Generic-Metric For AIGP
draft-ssangli-idr-bgp-generic-metric-aigp

IETF 111

Srihari Sangli, Juniper Networks
Shraddha Hegde, Juniper Networks
Reshma Das, Juniper Networks
Bruno Decraene, Orange
Agenda

- draft-ssangli-idr-bgp-generic-metric-aigp
  - Problem statement
  - Interpretations from RFC 7311
  - Generic-Metric TLV
  - BGP Best Path Selection
  - Example
Problem Statement

• The IGP metric has evolved:
  ● IGP default Cost, latency, bandwidth etc
• AIGP currently only supports IGP default cost
• We propose the extension of AIGP attribute to carry Generic-Metric TLV
• New metric-type field maps to the IGP metric-type registry, making translation between IGP to BGP easier
Interpretation from RFC 7311

- AIGP Attribute contain no more than one AIGP TLV. Any other AIGP TLV must be passed along.
  - All other TLVs (type 2 or 3) must be passed

- AIGP TLV is not malformed if it has more than one TLV of a type or unknown type.
  - If TLV is recognized, process and update it.
  - If TLV is unrecognized, how should it be processed.
Generic-Metric TLV

Figure 2: Generic-Metric TLV

Generic-Metric TLV Type (1 octet): Code point to be assigned by IANA

Generic-Metric TLV Length (2 octets): 12

Generic-Metric TLV Value (9 octets): 2 sub-fields as shown below:

1. metric-type (1 octet): Value from IGP metric-type registry.

2. metric-value (8 octets): Value range (0 - 0xffffffffffffffff)
Usage Of Generic-Metric TLV

- **Originator:**
  - Same as RFC7311
    - Advertised only if AIGP attribute is enabled
    - If the domain uses other metric than IGP cost, use Generic Metric TLV.

- **Receiver:**
  - metric-type matches, use the received value
  - metric-type differs, normalize the value to received metric-type
  - Generic-Metric TLV is not recognized, ignore
Updates to Best Path Decision

- Generic Metric TLV is preferred over AIGP TLV
  - Drop routes without Generic Metric TLV
- Route R has Generic Metric-value = T
  - Metric type matches
    - Compute $C = T + n$ (Metric to reach NH)
  - Metric type doesn’t match
    - Compute $C = T + m$ (Normalize value to metric type)
- Consider routes tied with lowest value of $C$
- Among two routes that have Generic-Metric, prefer the lowest metric-type.
Example

- Domain 4 and Domain 3 uses delay metric
- Domain 2 and Domain 1 uses igp-metric
- When advertising ASBR41 and ASBR 42 originate Generic-Metric TLV, with metric-type as delay (1).
- The metric type is set by the originator
Other Requirements

- If receiver node does not understand the Generic-Metric TLV in the AIGP attribute:
  - Process the AIGP as per RFC7311
  - When advertising, it should also pass the Generic-Metric TLV. [RFC7311]
COMMENTS WELCOME
Thank you