BGP Neighbor Autodiscovery
draft-xu-idr-neighbor-autodiscovery-01

Xiaohu Xu (Huawei)
Kunyang Bi (Huawei)
Jeff Tantsura (Individual)

IETF98, Chicago
Problem Statement

- BGP is used as IGP in many MSDCs (Massively Scalable Data Centers) (see RFC7938).

- However, BGP is not as good as IGP from the perspective of automation.
  - Connection address and Autonomous System Number (ASN) of each BGP neighbor have to be manually configured.
  - In the case where loopback addresses are used as the connection addresses, static routes to the loopback addresses have to be configured or IGP has to be enabled.
Solution Overview

- This document specifies a BGP neighbor discovery mechanism by borrowing ideas from the LDP [RFC5036].
  - BGP routers automatically discover the connection address and the ASN of their peers through the exchange of the to-be-defined BGP HELLO messages.
  - The BGP session establishment process is triggered once BGP neighbors have been discovered.

- In the case where the connection addresses are loopback addresses, routes towards the loopback addresses are dynamically created.
The BGP HELLO message is a new BGP message which has the same fixed-size BGP header as the exiting BGP messages.

However, the HELLO message MUST be sent as a UDP packet (179 is the suggested port value) to the “all routers on this subnet” multicast address (i.e., 224.0.0.2 in the IPv4 case and FF02::2 in the IPv6 case). The IP source address is set to the address of the interface over which the message is sent out.
In addition to the fixed-size BGP header, the HELLO message contains the following fields:

- **Version**: This 1-octet unsigned integer indicates the protocol version number of the message. The current BGP version number is 4.
- **Hold Time**: Hello hold timer in seconds.
- **Message Length**: This 2-octet unsigned integer specifies the length of the TLVs field in octets.
- **TLVs**: contains ASN TLV, Connection Address TLV and other TLVs.
- **Type**: TBD2.
- **Length**: Specifies the length of the Value field in octets.
- **AS Number**: This variable-length field indicates the 2-octet or 4-octet ASN of the sender.
### Connection Address TLV

<table>
<thead>
<tr>
<th>Type: TBD3</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Address (4-octet or 16-octet)</td>
<td></td>
</tr>
</tbody>
</table>

- **Type:** TBD3
- **Length:** Specifies the length of the Value field in octets.
- **Connection Address:** This variable-length field indicates the local IPv4 or IPv6 address which is used for establishing BGP sessions.
Next Steps

- Comments and suggestions are welcome.