BGP Community JSON schema

Martin Pels - mpels@ripe.net
What and why?

- JSON structure for defining BGP Communities
- Use cases:
  - Publication (PeeringDB? RPKI?)
  - Parsing (e.g. by looking glasses)
What and why?

- JSON structure for defining BGP Communities
- Use cases:
  - Publication (PeeringDB? RPKI?)
  - Parsing (e.g. by looking glasses)

Example - NLNOG looking glass
# Example - RFC8195

(Use of BGP Large Communities)

<table>
<thead>
<tr>
<th>RFC 8092</th>
<th>this document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Administrator</td>
<td>ASN</td>
</tr>
<tr>
<td>Local Data Part 1</td>
<td>Function</td>
</tr>
<tr>
<td>Local Data Part 2</td>
<td>Parameter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BGP Large Community</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>64497:4:64498</td>
<td>Do not export route to AS 64498</td>
</tr>
<tr>
<td>64497:4:64499</td>
<td>Do not export route to AS 64499</td>
</tr>
<tr>
<td>64497:4:65551</td>
<td>Do not export route to AS 65551</td>
</tr>
</tbody>
</table>

Table 1: Field Mapping

Table 5: Action: ASN NO_EXPORT
Example - RFC8195

large_bgp_community_template [
{
   "name": "RFC8195",
   "description": "RFC8195 large community",
   "fields": [
   {
      "name": "Function",
      "start": 32,
      "length": 32
   },
   {
      "name": "Parameter",
      "start": 64,
      "length": 32
   }
   ]
}
]
Example - RFC8195

large_bgp_community_template [ 
{
   "name": "RFC8195",
   "description": "RFC8195 large community",
   "fields": [
   {
      "name": "Function",
      "start": 32,
      "length": 32
   },
   {
      "name": "Parameter",
      "start": 64,
      "length": 32
   }
   ]
}
]

large_bgp_community [ 
{
   "name": "AS64497 no export to AS65551",
   "template": "RFC8195",
   "asn": 64497,
   "fields": [
   {
      "name": "Function",
      "value": 4
   },
   {
      "name": "Parameter",
      "value": 65551
   }
   ]
}
]
Example - RFC4384
(BGP Communities for Data Collection)

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserved</td>
<td>&lt;AS&gt;:0000000000000000</td>
<td>&lt;AS&gt; is the 16-bit AS</td>
</tr>
<tr>
<td>Customer Routes</td>
<td>&lt;AS&gt;:0000000000000001</td>
<td>&lt;R&gt; is the 5-bit Region Identifier</td>
</tr>
<tr>
<td>Peer Routes</td>
<td>&lt;AS&gt;:0000000000000010</td>
<td>&lt;X&gt; is the 1-bit satellite link indication</td>
</tr>
<tr>
<td>Internal Routes</td>
<td>&lt;AS&gt;:0000000000000011</td>
<td>X = 1 for satellite links, 0 otherwise</td>
</tr>
<tr>
<td>Internal More Specific Routes</td>
<td>&lt;AS&gt;:0000000000000100</td>
<td>&lt;CC&gt; is the 10-bit ISO-3166-2 country code [ISO3166]</td>
</tr>
<tr>
<td>Special Purpose Routes</td>
<td>&lt;AS&gt;:0000000000000101</td>
<td></td>
</tr>
<tr>
<td>Upstream Routes</td>
<td>&lt;AS&gt;:0000000000000110</td>
<td></td>
</tr>
<tr>
<td>Reserved</td>
<td>&lt;AS&gt;:0000000000000111-&lt;AS&gt;:0000011111111111</td>
<td>and &lt;R&gt; takes the values:</td>
</tr>
<tr>
<td>National and Regional Routes</td>
<td>&lt;AS&gt;:0000100000000000-&lt;AS&gt;:1111111111111111</td>
<td>Africa (AF) 00001</td>
</tr>
<tr>
<td>Encoded as</td>
<td>&lt;AS&gt;:&lt;R&gt;&lt;X&gt;&lt;CC&gt;</td>
<td>Oceania (OC) 00010</td>
</tr>
<tr>
<td>Reserved National and Regional values</td>
<td>&lt;AS&gt;:0100000000000000-&lt;AS&gt;:1111111111111111</td>
<td>Asia (AS) 00011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Antarctica (AQ) 00100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Europe (EU) 00101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Latin America/Caribbean Islands (LAC) 00110</td>
</tr>
<tr>
<td></td>
<td></td>
<td>North America (NA) 00111</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserved 01000-11111</td>
</tr>
</tbody>
</table>
Example - RFC4384

bgp_community_template [ 
{
   "name": "Route Origin",
   "description": "RFC4384 route origin community",
   "fields": [ 
   {
      "name": "Region",
      "start": 16,
      "length": 5,
   },
   {
      "name": "Satellite",
      "start": 21,
      "length": 1
   },
   {
      "name": "Country",
      "start": 22,
      "length": 10
   }
] 
} 
]
Example - RFC4384

bgp_community_template [  
  {  
    "name": "Route Origin",  
    "description": "RFC4384 route origin community",  
    "fields": [  
      {  
        "name": "Region",  
        "start": 16,  
        "length": 5,  
      },  
      {  
        "name": "Satellite",  
        "start": 21,  
        "length": 1  
      },  
      {  
        "name": "Country",  
        "start": 22,  
        "length": 10  
      }  
    ]  
  }  
]

bgp_community [  
  {  
    "name": "AS65001 Originated in NL",  
    "template": "Route Origin",  
    "asn": 65001,  
    "fields": [  
      {  
        "name": "Region",  
        "bvalue": 0b00101  
      },  
      {  
        "name": "Satellite",  
        "bvalue": 0b0  
      },  
      {  
        "name": "Country",  
        "bvalue": 0b1000010000  
      }  
    ]  
  }  
]
Questions/comments?

mpels@ripe.net