draft-tsou-bfd-ds-lite-02

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• Problem to solve
  – There is no status information of DS-Lite tunnel, e.g. tunnel up or down, which brings difficulties for operations and maintenance.
• Procedures

**B4**

- CPE get online via DHCPv6, and get AFTR’s FQDN via DHCPv6 option
- CPE create an IPv6 tunnel to AFTR
- CPE initiate a BFD session to AFTR (192.0.0.2 → 192.0.0.1)

**AFTR**

- AFTR initiate a BFD session to CPE, in the other direction (192.0.0.1 → 192.0.0.2)
- CPE detect failure, switch to another AFTR
- CGN detect failure, inform the management
- Procedural}

(CPE get online)
BFD DOWN

 local discriminator = 1234
 remote discriminator = 0

BFD INIT

 local discriminator = 5678
 remote discriminator = 1234

BFD UP

 local discriminator = 1234
 remote discriminator = 5678

(BFD session in one direction is finished)
(Start BFD session in the other direction)

BFD DOWN

 local discriminator = 5678
 remote discriminator = 1234

BFD INIT

 local discriminator = 1234
 remote discriminator = 5678

BFD UP

 local discriminator = 5678
 remote discriminator = 1234

(Bidirectional session created!)
• BFD for DS-Lite
  – Auto configuration
    In DS-Lite, B4 has the AFTR address, sufficient to initiate a BFD session, other parameters can be negotiated via signaling or static config, no manual configuration.

  – packet rate
    Long time period between BFD packets transmission, e.g. 10s or 30s

  – Failover
    If B4 detect a failure, it will switch to another AFTR
• BFD for DS-Lite

Compared with other solutions, e.g. PING, BFD can provide some more useful information besides connectivity detect, e.g. diagnostic code, delay, throughput, etc

Q: Will extension defined in [RFC6374 Packet Loss and Delay Measurement for MPLS Networks] available for IP network?
• BFD Explicit failover VS anycast

1. ECMP for ME upstream; traffic is hashed based on source and destination of IP packet; for example, B4-1 traffic hashed to AFTR1;

2. If there is a PMTU failure, a ICMPv6 failure will be sent from ME to AFTR1;

3. Source and destination of ICMPv6 packet is different with B4-1, this packet may be sent to AFTR2; PMTU negotiation will be failure;

ICMP error message problem in anycast
• BFD Explicit failover VS anycast

AFTR may use anycast address for receiving packet, and unicast address for sending packets to resolve the ICMP error message problem [section 4.2 of MAP-D]

But there is still a problem, e.g. PING, admin may ping the AFTR by anycast address, but receive response from another address ...