Fast failure detection in VRRP with P2P BFD

IETF-100 Singapore - draft-nitish-vrrp-bfd-p2p-00

Aditya Dogra, Nitish Gupta - Cisco Systems
Colin Docherty - Broadcom
Jeff Tantsura - Individual
Greg Mirsky - ZTE Corp

History

- **Drafts done earlier**:
  - draft-nitish-vrrp-bfd-00 – IETF-93
  - draft-mirsky-bfd-p2mp-vrrp-usecase00 was presented. - IETF-93.
  - Both the drafts were discussed in the mailing list and in RTGWG meeting.
- Proposal to Merge the drafts in RTGWG meeting.
- **Merged**: draft-nitish-vrrp-bfd-02 is the merge of the two drafts
  - All comments are addressed in draft-nitish-vrrp-bfd-04 - IETF-95
- **Abandoned**: draft-nitish-vrrp-bfd-04 abandoned because of the Ericson IPR issue.
- **New draft**: draft-nitish-vrrp-bfd-p2p-00 accommodates all comments given for the previous draft.

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.

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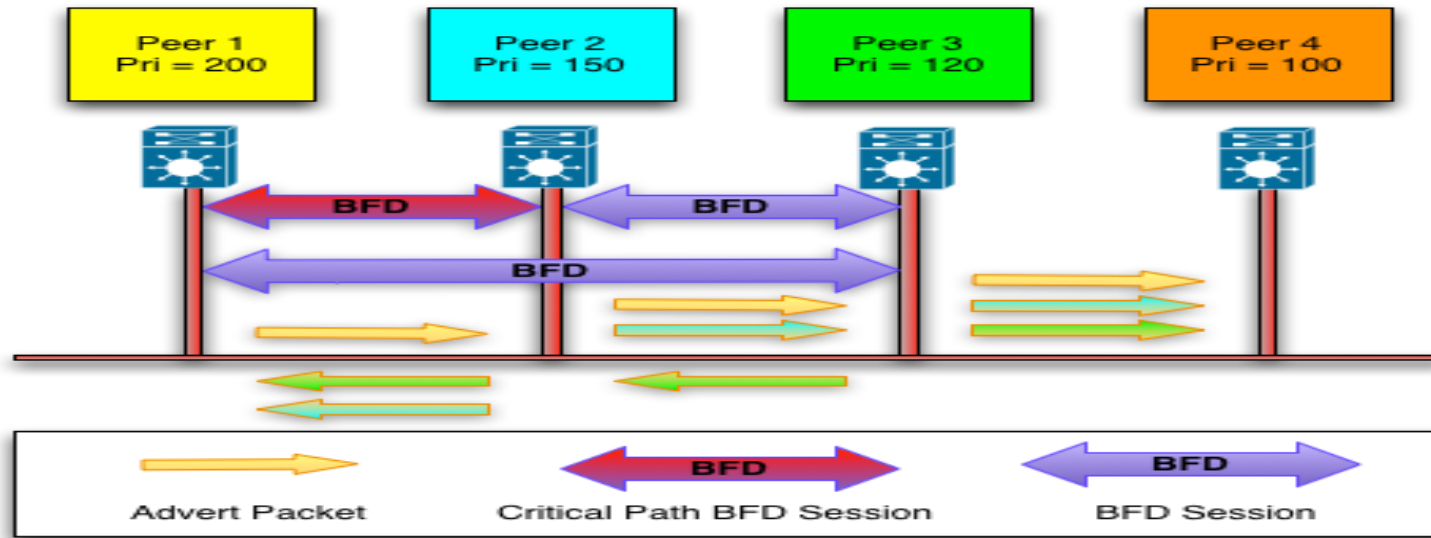
Example Peer Tables for each Peer in diagram (Peer 4 is non-BFD peer):

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

Work done so far

The draft 'draft-nitish-vrrp-bfd-04' had been updated with the review comments of Jeffrey Haas, Maik Pfeil, Chris Bowers and Vengada Prasad Govindan. Same work has been carried forward in draft-nitish-vrrp-bfd-p2p-00, which includes

- Extension to Vrrp protocol , New packet type is defined.
- Defined the Vrrp Peer learning mode & Critical BFD Session for faster convergence.
- Updated Vrrp Protocol State Machine.
- Scalability Consideration :
  - Backup can send Advert at lower frequency.
  - Less number of BFD sessions can be formed. Preferably between Master and most preferred Backup.
- 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.

Document Changes draft-nitish-vrrp-bfd-04 to draft-nitish-vrrp-bfd-p2p-00

The draft discusses the solution using Point to Point BFD accommodating all comments given for draft-nitish-vrrp-bfd-04 :

- Removal of the P2mp use case from the old draft.
- Updated the IANA considerations to create a new packet type.
- Updated the Author's info.

Next Steps

- Review from WG
- WG Adoption?

Thank You