Extended Experimental Path Attributes

draft-haas-idr-extended-experimental-00
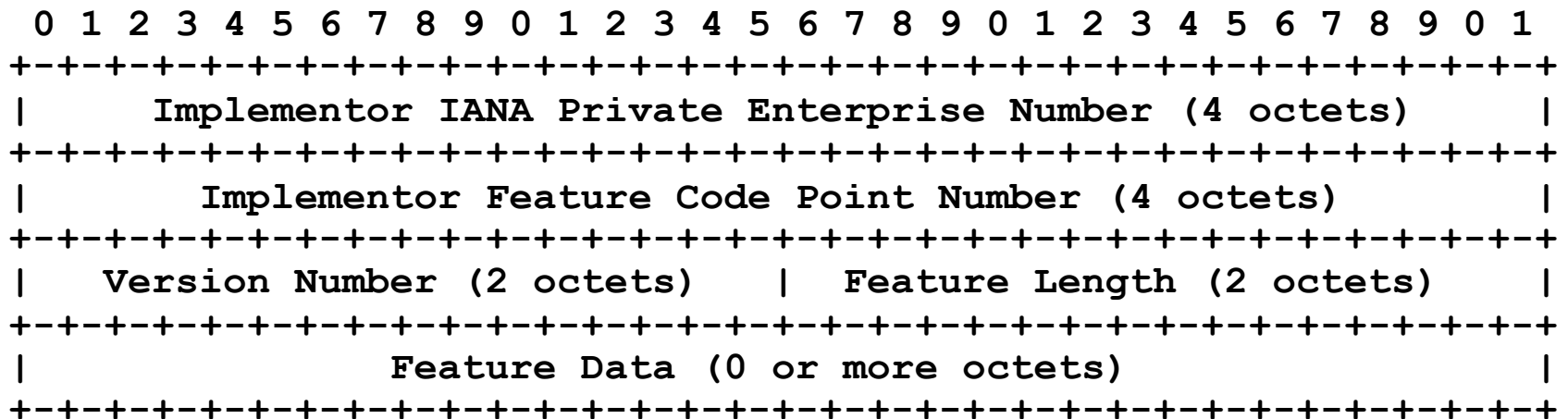
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Problem Statement

- When implementers are working on a BGP feature that requires a Path Attribute code point, how do they test it?

- They must give it a code point to let it work.

- BGP has a single code point, 255, "Reserved for Development".
  - This only lets you run one piece of in-development work at a time.
  - Letting any in-development work leak into the Internet is hazardous at best.
  - Collisions of features tend to be either of entire features, or features that are in development and may be changing their PDU formats.

Extended Experimental Path Attribute

- The general idea is to encapsulate ("tunnel") a future Path Attribute in a way that removes collisions.

- The second general idea is to encourage implementers and early adopters to understand that these early "experiments" WILL BE FILTERED.

Extended Experimental Path Attribute Format

```
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       Implementor IANA Private Enterprise Number (4 octets)   |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|        Implementor Feature Code Point Number (4 octets)       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|    Version Number (2 octets)    |   Feature Length (2 octets)  |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                Feature Data (0 or more octets)                |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Contained in a new Optional-Transitive Path Attribute.

Extended Experimental PDU Contents

- Private Enterprise Number (PEN): Readily available, globally distinguishable.
  - Pedantically, I don't think these are bound to be 32-bits. (q.v. ASN.1)
- Feature Code Point Number: Up to the PEN holder to *manage*.
  - If the implementer is being sloppy with their internal stuff, we can't help them.
  - We also don't want them writing code for the Internet!
- Version Number: Make PDU format changes for the same feature a first-class part of the PDU format to encourage implementors to think about versioning!

- John Scudder correctly observes that PEN+FCN+VN is really just a very long attribute code point.

Filtering is Expected

- The draft recommends that explicit configuration is required to permit the feature to be used.

- And if it's not configured, please strip them.

- And especially do this at your border routers!

Migration to a Supported Code Point

- The intention of this feature is to NOT supplant actual assigned Path Attributes.
  - Implementations that are stable should get them allocated via standards policies.
  - Once a Path Attribute code is assigned, it's reasonable to import the value from PEN+FCN+VN for a transitional period. However, keeping data active in two places is a recipe for headaches. See RFC 4893. ☺

Discussion Point: Private BGP Features

- This feature was initially proposed for development work.
- If the filtering restrictions were not so severe, it's possible to leverage this for "private" features.
  - This changes the "social contract" of globally visible BGP.
  - If you don't understand something, should it really be present in the global table?
- If route and attribute filtering were better by default, the game changes:
  - Several recent code point squatting incidents are because internal/VPN features are leaking into the global table.
  - BGP for DC environments pushes this envelope harder as feature utilized for DC in modified open source BGP has the possibility of getting leaked into the global table.

What Next?

- Is this something the Working Group wants to take on?

- More list discussion to help close scoping considerations for the feature?

- Widen the discussion to other BGP using groups such as BESS?

Discussion?