

IS-IS for IP Internets
Internet-Draft
Intended status: Standards Track
Expires: April 24, 2014

P. Sarkar, Ed.
H. Gredler
S. Hegde
H. Raghuvver
Juniper Networks, Inc.
S. Litkowski
B. Decraene
Orange
October 21, 2013

Advertising Per-node Admin Tags in IS-IS
draft-psarkar-isis-node-admin-tag-00

Abstract

This document describes an extension to IS-IS protocol [[IS010589](#)], [[RFC1195](#)] to add an optional operational capability, that allows tagging and grouping of the nodes in an IS-IS domain. This allows simple management and easy control over route and path selection, based on local configured policies.

This document describes the protocol extensions to disseminate per-node admin-tags in IS-IS protocols.

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](#)].

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 <http://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 April 24, 2014.

Copyright Notice

Copyright (c) 2013 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 (<http://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

1.	Introduction	2
2.	Administrative Tag TLV	2
3.	TLV format	3
3.1.	Per-node Admin Tag TLV	3
3.2.	Ordering of tags	4
4.	Applications	4
5.	Security Considerations	4
6.	IANA Considerations	4
7.	Acknowledgments	4
8.	References	5
8.1.	Normative References	5
8.2.	Informative References	5
	Authors' Addresses	5

[1.](#) Introduction

This document provides mechanisms to advertise per-node administrative tags in the IS-IS Link State PDU [[RFC1195](#)]. In certain path-selection applications like for example in traffic-engineering or LFA [[RFC5286](#)] selection there is a need to tag the nodes based on their roles in the network and have policies to prefer or prune a certain group of nodes.

[2.](#) Administrative Tag TLV

For the purpose of advertising per-node administrative tags within IS-IS, a new TLV is proposed. Because path selection is a functional set which applies both to TE and non-TE applications the same has not added as a new sub-TLV in the Traffic Engineering TLVs [[RFC5305](#)].

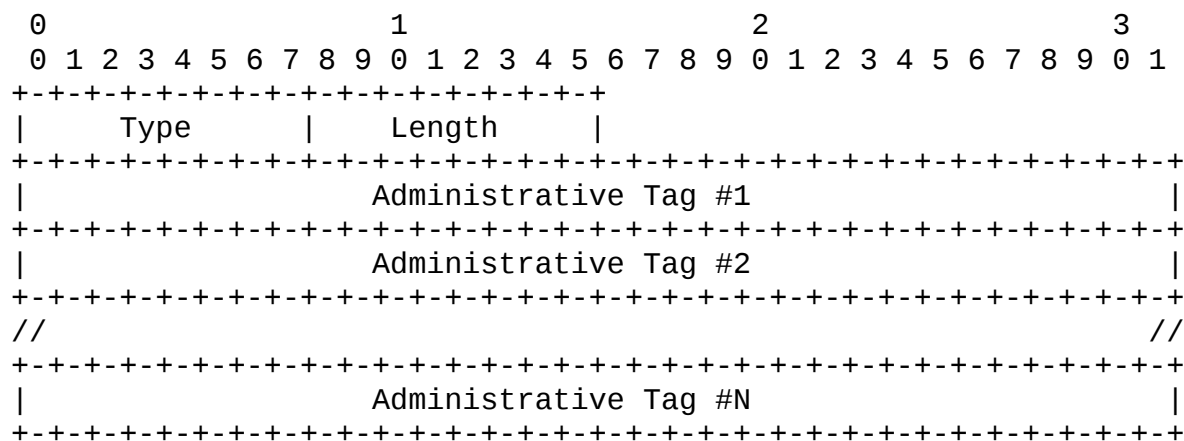
An administrative Tag is a 32-bit integer value that can be used to identify a group of nodes in the IS-IS domain. The new TLV specifies one or more administrative tag values. An IS-IS node advertises the set of groups it is part of in the specific IS-IS level. As an example, all PE-nodes may be configured with certain tag value, whereas all P-nodes are configured with a different tag value in.

The new TLV defined will be carried as a new TLV in the Link State PDUs originated by the router. Link State PDUs [IS010589] has level-wise (i.e. L1 or L2) flooding scope. Choosing the flooding scope to flood the group tags are defined by the policies and is a local matter. Once a group tag is decided in a specific level the same will be inserted in the administrative tag TLV in the Link State PDU for the same level. Implementations should allow configuring both a 'global' and 'per-level' admin tag. In the absence of a specific admin tag configuration for a specific level the global admin tag should be copied in to the LSP PDU for the same level.

3. TLV format

3.1. Per-node Admin Tag TLV

The new Administrative Tag TLV, like other ISIS TLVs, is formatted as Type/Length/Value (TLV) triplets. Figure 1 below shows the format of the new TLV.



Type : TBA

Length: A 8-bit field that indicates the length of the value portion in octets and will be a multiple of 4 octets dependent on the number of tags advertised.

Value: A sequence of multiple 4 octets defining the administrative tags.

Figure 1: IS-IS per-node Administrative Tag TLV

The 'Per-node Admin Tag' TLV may be generated more than once by an originating router. This MAY happen if a node carries more than 63 per-node admin groups and a single TLV does not provide sufficient space. As such occurrence of the 'Per-node Admin Tag' TLV does not cancel previous TLV announcements, but rather is cumulative.

3.2. Ordering of tags

The semantics of the tag order are implementation-dependent. There is no implied meaning to the ordering of the tags that indicates a certain operation or set of operations that need to be performed based on the ordering.

Each tag SHOULD be treated as an independent identifier that MAY be used in policy to perform a policy action. Whether or not tag A precedes or succeeds tag B SHOULD not change the meaning of the tag set.

4. Applications

Increased deployment of Loop Free Alternates (LFA) [[RFC5286](#)] has exposed some limitations. A recent draft on Operation management of Loop Free Alternates [[I-D.ietf-rtgwg-lfa-manageability](#)] proposes refinements to address those limitations. One of the proposed refinements is to be able to group the nodes in IGP domain with administrative tags and engineer the alternate paths based on configured policies.

The proposal in this document helps provide the capability to advertise group tags within IS-IS protocol and perform policy based LFA selection. The policies configured on each node can then make use of these tags to prefer or prune LFAs via certain group of nodes.

5. Security Considerations

This document does not introduce any further security issues other than those discussed in [[ISO10589](#)] and [[RFC1195](#)].

6. IANA Considerations

IANA maintains the registry for the TLVs. IS-IS Administrative Tags will require one new type code for the TLV defined in this document.

7. Acknowledgments

8. References

8.1. Normative References

- [ISO10589]
 , "Intermediate system to Intermediate system intra-domain
 routeing information exchange protocol for use in
 conjunction with the protocol for providing the
 connectionless-mode Network Service (ISO 8473), ISO/IEC
 10589:2002, Second Edition.", Nov 2002.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
 Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

8.2. Informative References

- [I-D.ietf-rtgwg-lfa-manageability]
 Litkowski, S., Decraene, B., Filsfils, C., and K. Raza,
 "Operational management of Loop Free Alternates", [draft-ietf-rtgwg-lfa-manageability-00](#) (work in progress), May
 2013.
- [RFC1195] Callon, R., "Use of OSI IS-IS for routing in TCP/IP and
 dual environments", [RFC 1195](#), December 1990.
- [RFC5286] Atlas, A. and A. Zinin, "Basic Specification for IP Fast
 Reroute: Loop-Free Alternates", [RFC 5286](#), September 2008.
- [RFC5305] Li, T. and H. Smit, "IS-IS Extensions for Traffic
 Engineering", [RFC 5305](#), October 2008.

Authors' Addresses

Pushpasis Sarkar (editor)
Juniper Networks, Inc.
Electra, Exora Business Park
Bangalore, KA 560103
India

Email: psarkar@juniper.net

Hannes Gredler
Juniper Networks, Inc.
1194 N. Mathilda Ave.
Sunnyvale, CA 94089
US

Email: hannes@juniper.net

Shraddha Hegde
Juniper Networks, Inc.
Electra, Exora Business Park
Bangalore, KA 560103
India

Email: shraddha@juniper.net

Harish Raghuveer
Juniper Networks, Inc.
Electra, Exora Business Park
Bangalore, KA 560103
India

Email: hraghuveer@juniper.net

Stephane Litkowski
Orange

Email: stephane.litkowski@orange.com

Bruno Decraene
Orange

Email: bruno.decraene@orange.com