Extension to Purge Initiator Identification TLV for ISIS in TRILL
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Abstract

This memo specified an extension of ISIS TLV for identifying purge initiator in TRILL environments. With the extension, it’s beneficial for operators to nail down the root cause when there is a corrupted LSP spread within a layer-2 network. The defined TLV is expected to record the system ID, Nickname and impacted VLAN information. RBridge should propagate the TLV information without changes in order to flood the information.

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1. Introduction

It’s a increasing demand to build a flexible layer 2 network within a data center network. TRILL was created to provide optimum point-to-point forwarding automatically by performing layer 2 customer bridging with ISIS link state routing. Multi-pathing has been supported for both unicast and multi-destination traffic through extension of ISIS in TRILL contexts. It’s required that TRILL implements a separate IS-IS instance from any used by Layer 3, that is, different from the one used by routers.[RFC6325]. Layer 3 IS-IS frames must be distinguished from TRILL IS-IS frames even when those Layer 3 IS-IS frames are transiting an RBridge campus.

[ RFC6232 ] specified Purge Originator Identification (POI) TLV for Layer 3 IS-IS frames, which could provide significant signals to facilitate trouble-shooting. Some of TRILL specific extension of TLV have been defined in [ RFC6165 ] [ RFC6326 ]. It’s desirable to make Layer 2 IS-IS to be able to identify the purge initiator with a distinct indicator compared to POI. In addition, several identification information has been introduced in TRILL protocol, e.g. nickname of RBridge and VLAN. Those information is likely useful to identify the corrupted source in a large layer 2 network. It’s worthwhile to map those Layer 3 feature into Layer 2. This memo specified the extension of ISIS TLV for identifying purge initiator in TRILL environments. With the extension, it’s beneficial for operators to nail down the root cause when there is a corrupted LSP spread within a layer-2 network. The defined TLV is expected to record the system ID, Nickname and impacted VLAN information. RBridge should propagate the TLV information without changes in order to flood the information.

2. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

3. The Purge Initiator Identification TLV

In order to trace the source of purge, the document defined the Purge Initiator Identification (PII) TLV for Layer 2 ISIS system. If an RBridge receives a corrupted LSP and generates purge message, it SHOULD include this TLV with its own system ID, nickname and optional VLAN information. If an RBridge receives a purge that does not include this TLV, then it SHOULD add this TLV with both its own system ID, nickname, optional VLAN and the system ID of the RBridge that it received the purge from. This allows RBridges receiving
purges to log the identification of the initiator. This makes it much easier for the network administrator to locate the origin of the purge and thus the cause of the purge.

The PII TLV is ISIS TLV type 146 and has the following format:

```
+-------------------+
| Type= PII     |                  (1 byte)
+-------------------+
|   Length      |                  (1 byte)
+-------------------+
|   RESV |      VLAN-ID          |  (2 bytes)
+-------------------+
|   Value       |                  (2 bytes)
+-------------------+
|   Nickname                    |  (2 bytes)
+-------------------+
|                          SystemID (1)       (7 bytes             |
+-------------------+
               .................                           |
+-------------------+...
```

- Type: TLV Type, set to 146 (PII).
- LENGTH - total length of the value field.
- RESV: (4 bits) MUST be sent as zero and ignored on receipt.(optional)
- VLAN-ID: This carries a 12-bit VLAN identifier that is to identify PII is relevant to a specific VLAN.(optional)
- Value: Number of entity information(including System ID and Nickname) carried in this TLV (1 octet) -- only the values 1 and 2 are defined.
- Nickname: If Value is set to 1, Nickname of the Intermediate System that inserted this TLV has been included. If Value is set to 2, Nickname of the Intermediate System from which the purge was received have also been included (optional).
- System ID: If Value is set to 1, System ID of the Intermediate System that inserted this TLV has been included. If Value is set to 2, System ID of the Intermediate System from which the purge was received have also been included (optional).
4. Security Considerations

For general TRILL protocol security considerations, see the TRILL base protocol standard [RFC6325]. IS-IS security may be used to secure the IS-IS messages discussed here. In that case, some of considerations could be found in [RFC6232]

5. IANA Considerations

IANA has assigned code point 146 for the 'Purge Initiator Identification' TLV from the IS-IS 'TLV Codepoints' registry. The additional values for this TLV should be IIH:n, LSP:y, SNP:n.

6. Normative References


Author’s Address

Gang Chen
China Mobile
53A, Xibianmennei Ave.,
Xuanwu District,
Beijing 100053
China

Email: phdgang@gmail.com