Considerations about mVPN standardization

draft-morin-l3vpn-mvpn-considerations-02

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The l3vpn working group is working to produce a “specification of IPv4 multicast over BGP/MPLS VPNs for publication” (charter)

draft-ietf-l3vpn-2547bis-mcast intends to be that specification, but describes multiple approaches for certain building blocks
  • in its current state, it is more a “framework” document
  • not enough to provide solution interoperability

we believe there is a need for progressing this work toward a good standard candidate, by identifying a set of mandatory procedures

we would consider the recourse to a “multiple solutions” approach as a last resort
Goals of this draft

- **Goals**
  - discuss the different options proposed in draft-ietf-l3vpn-2547bis-mcast, in the lights of requirements formulated in RFC4834
  - identify the better candidates for a set of mandatory mVPN procedures

- **Non goals**
  - it is not the aim of this document to remove options
  - non-mandatory approaches would still be described in the final solution spec as OPTIONNAL procedures
Where we are

- Draft -00 submitted one year ago for Prague
  - co-authored by 4 operators
- Draft -01 submitted in October
  - Vancouver showed good support from the working group to adopt as a WG item
  - extensive discussion in December on the mailing list
- Draft -02 submitted for this meeting
  - updated to address the issue raised
  - presented during l3vpn WG on Monday
  - still some friction...
    - some debate around the arguments and conclusions
    - it appears that some disagree with the goal of this draft
For mVPN auto-discovery

- proposed approaches
  - BGP-based auto-discovery
  - Discovery using PIM Hellos through an MI-PMSI implemented with an any-to-any tunnel (ASM/PIM-SM, or Bidir-PIM or MP2MP LDP)
- the BGP-based auto-discovery is seen as the approach to make mandatory
  - because it is a prerequisite to support certain type of tunnels (PIM-SSM, P2MP mLDP, P2MP RSVP-TE...)
  - because it is a prerequisite for the BGP-based approach for C-multicast routing to be usable
For the signalling of S-PMSI

- candidates
  - UDP-based signalling over MI-PMSI
  - BGP-based signalling
- we see the BGP-based signalling as the right candidate for the set of mandatory procedures
- key reasons:
  - no need for another protocol
    - BGP S-PMSI signalling is very close to the BGP auto-discovery procedures
  - the UDP-based signalling does not do more, but less
    - restricted to deployments using an MI-PMSI which uses more state in the P routers when one-to-many tunnels are used to built an MI-PMSI
    - limitations wrt. Inter-AS deployments
- other pros/cons still being debated, but currently seen as not changing the conclusion
For C-multicast routing

- two approaches are focused on:
  - PIM LAN procedures on an MI-PMSI
  - BGP-based procedures

- current state of our document is that:
  - the BGP-approach is seen as having a number of significant advantages, for scaling, architecture consistency, and reduced deployments contraints
  - in the mean time...
    - not all of the above is “free” : e.g. BGP mVPN may push for dedicated RRs, and/or multi-session BGP
    - unlike with the PIM-based approach which is known since deployments of draft-rosen, there are “unknowns” related to the BGP approach due to lack of experience : it is debated on how BGP handles the dynamic nature of multicast routing, and its impact on join latency
  - the above is detailed in the draft

- Conclusion : for now, recommend to implement both, delay mandating one until further experience is gained
For inter-AS

- two approaches are proposed
  - segmented inter-AS trees
  - non-segmented inter-AS trees
- we see the segmented approach as the right candidate for the mandatory set of procedures
  - because it offers the largest degree of deployment flexibility to operators
  - because of the scalability improvements for P-routers state and C-multicast routing
  - for VPN inter-AS option B deployments, it is the approach that has the best fit, and which isolate the most two ASes
- it is also identified that the non-segmented approach, similar to the one used in the deployed draft-rosen, can be helpful for some scenarios and migrations
  - still recommend the implementation of the non-segmented approach
- Also discussed...
- Type of tunnels
  - just like for unicast VPNs, given the diversity of backbone engineering choices and constraints, there doesn't appear to be one and only "best" tunnel type
  - conclusion: suggest prioritizing mLDP, P2MP RSVP-TE and GRE/IP-Multicast
- RP "collocated" in the PE
  - seen as a useful optional feature, but also has drawbacks
  - it should not be required
Why talk mVPN in mboned?

Feedback from the multicast-knowledgeable community is welcome:
- to review the solutions considered
  → see Eric presentation about draft-ietf-l3vpn-2547bis-mcast
- to help us pursue the comparisons between the different considered approaches
  → please review draft-morin-l3vpn-mvpn-considerations

mboned BCP on mVPN
- can be useful to help distinguish between approaches proposed, based on experience gained on implementations!

Thank you!
Comments?