

# Route Target Constrained (RTC) Distribution of Routes without Route Targets

- Original conception of Route Targets (RTs):
  - VRFs configured with RTs
  - UPDATES of certain AFI/SAFIs (“VPN address families”)
    - Always carry RTs
    - Distributed to “all” PEs
  - Receiving PE:
    - uses RTs to map UPDATES to VRFs
    - Filters UPDATES with undesired RTs
- Later development: RTC
  - announce the RTs in which you are interested
  - push announcements upstream (multiple hops): unnecessary UPDATES get filtered before going to PEs that don’t need them

# Corner Case: Some AFI/SAFIs Only Sometimes Carry RTs

- MDT-SAFI (RFC6037 MVPN) UPDATES
  - While MDT-SAFI is VPN address family, NLRI can be used to map MDT-SAFI to VRF; so originally MDT-SAFI did not carry RTs
  - RTs were added in later implementations for uniformity
- Use of RTs optional on certain MCAST-VPN UPDATES used to support Global Table Multicast *ala* MVPN
  - No need to use RTs to map UPDATES to the global table
- Problem: corner cases not considered in RTC spec
  - As implemented, RTC applied to given AFI/SAFI will filter (block) all UPDATES that do not have any RTs
  - Above corner cases only work if RTC passes all UPDATES that do not have any RTs

# Solution

- Obvious solution: RTC should:
  - Pass all UPDATES that have no RTs,
  - Filter all UPDATES that have undesired RTs
  - Pass all UPDATES that have desired RTs
- No, that's too easy!
  - What if someone wants to put RTs on a few UPDATES of a (non-VPN) AFI/SAFI, and then wants to use RTC to filter all the UPDATES that don't have the desired RTs?
- Compromise solution: establish default behaviors
  - For MDT-SAFI and MCAST-VPN: the “obvious solution”
  - Everything else: original behavior
  - New AFI/SAFIs: get original behavior unless specified otherwise