Open Shortest Path First IGP   S. Hegde
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Expires: April 24, 2014   Juniper Networks, Inc.
                                                           R. Shakir
                                                      British Telecom
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         Advertising per-node administrative tags in OSPF
                draft-hegde-ospf-node-admin-tag-00

Abstract

   This document describes an extension to OSPF protocol [RFC2328] to
   add an optional operational capability, that allows tagging and
   grouping of the nodes in an OSPF domain. This allows
   simplification,ease of management and control over route and path
   selection based on configured policies.

   This document describes the protocol extensions to disseminate per-
   node admin-tags to the OSPFv2 and OSPFv3 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.

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   This Internet-Draft will expire on April 24, 2014.

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1. Introduction

   This document provides mechanisms to advertise per-node
   administrative tags in the OSPF router information LSA [RFC4970]. In
   certain path-selection applications like for example in traffic-
   engineering or LFA backup 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. Applicability

   For the purpose of advertising per-node administrative tags within
   OSPF a new TLV is proposed. Because path selection is a functional
   set which applies both to TE and non-TE applications, this new TLV is
   carried in the Router Information LSA [RFC4970]

3. Administrative Tag TLV

An administrative Tag is a 32-bit integer value that can be used to identify a group of nodes in the OSPF domain.

The new TLV defined will be carried within an RI LSA for OSPFV2 and OSPFV3. Router information LSA [RFC4970] can have link,area or AS level flooding scope. Choosing the flooding scope to flood the group tags are defined by the policies and is a local matter.

The TLV specifies one or more administrative tag values. An OSPF node advertises the set of groups it is part of in the OSPF domain. (for example, all PE-nodes are configured with certain tag value, all P-nodes are configured with a different tag value in a domain).

4. TLV format

4.1. OSPF per-node administrative tag TLV

The format of the TLVs within the body of an RI LSA is the same as the format used by the Traffic Engineering Extensions to OSPF [RFC3630].

The LSA payload consists of one or more nested Type/Length/Value (TLV) triplets. The format of each TLV is:

```
 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                             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
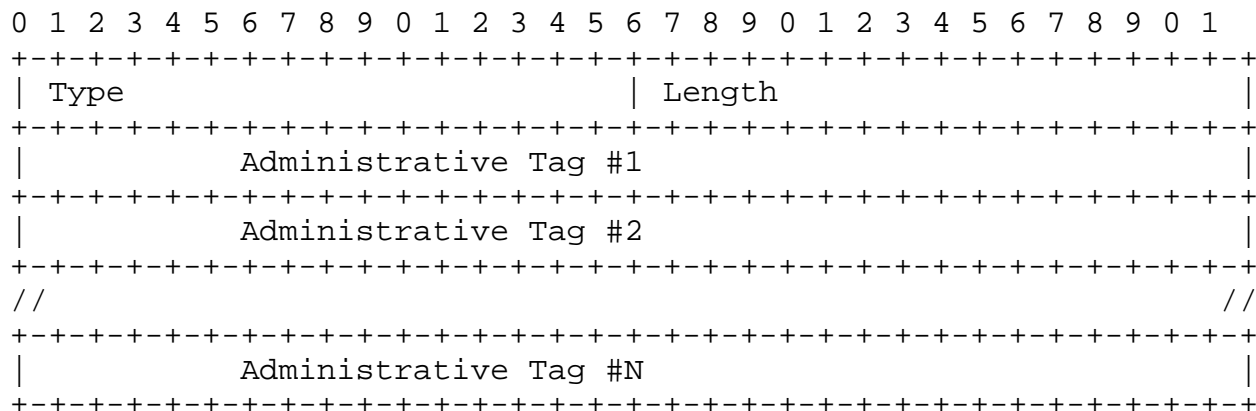
                Figure 1: OSPF per-node Administrative Tag TLV

Type : TBA

Length: A 16-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.

4.2. Ordering of tags

The semantics of the tag order are implementation-dependent. That
is, 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.

5. Applications

Increased deployment of Loop Free Alternates (LFA) as defined in
[RFC5286] has exposed some limitations.New draft Operation management
of Loop Free Alternates [I-D.litkowski-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 LFA based on
configured policies.

The mechanisms outlined in this document helps provide the capability
to advertise group tags within OSPF protocol in order to achieve
policy based LFA selection.

The policies configured on each node can then make use of these tags
to prefer or prune certain group of nodes for selecting LFAs.

6. Security Considerations

This document does not introduce any further security issues other
than those discussed in [RFC2328] and [RFC5340].

7. IANA Considerations

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

8. Acknowledgments

    Thanks to Bharath R and Pushpasis Sarakar for useful inputs.

9. References

9.1. Normative References

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Authors' Addresses

   Shraddha Hegde
   Juniper Networks, Inc.
   Embassy Business Park
   Bangalore, KA 560093
   India

   Email: shraddha@juniper.net

   Harish Raghuveer
   Juniper Networks, Inc.
   Embassy Business Park
   Bangalore 560093
   India

   Email: hraghuveer@juniper.net

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

   Email: hannes@juniper.net

   Rob shakir
   British Telecom

   Email: rob.shakir@bt.com