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

```plaintext
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>