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Distribution of MPLS-TE Extended admin Group Using BGP
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Abstract

As MPLS-TE network grows, administrative Groups advertised as a fixed-length 32-bit Bitmask is quite constraining. "Extended Administrative Group" IGP TE extensions sub-TLV defined in [RFC7308] is introduced to provide for additional administrative groups (link colors) beyond the current limit of 32. This document describes extensions to BGP protocol, that can be used to distribute extended administrative groups in MPLS-TE.

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Table of Contents

1. Introduction 2
2. Conventions used in this document 2
3. Carrying Extended Administrative Groups in BGP 2
3.1. AG and EAG coexistence 3
3.2. Desire for unadvertised EAG bits 3
4. Security Considerations 4
5. IANA Considerations 4
6. Acknowledgments 4
7. Normative References 4
Authors' Addresses 4

1. Introduction

MPLS-TE advertises 32 administrative groups (commonly referred to as "colors" or "link colors") using the Administrative Group sub-TLV of the Link TLV defined in OSPFv2 (RFC3630), OSPFv3 (RFC5329) and ISIS (RFC5305).

As MPLS-TE network grows, administrative Groups advertised as a fixed-length 32-bit Bitmask is quite constraining. "Extended Administrative Group" IGP TE extensions sub-TLV defined in [RFC7308] is introduced to provide for additional administrative groups (link colors) beyond the current limit of 32.

This document proposes new BGP Link attribute TLVs that can be announced as attribute in the BGP-LS attribute (defined in [I.D-ietf-idr-ls-distribution]) to distribute extended administrative groups in MPLS-TE.

2. 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 RFC2119 [RFC2119].

3. Carrying Extended Administrative Groups in BGP

This document proposes one new BGP link attribute TLVs that can be announced as attribute in the BGP-LS attribute (defined in [I.D-ietf-idr-ls-distribution]) to distribute extended administrative groups. The extensions in this document build on the ones provided in BGP-LS [I.D-ietf-idr-ls-distribution] and BGP-4 [RFC4271].

BGP-LS attribute defined in [I.D-ietf-idr-ls-distribution] has nested TLVs which allow the BGP-LS attribute to be readily extended. Link attribute TLVs defined in section 3.2.2 of [I-D.ietf-idr-ls-distribution]are TLVs that may be encoded in the BGP-LS attribute with a link NLRI. Each 'Link Attribute' is a Type/Length/ Value (TLV) triplet formatted as defined in Section 3.1 of [I-D.ietf-idr-ls-distribution].

This document proposes one new TLV as a link attribute:

Type	Value
TBD1	Extended Admin Group (EAG)

The EAG TLV is used in addition to the Administrative Groups when a node wants to advertise more than 32 colors for a link. The EAG TLV is optional. The format and semantics of the 'value' fields in EAG TLVs correspond to the format and semantics of value fields in IGP extension sub-TLVs, defined in [RFC7308].

TLV Code Point	Description	IS-IS TLV/Sub-TLV	Defined in:
xxxx	Extended Admin Group	22/xx	[RFC7308]

Table 1: 'EAG' Link Attribute TLV

3.1. AG and EAG coexistence

Similar to section 2.3.1 of [I-D.ietf-mpls-extended- admin-group],if a BGP speaker advertises both AG and EAG then AG and EAG should be dealt with in the same way as AG and EAG carried in the Extended Administrative Group (EAG) sub-TLV [I-D.ietf-mpls-extended- admin-group] for both OSPF [RFC3630] and ISIS [RFC5305].

3.2. Desire for unadvertised EAG bits

Unlike AGs, EAGs are advertised as any non-zero-length-bit Bitmask. the EAG length may be longer for some links than for others. Similar to section 2.3.2 of [RFC7308], if a BGP peer wants to only use links where the specific bits of an EAG is set to 1 but the specific bits of this EAG is not advertised, then the implementation SHOULD process these desire and unadvertised EAG bits in accordance with rule defined in section 2.3.2 of [RFC7308].

4. Security Considerations

This document does not introduce security issues beyond those discussed in [I.D-ietf-idr-ls-distribution] and [RFC4271].

5. IANA Considerations

IANA maintains the registry for the TLVs. BGP Extended Admin Group link attribute TLV will require one new type code defined in this document.

6. Acknowledgments

The authors gratefully acknowledge the review made by Eric Osborne.

7. Normative References

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