BGP Route Policy and Attribute Trace Using BMP

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

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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

Prefix length
Prefix
Route Origin

Event count
Total event length
1st Event
2nd Event
.....
Last Event

Event index

Single event length
Event index

Timestamp

Timestamp(seconds)
Timestamp(microseconds)

Path ID

Path Identifier

AFI/SAFI

AFI
SAFI

Table TLV

VRF/Table TLV
Policy TLV

Attribute TLVs

Pre Policy Attribute TLV
Post Policy Attribute TLV

String TLV

Policy TLV

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
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

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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

Detected:
Route A, {AS2, AS1, AS3}→ {P2C, C2P}→ Hairpin Leak at local AS: AS1
Root cause:
Policy configuration error at R4
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
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

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Changes to version-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.
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!