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OSPF Abnormal State Information

Abstract

This document describes a couple of options for an OSPF router to advertise its abnormal state information in a routing domain.

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1. Introduction

There may be some states that are not normal in an OSPF router, which include the state that a link state advertisement (LSA) stays in a retransmission list on the router for more than a given time period such as more than hello dead interval, and may include the state that a database description (DD) packet does not get acknowledged for a given period of time.

If a link state advertisement (LSA) with a topology change in a router can not get through over an OSPF interface for a given time period, some of the routers in the routing domain may have different view of the real network topology, thus routing loops may occur and some traffic may get dropped.

It is useful for an OSPF router in a routing domain to advertise its abnormal state information to other routers, or notify some systems such as an event management or monitoring system for its abnormal state.

This document describes a couple of options for an OSPF router to advertise its abnormal state information in a routing domain.

2. Terminology

This document uses terminologies defined in RFC 4970, RFC 2328, and RFC 2740.

Type:

A 2-octet field set to 1.

Length: A 2-octet field that indicates the length of the value portion in octets and will be the total number of octets that state information sub-TLVs use.

Value: A variable length sequence of router state information sub-TLVs.

The format of the Router State Information LSA retransmission time sub-TLV is as follows:

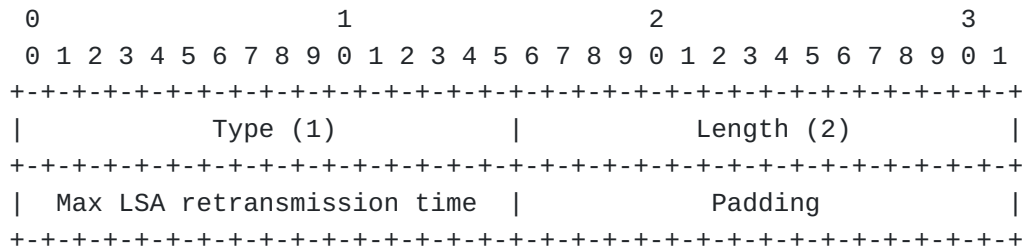


Figure 4: Retransmission Time Sub-TLV

Type: A 2-octet field set to 1.

Length: A 2-octet field that indicates the length of the value portion in octets and will be 2.

Value: A 2-octet field set to the current maximum time (in seconds) that an LSA stays in a retransmission list in a router.

The format of the sub-TLV for the maximum time that a Database Description packet is not acknowledged is illustrated below.

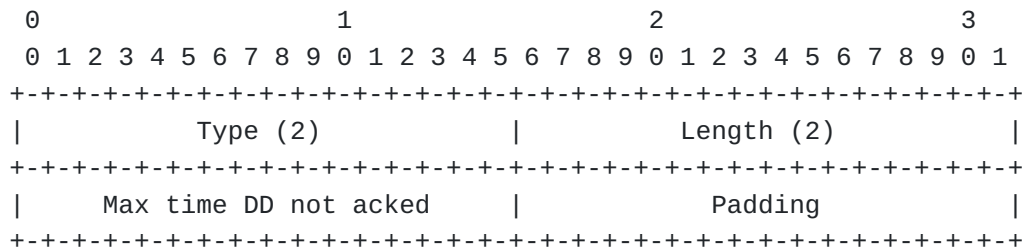


Figure 5: Maximum DD Time Sub-TLV

Type: A 2-octet field set to 2.

Length: A 2-octet field that indicates the length of the value portion in octets and will be 2.

Value:

A 2-octet field set to the current maximum time (in seconds) for which a DD packet is not acknowledged in a router.

5. Attach RSI TLV to Router Information LSA

Instead of using a Router State Information LSA to advertise the abnormal state information for a router, we may use the existing Router Information LSA defined in RFC 4970 to advertise the state information through adding the Router State Information (RSI) TLV into the Router Information LSA.

When a Router State Information (RSI) TLV is put into a Router Information LSA, the type of the TLV may be different from the one mentioned in the section above.

6. Notify Other Systems

An OSPF router may also notify other systems such as an event management system about its abnormal state when the abnormal state occurs in the router.

7. Security Considerations

The mechanism described in this document does not raise any new security issues for the OSPF protocols.

8. IANA Considerations

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9. Acknowledgement

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