New TLV for Purge Packet in ISIS
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Abstract

At present the purge packet does not contain information of source router generating purge packets, so under the circumstance of route oscillation, it is difficult to locate the router closest to the point of failure that receives the LSP.

In this draft, it is proposed to add a new TLV for purge packet in which the system ID of source router is included. The TLVs are not changed in purge packets sent by other routers. When there is a network failure and purge packets are sent by routers, it is easy to locate the point of failure.

1. Introduction

ISIS [RFC1195] routing protocol has been widely used large-scale IP networks because of its strong scalability and fast speed of convergence. ISIS is a kind of link-state routing protocols by flooding the LSP to advertise route network widely.

When router A receives a LSP from router B, if the LSP is damaged, which may be caused by router B or the link between them, router A will remove routes to the router B. Then, router A generates purge packet and floods it to the whole network. The purge message informs other routers in the whole network that the LSP is wrong and the route to router B is not reachable. Other routers receiving the purge messages will do the same operation: deleting the route and flooding the purge packet. The route will be recovered until router B generates a new LSP packet to inform the whole network.

2. Current Purge Packet and Its Problems

If under the environment that a router is abnormal, quick update method can is helpful to update routes rapidly. Unfortunately, sometimes LSPs may be damaged by some reasons even though the routers are under normal conditions, for example when QoS of transport network is downgraded.

In this case, purge packets will be generated by the router receiving the damaged LSP and flooded to the whole network. After receiving a
purge packet, the source router sending the LSP will send out a packet to inform that there is no problem with the route. These packets may result in deleting and adding routes frequently, which lead to network route oscillation. At this time, it is very difficult to locate which router is the first router generating the purge packet, so it may take much time to make route stable.

In order not to cause route oscillation, it is also defined in ISIS that when routers receive a damaged LSP packet, it should be discarded without deleting route, not producing purge packets. Obviously when there is something wrong with source router, the following datagrams going through the links will be damaged or dropped.

3. New TLV in Purge Packet

This draft proposes a new TLV for purge packet, which carries the system ID of source router generating purge packet.

The new TLV is:

CODE - XX (to be assigned)

LENGTH - total length of the value field.

VALUE - System ID of Intermediate System which generates the first Purge packet

When other routers generating new Purge packets, the TLV should be included in these packets and unchanged. So, it is easy to locate the router receiving the damaged LSP.

4. Security Considerations

The suggestions in this document will not cause extra new security concerns.

5. IANA Considerations

This document defines the following new TLV type, which has already been reflected in the IANA TLV code-point registry:

<table>
<thead>
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<th>Name</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Wei</td>
<td>April 2010</td>
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</tbody>
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6. Technical merits


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