BGP Extended Community for Virtual Private Wire Service Support in Ethernet VPN
draft-ssm-bess-bgp-ec-evpn-vpws-00

Abstract

This document describes an optional BGP extended community for use in Ethernet VPN (EVPN) Virtual Private Wire Service (VPWS). It helps in avoiding the situation where the EVPN VPWS instance is declared ‘up’ on one side but remains ‘down’ on the other side.

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1. Introduction

In EVPN, a VPWS service instance is identified by a pair of per-EVI Ethernet A-D routes as described in [RFC8214]. Each Provider Edge (PE) node that wants to instantiate a VPWS service instance encodes the VPWS service instance identifier in the 32-bit Ethernet Tag ID field of the per-EVI Ethernet A-D route.

The pair of PEs instantiating a VPWS service instance will each advertise a per-EVI Ethernet A-D route with its VPWS service instance identifier. Each PE is also configured with the other PE’s VPWS service instance identifier. When each PE receives the other PE’s per-EVI Ethernet A-D route with the VPWS service instance identifier of the other PE configured on each PE, the VPWS service instance is instantiated.

However, if the VPWS service identifiers are misconfigured on either of the PEs, it can result in a situation where the EVPN VPWS service instance is declared ‘up’ on one PE but remains ‘down’ on the other PE.

This document describes an optional BGP extended community for use in VPWS that can be used to avoid the above situation.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.
3. Problem Description

Consider a case where PE1 and PE2 wants to instantiate a EVPN VPWS service instance with the following configurations:

- PE1 is configured with Local VPWS service instance identifier (LSI) as 100 and Remote VPWS service instance identifier (RSI) as 200.
- PE2 is configured with LSI as 300 and RSI as 100.

With this setup:

- PE1 will receive the per-EVI Ethernet A-D route from PE2 with Ethernet Tag ID as 300.
- PE2 will receive the per-EVI Ethernet A-D route from PE1 with Ethernet Tag ID as 100.

Though it is a misconfiguration, the EVPN VPWS service instance on PE2 will come up and PE2 will start forwarding traffic towards PE1. However, the EVPN VPWS service instance on PE1 will remain down. This may be undesirable (for example, it can resulting in wastage of network bandwidth).

4. Remote VPWS Instance Identifier Extended Community

This document defines a new transitive extended community [RFC4360] to be included with per-EVI Ethernet A-D routes. This attribute is optional and can be used to avoid the situation described in Section 3.
5. Usage of the Extended Community

Consider the following setup:

```
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PE1</td>
<td>PE2</td>
</tr>
<tr>
<td>(LSI: 100)</td>
<td>(LSI: 200)</td>
</tr>
<tr>
<td>(RSI: 200)</td>
<td>(RSI: 100)</td>
</tr>
</tbody>
</table>
```

Figure 2: Network Topology for EVPN-VPWS

EVPN-VPWS as described in [RFC8214] only exchange LSI value along with local label. In this case PE1 will send a per-EVI Ethernet A-D route with LSI 100 and PE2 will send a per-EVI Ethernet A-D route with LSI 200.

With the extended community described in this document, PE1 sends the per-EVI Ethernet A-D route with LSI 100 and RSI 200 and PE2 sends the per-EVI Ethernet A-D route with LSI 200 and RSI 100.

PE1 upon receiving the per-EVI Ethernet A-D route will bring up the EVPN VPWS service instance only if the LSI and RSI received in the route matches the LSI and RSI configured on PE1. Otherwise, PE1 keeps the EVPN VPWS service instance as down.

6. Security Considerations

The security considerations described in RFC8214 apply to this document.
7. IANA Considerations

This document requests IANA to assign a new EVPN Extended Community of Type 0x06 and Sub-Type TBD:

<table>
<thead>
<tr>
<th>Sub-Type Value</th>
<th>Name</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>Remote VPWS Instance Identifier</td>
<td>This document</td>
</tr>
</tbody>
</table>

8. Acknowledgments

Thanks to Chundu Kotesh Babu and Jiang He for comments and suggestions.

9. Normative References


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