BGP Route Policy and Attribute Trace Using BMP

draft-xu-grow-bmp-route-policy-attr-trace-03

Feng Xu, Tencent
Thomas Graf Swisscom
Yunan Gu, Shunwan Zhuang, Zhenbin Li, Huawei

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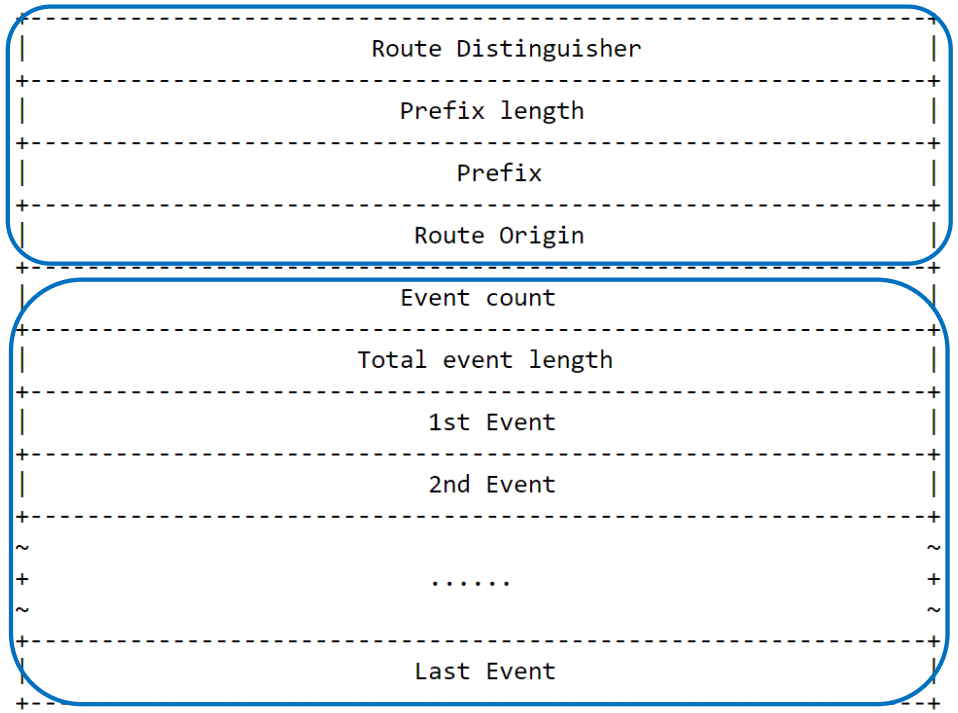
Recap

- Changes to version-02
  - Pack all policy related information into “Policy TLV”
    - New flags defined
    - “Policy node/item ID” becomes fixed length
  - Rename “Previous hop” to “Route Origin”
  - Rename “VRF/Table name TLV” to “VRF/Table TLV”
  - Make “VRF/Table TLV” optional
  - Add “VRF/Table ID” to the “VRF/Table TLV”
  - Rename “Optional string TLV” to “String TLV”, add new usage example
  - New “Policy Classification Type” defined

BMP RoFT Message

Prefix information

Events



Event index

Timestamp

Path ID

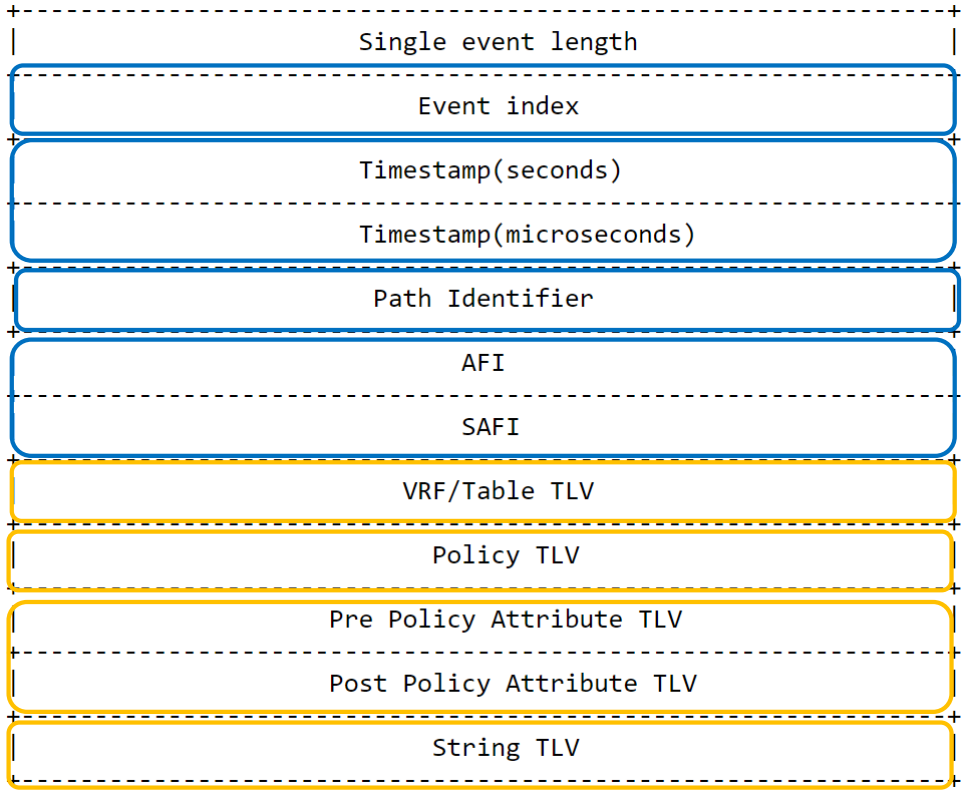
AFI/SAFI

Table TLV

Policy TLV

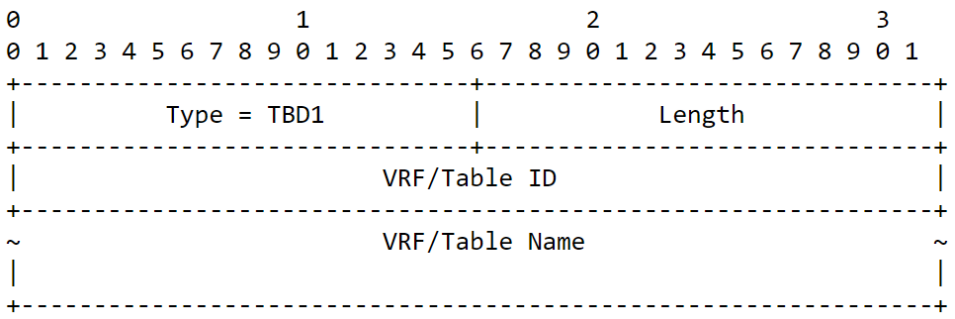
Attribute TLVs

String TLV



TLVs

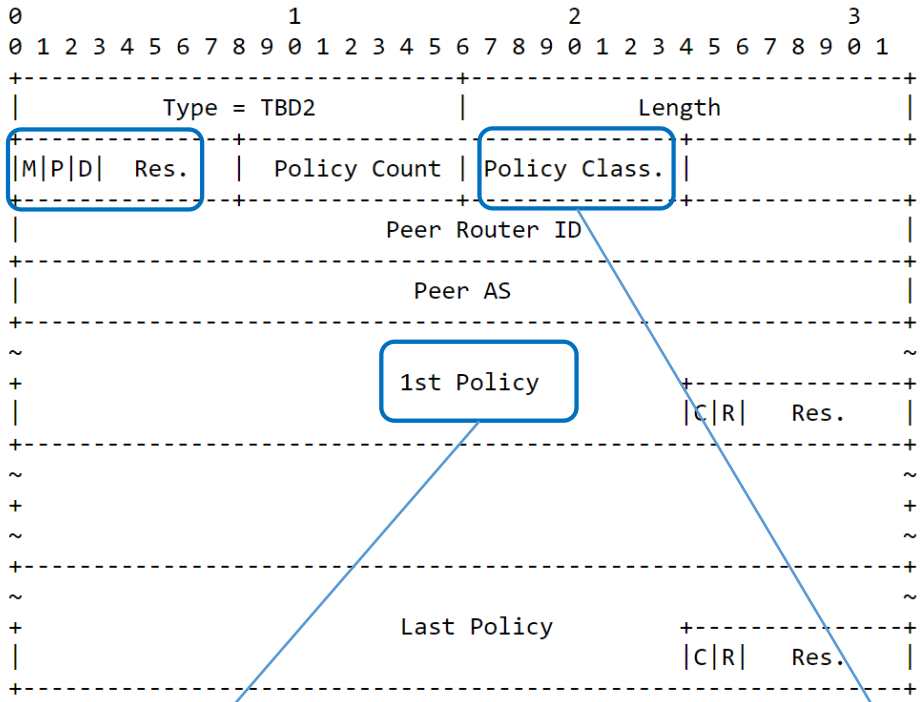
- VRF/Table TLV
- Policy TLV
- Pre-policy attribute TLV
- Post-policy attribute TLV
- String TLV

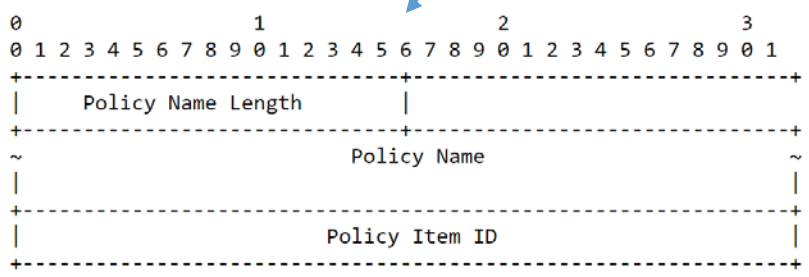


TLVs

- VRF/Table TLV
- Policy TLV
- Pre-policy attribute TLV
- Post-policy attribute TLV
- String TLV

M: match/mismatch
P: permit/deny
D: difference or not

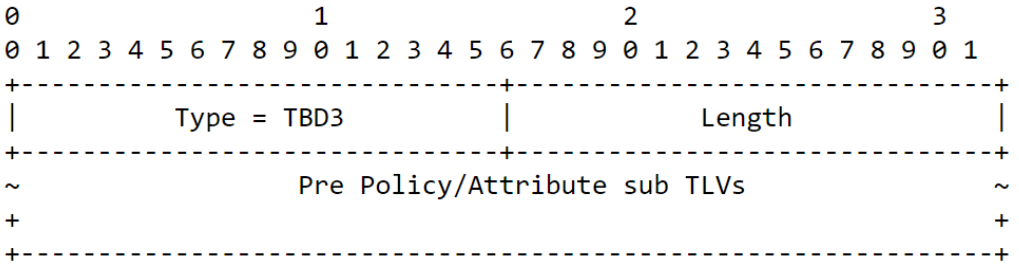


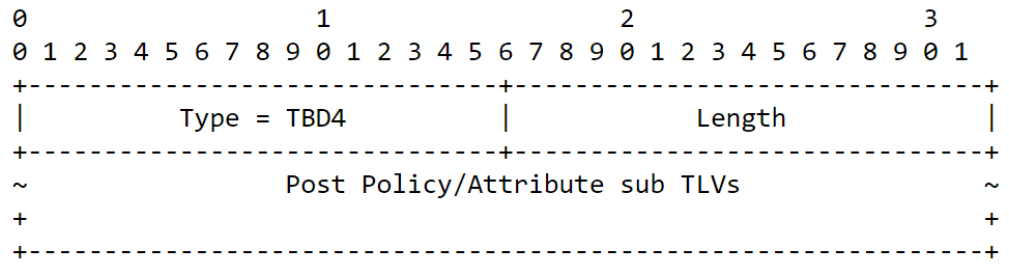


Value	Policy Classification
00000000	Inbound policy
00000001	Outbound policy
00000010	Multi-protocol Redistribute
00000011	Cross-VRF Redistribute
00000100	VRF import
00000101	VRF export
00000110	Network
00000111	Aggregation
00001000	Route Withdraw

TLVs

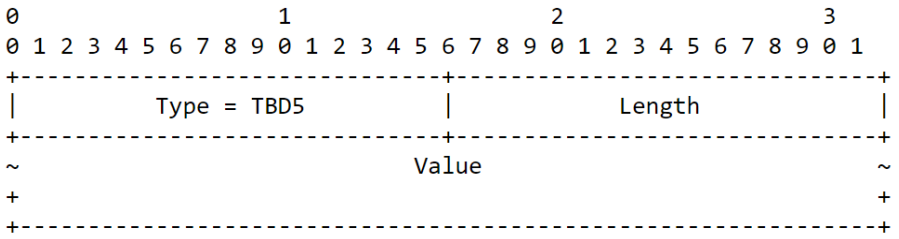
- VRF/Table TLV
- Policy TLV
- Pre-policy attribute TLV
- Post-policy attribute TLV
- String TLV





TLVs

- VRF/Table TLV
- Policy TLV
- Pre-policy attribute TLV
- Post-policy attribute TLV
- String TLV
  - Example usage: xpath of bgp yang and routing policy yang models



Next steps

- The future direction
  - Comprehensively formatted for a general purpose troubleshooting/validation?
  - Compactly formatted for a couple of specific use cases?
- We appreciate feedbacks
  - Future direction
  - Possible use cases
  - Format refinement suggestions

BMP for BGP Route Leak Detection

draft-gu-grow-bmp-route-leak-detection-03

Yunan Gu, Huawei

Huanan Chen, China Telecom

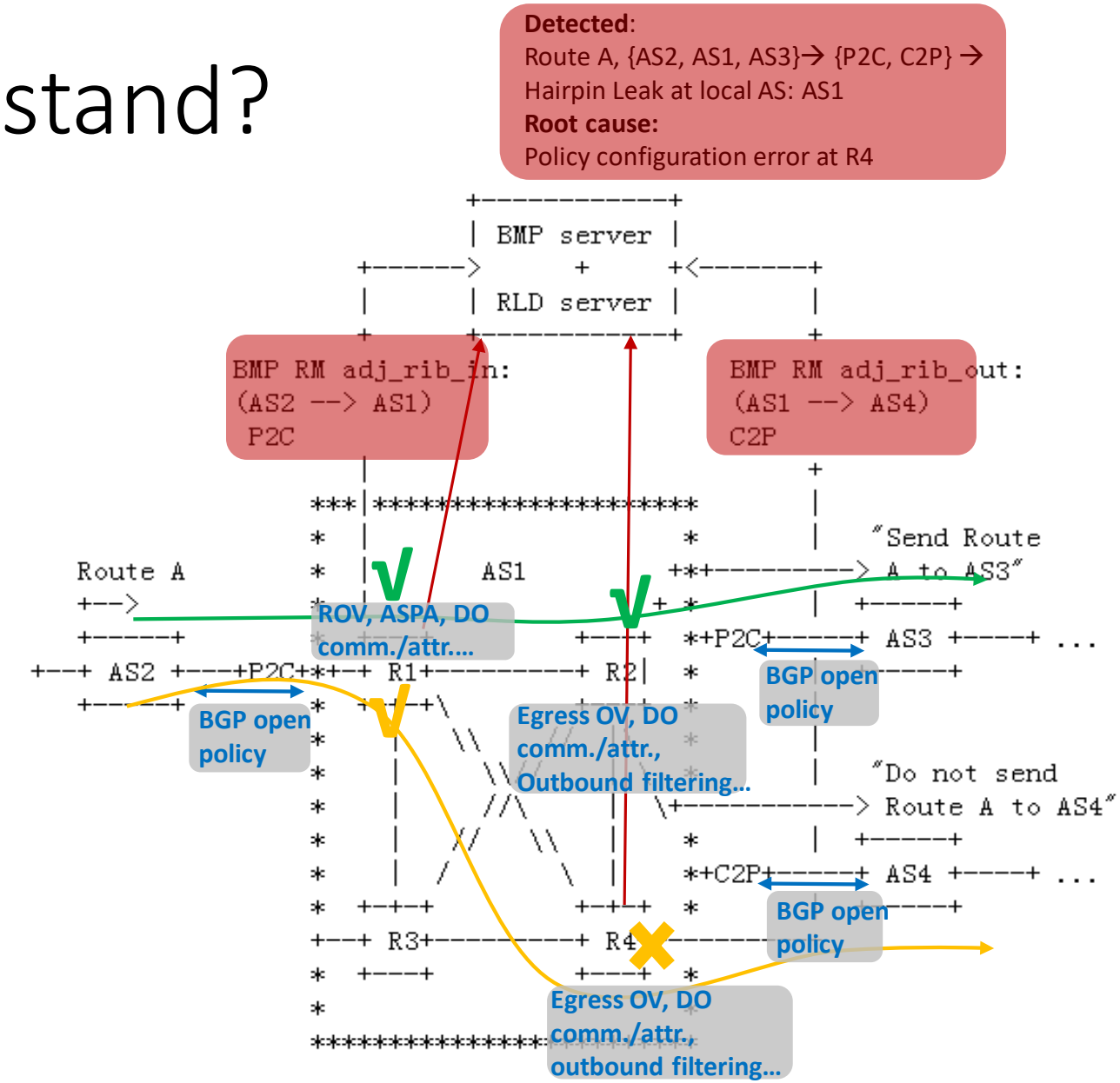
Di Ma, ZDNS

Shunwan Zhuang, Zhenbin Li, Huawei

2019/11/20

Where does this draft stand?

- Target issue
  - **Egress ASBR (R4)** inbound/local/outbound route policy configuration error
- For **local-AS** (not upstream/downstream) **leak detection**
  - Route leak prevention
    - Inbound/outbound prefix/peer/AS filtering policies
  - **Route leak detection**
    - **Intra-AS: peering relation analysis of ingress + egress nodes within an AS**
    - Inter-AS: peering relation analysis of upstream ASes
  - Route leak mitigation
    - Reject or reduce priority of invalid routes
- Deployment consideration
  - Single ISP deployable
  - No third-party DB required, e.g., ROA, ASPA DB
  - Route-level peering relations representation
  - Could be in complementary to RLP, ASPA verification, ROV, and so on



Draft Updates

- Version 00:
  - Stated the issue, and proposes BMP as solution, no extension format defined
- Version 01:
  - BMP extension format defined
  - New co-author (Huanan Chen) added
- Version 02:
  - BMP extension format change
    - Relationship TLV format change
  - New co-author (Di Ma) added
- Version 03:
  - Describe the draft position
  - BMP extension format change
    - Rename peering relation TLV → RLD TLV

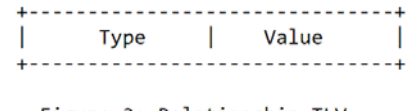


Figure 3: Relationship TLV

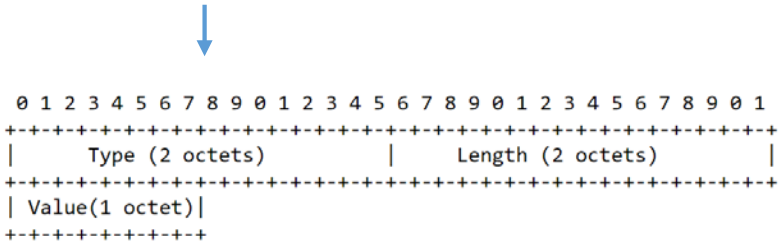


Figure 3: Relationship TLV

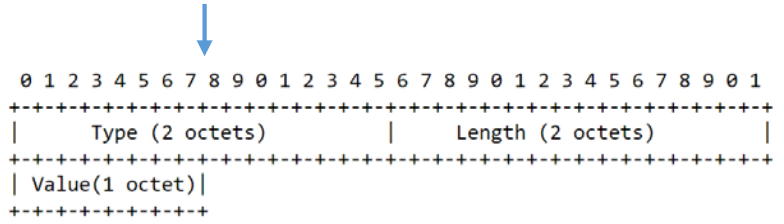


Figure 1: RLD TLV

Value	Business Relationship
0	P2C
1	C2P
2	P2P
3	I2I

Table 1: Business relationship value

Next steps

- Questions to the WG
  - Is the target use case scenario (detection of egress filtering error) a real need?
  - Is BMP an adorable way for this issue?
  - Should we do session-level or prefix-level peering relationship monitoring?
    - If session-level,
      - the BMP Peer-Up Message is sufficient (with BGP open policy), no extension required for BMP
      - Can not accommodate complex relations
    - If prefix-level,
      - The BMP RLD TLV is used
      - Regarding how to get the prefix-level peering relationship, is it in or out of the scope of this draft?
- We’d like feedbacks from the WG and work on refinements

Enhanced AS-Loop Detection for BGP

draft-chen-grow-enhanced-as-loop-detection-03

Huanan Chen, China Telecom
Di Ma, ZDNS
Yunan Gu, Shunwan Zhuang, Haibo Wang, Huawei

Nov. 21, 2019

Changes to verion-02

- Two options defined for both inbound and outbound enhancement
  - Option 1: Analyze the routes with AS loop based on local database.
  - Option 2: Collect the routes with AS loop with BMP and analyze them at the remote controller/server.

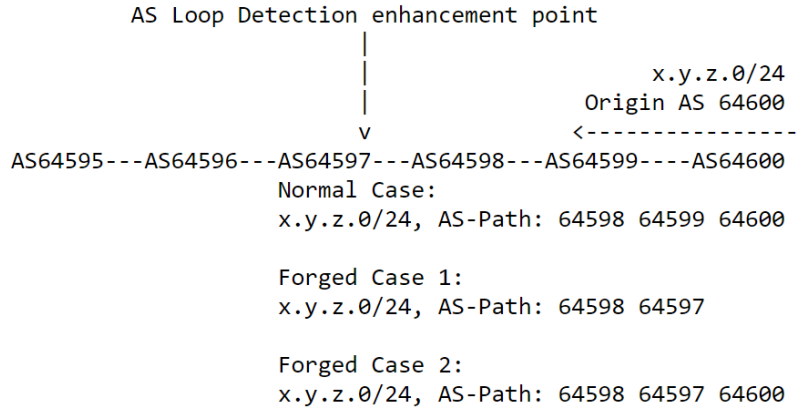


Figure 1: BGP Inbound Route Processing

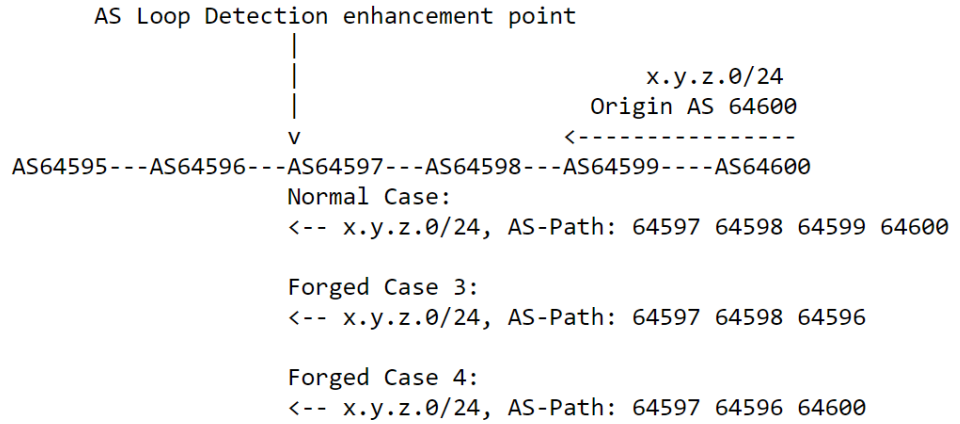
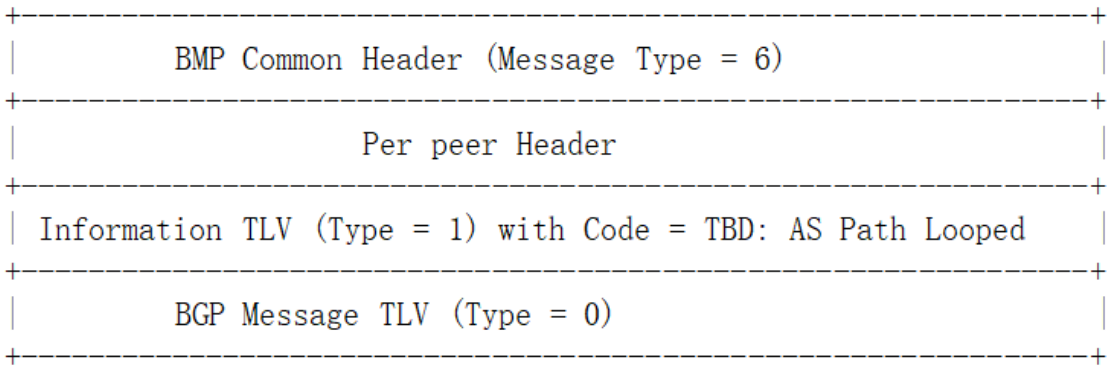


Figure 2: BGP Outbound Route Processing

Option 2: BMP extension

- Per RFC7854, Route Mirroring messages can be used to mirror the messages that have been treated-as-withdraw [RFC7606], for debugging purposes. This document defines a new code type for Type 1 Information TLV:
  - Code = TBD: AS Loop Detected. An AS loop is detected for the BGP route. A BGP Message TLV MUST also occur in the TLV list.



Next steps

- New use cases to be identified

I made it! Finally!