.**

The lwAFTR-Name DHCPv6 Option

- The format is the same with DS-Lite AFTR-Name option, but with a new option code

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-------------------------------+-------------------------------+
|       OPTION_lwAFTR_NAME      |          option-len           |
+-------------------------------+-------------------------------+
|                                                               |
|                  tunnel-endpoint-name (FQDN)                  |
|                                                               |
+---------------------------------------------------------------+

   OPTION_lwAFTR_NAME: TBD

          option-len: Length of the tunnel-endpoint-name field in
                      octets.

tunnel-endpoint-name: A fully qualified domain name of the lwAFTR
                      tunnel endpoint.
```

How This Option Be Used

- LwB4 uses this option to request LwAFTR's name
  - With a different option, DHCPv6 server can identify a lwB4 and the lw4over6 subscriber
  - The provisioning system does not need to be upgraded to identify the subscriber's type.

```
+----+-----+      +----+-----+            +------+------+
|    B4    |      |   lwB4   |            |     BNG     |
| DS-Lite  |      | lw4over6 | =========-|DHCPv6 Server|
+----+-----+      +----+-----+            +------+------+
     |                 |  dhcpv6 option(lw4over6)|
     |                 |------------------------>|
     |                 |    lw4over6.example.com |
     |                 |<------------------------|
     |                 |                         |
     |            dhcpv6 option64                |
     |------------------------------------------>|
     |            dslite.example.com             |
     |<------------------------------------------|
```

Simple and straightforward

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Summary

- In particular, it is helpful for operator running Lw4over6 and DS-Lite in the same network.

- This option is used for scenarios different from scenario described in Unified-CPE.

  – In Unified-CPE, the provisioning system knows which mode should use for the CPE

  – In this scenario, the provisioning system does not

  – Instead, CPE should tell the provisioning system what tunnel address it wants to get

Next Steps

- Question:
  - Any interest to continue this work?
  - How to move it forward ?