draft-nitish-vrrp-bfd-01

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Problem Statement

- Real time Applications need faster failover detection of the order of ~150ms.

    - VRRP detects Master down in 3 sec in default configuration.

    - VRRP if implemented in Control plane, aggressive VRRP timers can affect scale.

- VRRP when interfaced with BFD can detect failures faster.

    - BFD requires both the participating peers ipv4 or ipv6 address to initiate the session.

Limitations in VRRP

- VRRP Master router send periodic Advert messages.
- VRRP Backups don't send Advert messages.
- VRRP Backups and Master not aware of other available Backups.

VRRP Peer Learning Mode

- Define a new BACKUP ADVERTISMENT Packet type.
- VRRP Master sends ADVERTISEMENT and Backup sends BACKUP ADVERTISMENT at regular interval.
- VRRP peers Master or Backup form peer table.
- VRRP peer can form BFD sessions with all the learnt peers.
- Critical Backup can become master on Critical BFD session going down.

Peer Table
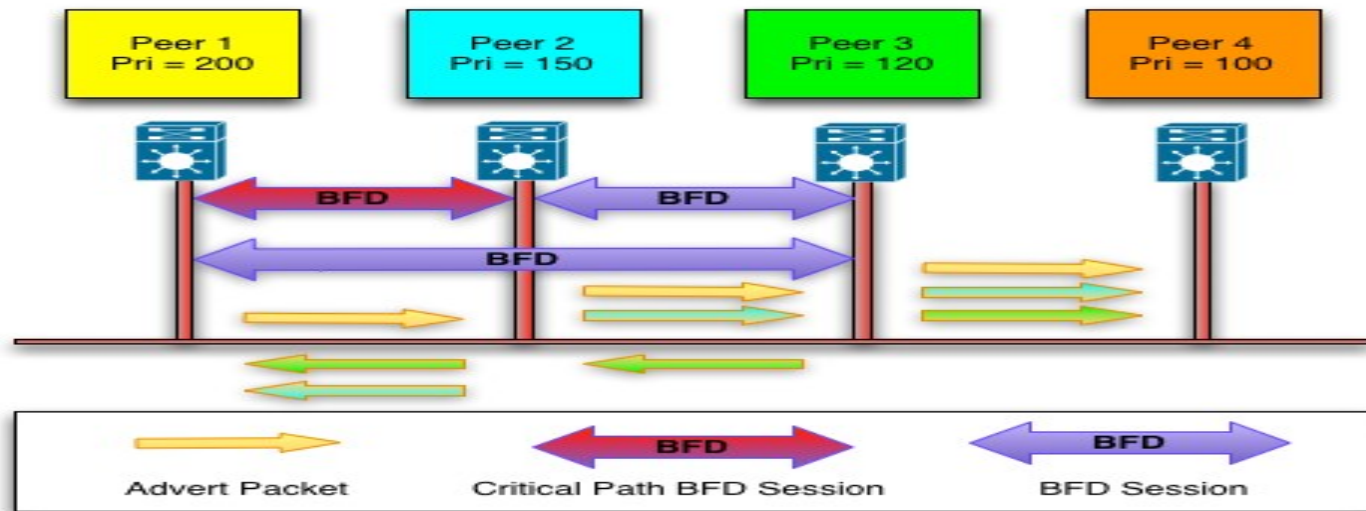
Example Peer Tables for each Peer in diagram (Peer 4 is non-BFD peer):

Peer 1 Table	Pri	TTL
Peer 2 (IP/IPv6)	150	2
Peer 3 (IP/IPv6)	120	3

Peer 2 Table	Pri	TTL
Peer 1 (IP/IPv6)	200	3
Peer 3 (IP/IPv6)	120	3

Peer 3 Table	Pri	TTL
Peer 1 (IP/IPv6)	200	3
Peer 2 (IP/IPv6)	150	2

Operational consideration

- Peer can be removed from the peer table if Advert not received in 3 * Advert interval.
- VRRP router not supporting the feature should be configured with lowest priority.
- VRRP should be interfaced with BFD, only when BFD can support more aggressive timers.
- BFD session can be shared with other protocols tracking the same peer.
- Multipoint BFD sessions.
  - Its recommended to use point to point BFD sessions.

Scalability Consideration

- Backup can send Advert at lower frequency.
- Less number of BFD sessions can be formed. Preferably between Master and most preferred Backup.
  - Its recommended that BFD sessions are boot strapped in a mesh mode.

Thank You