Route Leak Detection and Filtering using Roles in Update and Open Messages

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Merged Approach

- Enforce Relationship (peer, customer, …) through protocol and code, not operator configuration. No config mistakes.
- Because it is enforced, only need marking on first hop; business relationship not leaked further. (see discussion)

Five Roles

- Provider - sender is a transit provider to neighbor
- Customer - sender is customer of neighbor
- Peer - sender and neighbor are peers
- Internal - sender is part of an internal AS of an organization which has multiple ASs, or is a confederation, etc.
- Complex - sender has a non-standard relationship and wants to use manual per-prefix based role policies. (aptly named. do we really need this?)

i Only To Customer

1. The iOTC attribute MUST be added to all incoming routes if the receiver's Role is Customer or Peer
2. The iOTC attribute MUST be added to all incoming routes if the receiver's Role is Complex and the prefix Role is Customer or Peer
3. Routes with the iOTC attribute set MUST NOT be announced by a sender whose Role is Customer or Peer
4. Routes with the iOTC attribute set MUST NOT be announced if by a sender whose Role is Complex and the prefix Role is Customer or Peer

e Only to Customer
Same as iOTC but leaked

1. If eOTC is not set and the sender's Role is Provider or Peer, the eOTC attribute MUST be added with value equal to the sender's AS number
2. If eOTC is not set and the sender's Role is Complex and the prefix role is Provider or Peer, the eOTC attribute MUST be added with value equal to to the sender's AS number

3. If eOTC is set, the receiver's Role is Provider or Peer, and its value is not the neighbor's AS number then the incoming route is route leak and MUST be given a lower local preference, or MAY be dropped
4. If eOTC is set, the receiver's Role is Complex, the prefix role Role is Provider or Peer, and the eOTC value is not equal to the neighbor's AS number, then the incoming route is a route leak and MUST be given a lower local preference, or they MAY be dropped.

Fun Things to Argue

- Complex is well named. And it makes the relationship unenforced.
- What is the difference between Complex and no BGP Open Role setting?

- Do we need eOTC which propagates, or will one non-propagating bit be enough?