Fast failure detection in VRRP with P2P BFD

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

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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):

<table>
<thead>
<tr>
<th>Peer 1 Table</th>
<th>Pri</th>
<th>TTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer 2 (IP/IPv6)</td>
<td>150</td>
<td>2</td>
</tr>
<tr>
<td>Peer 3 (IP/IPv6)</td>
<td>120</td>
<td>3</td>
</tr>
</tbody>
</table>

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<tr>
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</tr>
</tbody>
</table>
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