

Internet Engineering Task Force  
Internet-Draft  
Intended status: Standards Track  
Expires: 26 February 2022

H. Chen  
Futurewei  
25 August 2021

OSPF Abnormal State Information  
draft-chen-ospf-abnormal-state-info-06

## Abstract

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

## Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 26 February 2022.

## Copyright Notice

Copyright (c) 2021 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the [Trust Legal Provisions](#) and are provided without warranty as described in the Simplified BSD License.

## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Terminology . . . . .	<a href="#">2</a>
<a href="#">3.</a>	Conventions Used in This Document . . . . .	<a href="#">3</a>
<a href="#">4.</a>	OSPF Router State Information LSA . . . . .	<a href="#">3</a>
<a href="#">4.1.</a>	OSPFv2 Router State Information (RSI) Opaque LSA . . . . .	<a href="#">3</a>
<a href="#">4.2.</a>	OSPFv3 Router State Information (RSI) Opaque LSA . . . . .	<a href="#">4</a>
<a href="#">4.3.</a>	OSPF Router State Information (RSI) TLV . . . . .	<a href="#">4</a>
<a href="#">5.</a>	Attach RSI TLV to Router Information LSA . . . . .	<a href="#">6</a>
<a href="#">6.</a>	Notify Other Systems . . . . .	<a href="#">6</a>
<a href="#">7.</a>	Security Considerations . . . . .	<a href="#">6</a>
<a href="#">8.</a>	IANA Considerations . . . . .	<a href="#">6</a>
<a href="#">9.</a>	Acknowledgement . . . . .	<a href="#">6</a>
<a href="#">10.</a>	References . . . . .	<a href="#">6</a>
<a href="#">10.1.</a>	Normative References . . . . .	<a href="#">6</a>
<a href="#">10.2.</a>	Informative References . . . . .	<a href="#">7</a>
	Author's Address . . . . .	<a href="#">7</a>

[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](#).

Chen

Expires 26 February 2022

[Page 2]

Internet-Draft

OSPF Abnormal State

August 2021

### [3.](#) Conventions Used in This Document

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](#).

### [4.](#) OSPF Router State Information LSA

OSPF routers MAY advertise their state information in a area-scoped or AS-scoped router state information LSA with a router state information TLV.

#### [4.1.](#) OSPFv2 Router State Information (RSI) Opaque LSA

OSPFv2 routers will advertise an area-scoped or AS-scoped Router State Information Opaque-LSA [[RFC 2370](#)], which has an Opaque type of 5 and Opaque ID of 0.

The RSI LSA will be originated initially by an OSPF router when an OSPF instance is created and re-originated in every refresh interval (LSRefreshTime) with the current state information of the router. When the current state information changes, the RSI LSA will also be originated.

0										1										2										3									
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								
LS age										Options										10/11																			
5										0																													
Advertising Router																																							
LS sequence number																																							



The format of the Router State Information TLV is as follows:

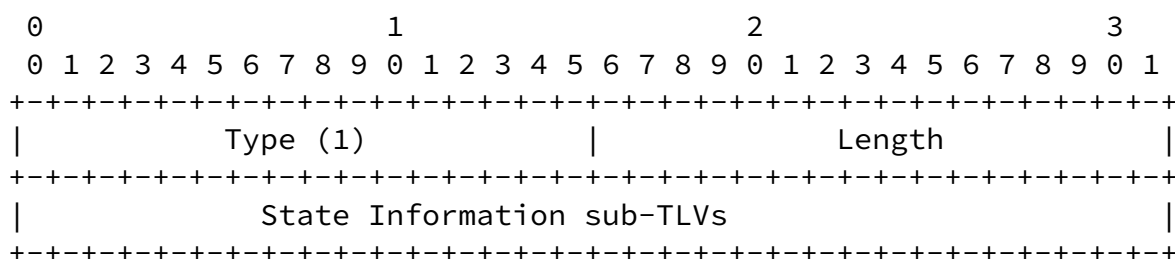


Figure 3: Router State Information TLV

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 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:

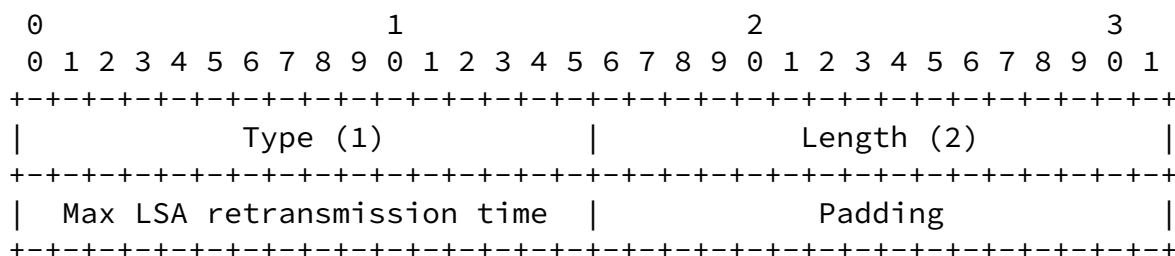


Figure 4: Retransmission Time Sub-TLV

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.



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

tb

## 9. Acknowledgement

The author would like to thank people for their valuable comments on this draft.

## 10. References

### 10.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC2328] Moy, J., "OSPF Version 2", STD 54, [RFC 2328](#), DOI 10.17487/RFC2328, April 1998, <<https://www.rfc-editor.org/info/rfc2328>>.
- [RFC2370] Coltun, R., "The OSPF Opaque LSA Option", [RFC 2370](#), DOI 10.17487/RFC2370, July 1998, <<https://www.rfc-editor.org/info/rfc2370>>.

- [RFC2740] Coltun, R., Ferguson, D., and J. Moy, "OSPF for IPv6", [RFC 2740](#), DOI 10.17487/RFC2740, December 1999, <<https://www.rfc-editor.org/info/rfc2740>>.
- [RFC3630] Katz, D., Kompella, K., and D. Yeung, "Traffic Engineering (TE) Extensions to OSPF Version 2", [RFC 3630](#), DOI 10.17487/RFC3630, September 2003, <<https://www.rfc-editor.org/info/rfc3630>>.

- [RFC4970] Lindem, A., Ed., Shen, N., Vasseur, JP., Aggarwal, R., and S. Shaffer, "Extensions to OSPF for Advertising Optional Router Capabilities", [RFC 4970](#), DOI 10.17487/RFC4970, July 2007, <<https://www.rfc-editor.org/info/rfc4970>>.

## [10.2.](#) Informative References

- [RFC5250] Berger, L., Bryskin, I., Zinin, A., and R. Coltun, "The OSPF Opaque LSA Option", [RFC 5250](#), DOI 10.17487/RFC5250, July 2008, <<https://www.rfc-editor.org/info/rfc5250>>.

### Author's Address

Huaimo Chen  
Futurewei  
Boston, MA,  
United States of America

Email: [Huaimo.chen@futurewei.com](mailto:Huaimo.chen@futurewei.com)