Wide BGP Communities

IETF IDR

draft-raszuk-wide-bgp-communities-00
ftp://ftpeng.cisco.com/raszuk/bgp_wide_comms/
Agenda

• Current Standard BGP Communities

• New encoding proposed to accommodate both 2 octet and 4 octet AS numbers in BGP communities

• Defined new pre defined/registered community values to simplify number of intra-domain and inter-domain operational route tagging and policy communications
Current Standard BGP Communities

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Reserved special values:

- 0x00000000 through 0x0000FFFF
- 0xFFFF0000 through 0xFFFFFFFF

Issues:

- No way to encode 4 octet AS number
- Well known community ranges do not allow for AS specific encoding
Wide BGP Communities

<table>
<thead>
<tr>
<th>0x06 or 0x46</th>
<th>ACTIONS</th>
<th>2 or 4 octet AS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or 4 octet AS number</td>
<td>Community Value</td>
<td></td>
</tr>
</tbody>
</table>

Features:

- Encoding 2 octet or 4 octet AS numbers
- One octet for ACTIONS applicable to registered and operator’s defined communities
- Registered communities allow for flexible AS specific encoding
Wide BGP Communities – Actions

• 0x00 - Default action. No special handling
• 0x01 - Informational Only Support Indicator
• 0x02 - Mandatory
• 0x03..0x7F - Reserved for future registered action extensions
• 0x80..0xFF - Open for operator's own use actions
Registered Wide BGP Communities

• Huge credit to network operators for publishing and so far given feedback on most common BGP community applications of today.

• An attempt to document most of them as well as provide a new IANA Wide BGP Community registry to serve as database for new.

• Your feedback / contribution is very welcome at this point.

General Registered Wide BGP Communities

<table>
<thead>
<tr>
<th>Community Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC_AS:BLACKHOLE</td>
<td>0xB000</td>
</tr>
<tr>
<td>SRC_AS:BLACKHOLE_FROM_PEER</td>
<td>0xB001</td>
</tr>
<tr>
<td>SRC_AS:BLACKHOLE_FROM_UPSTREAM</td>
<td>0xB002</td>
</tr>
<tr>
<td>SRC_AS:SOURCE_BLACKHOLE</td>
<td>0xB003</td>
</tr>
<tr>
<td>SRC_AS:SOURCE_DO_RPF</td>
<td>0xB004</td>
</tr>
<tr>
<td>SRC_AS:HIGHEST_PRIORITY_PREFIX</td>
<td>0xB005</td>
</tr>
<tr>
<td>SRC_AS:ATTACK_TARGET</td>
<td>0xB006</td>
</tr>
<tr>
<td>General_Free_Pool</td>
<td>0xB006..0xB07F</td>
</tr>
</tbody>
</table>
Registered Wide BGP Communities

Advertisement control Registered Wide BGP Communities

**PARAM AS**: NO_ADVERTISE 0xB080
**PARAM AS**: ADVERTISE_TO 0xB081
**SRC AS**: ADVERTISE_NO_PEER 0xB082
**SRC AS**: ADVERTISE_NO_UPSTREAM 0xB083
**SRC AS**: ADVERTISE_NO_CUSTOMER 0xB084
**PARAM AS**: ADVERTISE_TO_SET_NO_EXPORT 0xB085

AS source marking Registered Wide BGP Communities

**SRC AS**: FROM_PEER 0xB100
**SRC AS**: FROM_CUSTOMER 0xB101
**SRC AS**: INTERNAL 0xB102
**SRC AS**: FROM_UPSTREAM 0xB103
**SRC AS**: FROM_IX 0xB104
**PARAM AS**: LEARNED_FROM 0xB105
Registered Wide BGP Communities

Return Path influencing Registered Wide BGP Communities

PARAM\_AS\_PATH\_HINT 0xB180
(Proposal from Brent Sweeny)
PARAM\_AS\_PATH\_NEGATIVE\_HINT 0xB181

AS\_PATH modifying Registered Wide BGP Communities

PARAM\_AS\_REPLACE\_BY 0xB200
PARAM\_AS\_PREPEND\_BY 0xB201..0xB20F
PARAM\_AS\_PREPEND\_TO 0xB211..0xB21F
SRC\_AS\_PREPEND\_UPSTREAM 0xB221..0xB22F
SRC\_AS\_PREPEND\_PEERS 0xB231..0xB23F
SRC\_AS\_PREPEND\_CUSTOMERS 0xB241..0xB24F
Registered Wide BGP Communities

Geographic source marking Registered Wide BGP Communities

SRC_AS:PEER_ROUTE 0xB280..0xB28F
SRC_AS:UPSTREAM_ROUTE 0xB290..0xB29F
SRC_AS:CUSTOMER_ROUTE 0xB2A0..0xB2AF

Each to be marked with predefined global regions:
0xB2.0 - North America
0xB2.1 - Central America
0xB2.2 - South America
0xB2.3 - Europe
0xB2.4 - Asia
0xB2.5 - Japan
0xB2.6 - ANZ
0xB2.7 - Africa
0xB2.8 - Unspecified Region
Registered Wide BGP Communities

Local Preference Registered Wide BGP Communities

SRC_AS:LOCAL_PREF  0xB300..0xB30F

- 0xB300 - Unallocated
- 0xB301 - Decrement Local Pref by 20
- 0xB302 - Decrement Local Pref by 40
- 0xB303 - Decrement Local Pref by 60
- 0xB304 - Decrement Local Pref by 80
- 0xB305 - Decrement Local Pref by 100
- 0xB306 - Increment Local Pref by 20
- 0xB307 - Increment Local Pref by 40
- 0xB308 - Increment Local Pref by 60
- 0xB309 - Increment Local Pref by 80
- 0xB30A - Increment Local Pref by 100
- 0xB30B - Unallocated
Registered Wide BGP Communities

AS_PATH TTL Registered Wide BGP Communities

SRC_AS:AS_PATH_TTL  0xB310..0xB31F

- 0xB310 - Reserved
- 0xB311 - Drop if AS_PATH >= 1
- 0xB312 - Drop if AS_PATH >= 2
- 0xB313 - Drop if AS_PATH >= 3
- 0xB314 - Drop if AS_PATH >= 4
- 0xB315 - Drop if AS_PATH >= 5
- 0xB316 - Drop if AS_PATH >= 6
- 0xB317 - Drop if AS_PATH >= 7
- 0xB318 - Drop if AS_PATH >= 8
- ........................................
- 0xB31F - Drop if AS_PATH >= 15
Question’s are welcome ...

... both on the IDR list as well as off-line to co-authors and contributors of this work.