BGP Flowspec for IETF Network Slice Traffic Steering

draft-dong-idr-flowspec-network-slice-ts-01

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Background

- BGP Flowspec provides a mechanism to distribute the flow specifications and the forwarding actions to be performed to the matched traffic

- IETF network slice traffic needs to be steered into an NRP to meet the connectivity and performance requirements
  - An NRP is a collection of network resources in the underlay network
  - An NRP can be identified using either resource-aware SR SIDs or dedicated NRP ID in data packet

- This document defines BGP Flowspec extensions for steering IETF network slice traffic into the corresponding NRP
Matching Rules for Network Slice Traffic

- Existing Flowspec components can be reused to match network slice service traffic
  - The components as defined in RFC 8955 and RFC 8956
- In some scenarios, an NRP-ID is encapsulated in the received data packets, a new Flowspec component is defined to match the NRP-ID
  - The component encoding aligns with Flowspec V2
  - g flag: indicates the NRP ID is globally unique (when set) or is domain significant (when clear)
  - NRP ID: 4-octet identifier of an NRP
Network Slice Traffic Steering Actions

• Network slice traffic steered into an NRP can be forwarded using
  • Either the shortest (BE) path in the NRP
  • Or the traffic engineering (TE) paths associated with the NRP

• Traffic steering to NRP BE path
  • If resource-aware segments are used for NRP-specific forwarding, the redirect-to-ip action can be used to carry the resource-aware SR SID of the egress node
  • If data plane NRP-ID is used for NRP-specific forwarding, a new Encapsulate-NRP-ID action is defined

E Flag: indicates whether the NRP ID should be encapsulated in an outer header
Network Slice Traffic Steering Actions

• Traffic steering to NRP TE path
  • Network slice traffic can be steered to an SR Policy, which is associated with an NRP

• Two approaches to associate an SR Policy with an NRP
  • Using NRP-specific resource-aware segments to build the SR Policy SID list
  • Associate the SR Policy with an data plane NRP ID

• In both cases, IETF network slice traffic can be steered into an NRP TE path based the mechanism defined in draft-ietf-idr-ts-flowspec-srv6-policy
Next Steps

• Comments and feedbacks are welcome

• Revise the document accordingly
Thank You