Advertising Per-node Admin Tags in IS-IS
draft-psarkar-isis-node-admin-tag-02

Abstract

   This document describes an extension to IS-IS protocol [ISO10589],
   [RFC1195] to add an optional operational capability, that allows
   tagging and grouping ofthe 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 will expire on January 2, 2015.

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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

For the purpose of advertising per-node administrative tags within
IS-IS, a new sub-TLV to the IS-IS Router Capability TLV-242 that is
defined in [RFC4971] 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 Engingineering
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 sub-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 sub-TLV defined will be carried inside the IS-IS Router
Capability TLV-242 (defined in [RFC4971]) in the Link State PDUs
originated by the router. Link State PDUs [ISO10589] 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 sub-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 sub-TLV**

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

```
  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
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 |     Type      |    Length     |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 |                   Administrative Tag #1                       |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 |                   Administrative Tag #2                       |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 //                                                             //
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 |                   Administrative Tag #N                       |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

    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 sub-TLV

   The 'Per-node Admin Tag' sub-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 sub-TLV does not provide
   sufficient space. As such occurence of the 'Per-node Admin Tag' sub-
   TLV does not cancel previous 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.

   For a detailed list of more such applications please refer to section
   5 in [I-D.hegde-ospf-node-admin-tag].

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 Router Capability sub-TLVs. IS-
   IS Administrative Tags will require one new type code for the sub-TLV
   defined in this document.

7. Acknowledgments

8. References

8.1. Normative References

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8.2. Informative References

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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

Stephane Litkowski
Orange

Email: stephane.litkowski@orange.com

Bruno Decraene
Orange

Email: bruno.decraene@orange.com

Li Zhenbin
Huawei Technologies
Huawei Bld. No.156 Beiqing Rd
Beijing, KA 100095
China

Email: lizhenbin@huawei.com

Harish Raghuveer

Email: hraghuveer@juniper.net