Constrain Attribute Announcement within BGP
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Motivation

- Currently there is no mechanism to scope the announcements of optional attributes
- The only possible way to filter attributes within BGP are:
  - Unrecognized Optional non-transitive attributes
  - Error Handling filters malformed attributes
  - Attribute Specific rules to ensure their scope (Local Pref)
- Need for scoping attributes (atleast) at:
  - Confed Boundary
  - AS Boundary
  - At Multi-AS administration boundary
Use Case

- **BGP Tunnel Encap attribute**
  - Defined in ietf-idr-tunnel-encaps
  - Scope the Tunnel attribute announcements

- **BGP Nexthop Capabilities Attribute**
  - Defined in draft-decraene-idr-next-hop-capability-01
  - Optional Non Transitive Attribute defines Nexthop’s capabilities

- **BGP Timestamp Attribute**
  - Defined in draft-litkowski-idr-bgp-timestamp-02
  - Carries Timestamps for a given NLRI for each BGP speaker the NLRI traverses

- Any new attributes defined in future.....
Solution

- No use of Capability
  - Adds complexity to protocol

- Modify the attribute format for all unassigned attributes
  - Reserve first 4 bytes of the attribute data field as Path Attribute flags

- Define 2 new Path Attribute flags:
  - A AS Wide Scope 1\textsuperscript{st} bit
  - C Member-AS in Confederation Scope 2\textsuperscript{nd} bit
  - M Multi-AS Scope 1\textsuperscript{st} and 2\textsuperscript{nd} bit

- In order to preserve the bits Multi-AS scope is enabled when 1\textsuperscript{st} and 2\textsuperscript{nd} bits are both turned on!

- Reserve IANA space for new attributes so that implementations modify the attribute code to reserve first 4 bytes as flags field
Solution - Rules

- A, C OR M Bits require Optional flag to be set (i.e. attribute be of type Optional)

- Filtering based on bits must be enforced when a BGP speaker receives or originates a route

- Requires implementation to enforce Enhance Error handling rules for attributes
  - Malformed attributes having impact on route selection or route installation should enforce “treat-as-withdraw” procedure
  - Other Malformed attributes should enforce “attribute-discard” procedure
Status

- 00 version presented at IETF 94
- Draft is a WG document
- Draft in fairly decent shape
- Awaiting Implementations
Thank you