# BGP Entropy Label Capability, Version 3

draft-scudder-idr-entropy-label-00
IDR, IETF-114, July 27, 2022
John Scudder, Kireeti Kompella, Satya Mohanty, Jim Uttaro, Bin Wen, Serge Krier

# Background

- RFC 6790 specifies entropy label, to facilitate load-balancing
  - This is increasingly a must-have for deployments
- It's highly desirable to be able to signal entropy label support
  - The alternative is not using entropy label, or
  - Blindly using entropy label (risks persistent packet loss or misrouting if LSP tail end doesn't support entropy labels)
- RFC 6790 specifies a dataless path attribute that indicates a router can process entropy labels
  - "Entropy Label Capability", or "ELCv1"
  - RFC 6790 requires that the attribute be scoped... but an optional transitive was used

# Background [2]

- Juniper developed a solution that fixes the problem, on which this draft is based
    - Documented in draft-scudder-bgp-entropy-label-00
    - We call this "ELCv2"
- Differences:
    - Juniper's solution reuses Attribute 28
    - The current draft ("ELCv3") requests a fresh attribute
        - Addresses concerns about ELCv1 and ELCv2 sharing the same attribute codepoint

# Requirements

- Constraints for the solution
  - Must not require full route reflector infrastructure upgrade in order to deploy
    - This implies optional transitive
  - Must not leak

# Requirements

- Constraints for the solution
  - Must not require full route reflector infrastructure upgrade in order to deploy
    - This implies optional transitive
  - Must not leak
- But these are contradictory. Let's try again:

# Requirements

- Constraints for the solution
  - Must not require full route reflector infrastructure upgrade in order to deploy
    - This implies optional transitive
  - Must not leak
- But these are contradictory. Let's try again:
  - ~~Must not leak~~

# Requirements

- Constraints for the solution
  - Must not require full route reflector infrastructure upgrade in order to deploy
    - This implies optional transitive
  - Must not leak
- But these are contradictory. Let's try again:
  - ~~Must not leak~~
  - Must do no harm if it does leak

# Do no harm

- Approach chosen is to add data to the attribute
  - IP address of the next hop sent in the route by the originator.
- Receiver compares the ELCv3's next hop, to the next hop of the route (the NEXT_HOP or the Network Address of Next Hop field in the MP_REACH_NLRI)
  - If they match, all good
  - If they don't, it was a leak and is discarded

# Planned for version 01

- Future extensibility by allowing trailing data
- Considerations for interoperation between ELCv3 and legacy ELCv2
  - Optional of course
  - Essentially, if you receive either a valid ELCv2 or a valid ELCv3, consider the route "EL-capable"

# Next steps

- Publish version 01
- Request WG adoption
  - There's a demonstrated need for a standardized solution
  - We have significant deployment experience with ELCv2 which is substantially similar to ELCv3