RT-Constrain Lite

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RT-Constrain Refresher

- RT-Constrain (RFC 4684) scales control plane for network-based VPNs
- BGP speakers which import routes into VRFs (PEs) advertise their imported RTs as rt-constrain NLRI (with AFI/SAFI 1/132)
- Participating speakers (practically: route reflectors and ASBRs) build outbound route filters based on received rt-constrain NLRI
  - Only advertise to each peer (whether PE, RR or ASBR), the routes with RTs for which peer has advertised "interest"
- Consequence: If fully deployed, routes for each RT propagate only where needed. Large potential savings.
- But, non-participating PEs get no filtering (receive all VPN routes) and force route reflectors to advertise an rt-constrain default route (attracting all VPN routes)

Problem Statement

- RT-Constrain (RFC 4684) provides a powerful, general way to scale control plane for network-based VPNs
- However, implementation is not completely trivial
- Lack of wider implementation is problematic for operators wishing to use RFC 4684 to scale their networks
  - PEs which aren't 4684 enabled don't benefit
  - RRs don't gain full benefit until all their client PEs are 4684 enabled

Proposed Solution

- Observation: PEs can implement a tiny subset of RFC 4684 and reap virtually all the benefits
- PE must advertise an rt-constrain route for each route-target it imports
  - Plus, advertise AFI/SAFI 1/132 in its MP-BGP Capability
  - That is all!
- Implementation of this subset *is* trivial
  - Should greatly reduce barriers to wide implementation

Compared to RFC 4684

- Removes requirements for
  - Parsing received rt-constrain routes
    - Equivalent to filtering them out in inbound policy
  - Building outbound VPN route advertisement filters
    - Not needed by PEs anyway except in degenerate cases
  - Propagating rt-constrain routes
    - Again equivalent to filtering them out in inbound policy

Criticisms

- Draft is not needed; RFC 4684 covers this already
  - 4684 is relatively large and complex and must be read carefully to know what can and cannot be excluded. This draft weighs in at 3 pages (excluding boilerplate), complete.
- Nobody will want to implement it
  - Perhaps. If so we can always withdraw the draft (or move to historical if it has progressed), and no harm is done.

Next Steps

- Current draft is draft-scudder-idr-rt-constrain-lite-00.txt

- Propose we make this an IDR working group document