Unaffiliated BFD Echo Function

draft-cw-bfd-unaffiliated-echo-01

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Intention of this draft

- Proposes a use of BFD Echo function

  - It's a new use that's not yet been documented in the current RFCs

  - BBF TR-146 (published in 2013) does document the similar use of BFD Echo function proposed in this draft, but in that TR the procedural text is a bit unclear

  - An errata was considered before this draft was written, but after consulting our Co-chairs and AD, it's realized that an errata isn't appropriate and an informational document seems valuable

BBF TR-146 Use Case

- "It should be noted that the BFD Echo mechanism is only suitable to detect and recover from the loss of IP forwarding connectivity between the RG and IP Edge, as observed and detected by the RG. "

BBF TR-146 Section 6.2.2

R-59   The RG MUST support the configuration of the BFD Echo functionality, as per RFC5881 [27].

R-60   The RG MUST support sending BFD Echo packet(s) on its WAN interface at configurable regular interval with a default value of 30s. The destination IP address of such packets MUST be taken from the list of IP addresses assigned to or via the WAN interface, including the Subnet-Router address of a DHCPv6 delegated prefix.

R-61   The RG MUST support receiving self originated BFD echo packets addressed to its assigned address or the Subnet-Router IPv6 delegated prefix.

R-62   The RG MUST issue a DHCP renewal message after a failure to receive a configurable number of successive BFD Echos. This renewal MUST be delayed by a random time between 1 and 30 seconds.
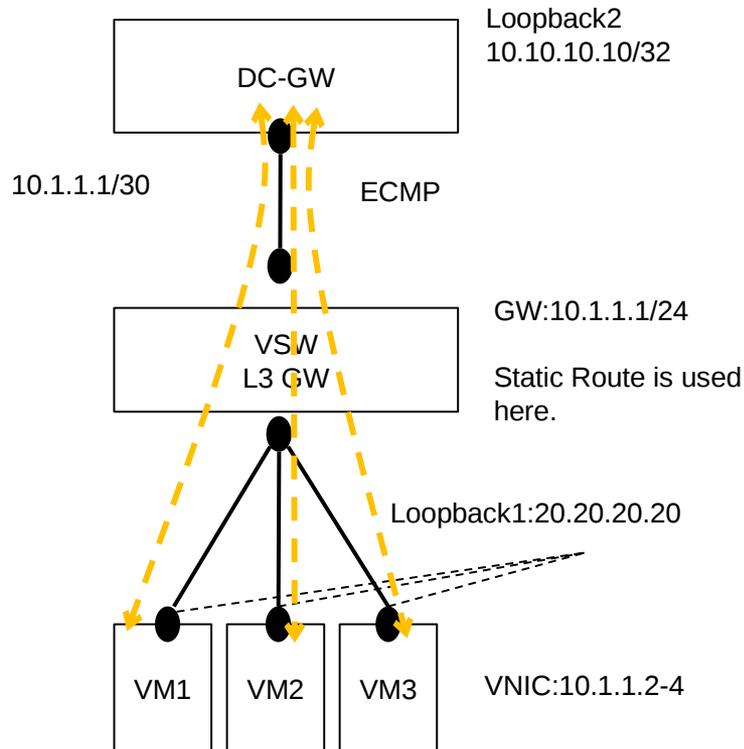
- It's unclear whether the BFD state machine defined in RFC 5880 is applied to the local system
- It's unclear whether the BFD Echo packet reuses the format of BFD Control packet defined in RFC 5880

Proposed Unaffiliated BFD Echo

```
Device A                                          Device B
                    BFD echo session
BFD Enabled                               BFD Echo packets loopback
+--------+                                   +--------+
|   A    |-----------------------------|   B    |
|        |Inf 1                    Inf 1|        |
+--------+10.1.1.1/24          10.1.1.2/24+--------+
BFD is supported.                  BFD is not supported.
```

- Device A supports BFD state machine, which is

  Down -> Init -> UP

- Device A sends BFD Echo packets to Device B, with the IP address destined for itself. BFD Echo packet reuses the format of BFD Control packet, with destination UDP port 3785 assigned in RFC 5881

- Device B doesn't support BFD state machine

- Device B doesn't support BFD Control packet processing

One deployed use case in datacenter except for BBF TR-146

Loopback2
10.10.10.10/32

DC-GW

10.1.1.1/30

ECMP

GW:10.1.1.1/24

VSW
L3 GW

Static Route is used here.

Loopback1:20.20.20.20

Two main advantages:

1.VM doesn't need to support BFD

2.Decoupling between DC-GW and VM

VM1   VM2   VM3

VNIC:10.1.1.2-4

- Do we need to document this use case in this draft?

Next steps

- Ask for more reviews and comments
- Revise this draft to resolve comments
- Ask for WG adoption