# BGP Monitoring Protocol (BMP)

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**NANOG 45**

# Draft Information

- **Draft-ietf-grow-bmp-00.txt**
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# What Is It?

- A way for a monitoring station to get a complete dump of the routes received from a peer or peers (including all peers)

- And to get ongoing updates about all routes received from that peer or peers

- Currently, this information is only available by some variation on "show route" and parsing ASCII ("screen scraping")

- Useful for looking glasses, network analysis, etc.

# Design Goals

- **Simple**
- **Useful**
- **Easy to implement**
- **Non service-affecting (OK, minimally anyway)**

# History

- **Draft-scudder-bmp-00 submitted in 2005**
  - Turned out to be too hard to implement (despite best intentions!)
  - Set aside
- **Renewed interest recently**
  - New approach, provides similar benefits in an implementable fashion
  - Implementation has been done (lab only at present)

# Why Not Use Plain BGP?

- **BGP only provides *best* paths**
  - Implicit withdraws — new advertisement of 10/8 overwrites any previous advertisement of 10/8
  - Fundamental to how BGP (currently) operates (though add-path changes things)
- **BMP provides *all* paths**

# Why Not Use Add-Path?

- **Add-path can provide all paths in principle**
- **But at non-trivial cost in resources on the router**
- **BMP**
  - Can be implemented at (almost) no resource cost,
  - (Almost) non-invasively,
  - Provides time stamps and other convenience hooks for operational (not routing) data,
  - Provides peer down notification (add-path would simply withdraw routes which isn't the same)

# Overview of Operation

- **Router configured with management station identity, list of peers of interest (could be all peers)**
- **Connects to management station, sends initial dump of all routes for those peers**
  - Formatted as BGP UPDATE messages wrapped in a BMP header
- **As peers advertise/withdraw routes, sends additional updates to management station**

# Information Provided

- **In addition to usual BGP UPDATE information, BMP header has**
  - Peer identity (address, BGP Identifier, RD if applicable, AS number)
  - Time stamp (when route or route withdrawal was received, up to microsecond granularity)

# Statistics Reporting

- **Pro-actively report stats of interest**
  - Threshold or timer driven
  - Optional
- **Defined counters:**
  - Prefixes rejected by inbound policy
  - Duplicate prefix advertisements
  - Duplicate withdraws
  - Updates invalidated due to CLUSTER_LIST loop
  - Updates invalidated due to AS_PATH loop
- **Stats message is extensible (TLV) to add new counters**

# Peer Notification

- **Notification message sent when peering session goes down**
- **Includes BGP NOTIFICATION data, if any**

# Characteristics

- **BMP messages are not bit-for-bit clones of received UPDATES**
  - Messages are regenerated according to usual BGP UPDATE generation logic
  - However, data is taken from Adj-RIB-In, not Loc-RIB
- **Implications**
  - Not every received UPDATE will necessarily result in a BMP message being sent
    - During busy times, some UPDATEs might be suppressed if obsoleted by newer UPDATEs
  - However, BMP messages will generally be the same as or very close to received UPDATES
- **BMP *will* converge to the correct set of routes**

# Implementations

- **JUNOS in lab**

```
routing-options bmp {
    station-address <bmp-station-address>;
    station-port <bmp-station-port>;
    stats-timeout <stats-timeout>;
}
```

- **Quagga underway**

# Requested Revisions— Next Version

- **Re-introduce "L" bit**
  - Indicates whether route is pre- or post-policy
- **Peer up indication**
  - For detection of peers which send no routes

# Summary

- **Allows a management station to track routes received from one or more peers**
  - Even routes which are not "best"
- **Updates not "cloned" but regenerated**
- **Also provides some convenience counters**
- **Not suitable for use as a routing protocol**
- **Implementation works in lab**

# Feedback Please!

- **To authors or GROW mailing list <grow@ietf.org>**