MP-BGP Extension and Procedures for IPv4/IPv6 Mapping Advertisement

Chongfeng Xie(Presenter)  China Telecom
Xing Li  CERNET Center/Tsinghua University
Guozhen Dong  China Telecom
Guoliang Han  Indirection Network Inc.
Zhongfeng Guo  Alibaba Cloud

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Overview

• This document defines MP-BGP extension, i.e. 4map6, and the procedures for IPv4 service delivery in multi-domain IPv6-only underlay network.
• This document was proposed in Jan. 2023, firstly presented in IETF 116, adopted after IETF 118.
MP-BGP Extension in this Document

- A new SAFI is used to identify new 4map6 extension
  - AFI = 2 (IPv6)
  - SAFI = xxx (4map6)
- The new SAFI's NLRI is encoded as:

<table>
<thead>
<tr>
<th>NLRI Length (1 octet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPv6 mapping prefix length (1 octet)</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>IPv6 mapping prefix (0 ... 16 octets)</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>IPv4 address prefix length (1 octet)</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>IPv4 address prefix (0 ... 4 octets)</td>
</tr>
</tbody>
</table>

- The fields of “Forwarding Type(1 octet)” and “Address Origin Type(1 octet)” are encoded in new 4map6 Tunnel TLV in BGP tunnel attribute.
Revisions made since IETF 119(1/2)

• The format of 4map6 Tunnel TLV in section 3.2 is revised by changing the parameters of "Address Origin Type" and "Forwarding Type" into two Sub-TLVs.
  • a) The Address Origin Type Sub-TLV (Type Code yy1)
  • b) The Forwarding Type Sub-TLV (Type Code yy2)

• Utilization of validation rules in RFC9012 for the TLV and Sub-TLV in this case is added.
Revisions made since IETF 119(2/2)

• In section 4.2, the behavior of ingress PE is updated by adding the checking the reachability of mapping refix received in the IPv6 underlay network.

• The section of “IANA considerations” is revised and moved to section 8.

• Several editorial changes.
Next Steps

• System implementation and interworking test

• Comments and suggestions are welcome, and further refinement will be made to improve the document.
Thank you!

Q&A