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Z. Wang  
Q. Wu  
Huawei  
J. Tantsura  
Nuage Networks  
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**Distribution of MPLS-TE Extended admin Group Using BGP  
draft-ietf-idr-eag-distribution-06**

**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 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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## [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 [[RFC7752](#)] and BGP-4 [[RFC4271](#)].

BGP-LS attribute defined in [[RFC7752](#)] 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 Administrative 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	Description	IS-IS	Defined in:
Point		TLV/Sub-TLV	
TBD1	Extended	22/14	<a href="#">[RFC7308]</a>
	Administrative Group		

Table 1: 'EAG' Link Attribute TLV

### [3.1.](#) AG and EAG coexistence

Similar to [section 2.3.1 of \[RFC7308\]](#), 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 [[RFC7308](#)] 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 [\[RFC7752\]](#) and [\[RFC4271\]](#).

#### **5. IANA Considerations**

This document requests assigning code-points from the registry "BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs" for the new Link Attribute TLVs defined in the table above:

#### **6. Acknowledgments**

The authors gratefully acknowledge the review made by Eric Osborne.

#### **7. Normative References**

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- [RFC5305] Li, T. and H. Smit, "IS-IS Extensions for Traffic Engineering", [RFC 5305](#), October 2008.
- [RFC7308] Osborne, E., "Extended Administrative Groups in MPLS-TE", ID [RFC7308](#), July 2014.
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#### **Authors' Addresses**

Zitao Wang  
Huawei  
101 Software Avenue, Yuhua District  
Nanjing, Jiangsu 210012  
China

Email: wangzitao@huawei.com



Qin Wu  
Huawei  
101 Software Avenue, Yuhua District  
Nanjing, Jiangsu 210012  
China

Email: [bill.wu@huawei.com](mailto:bill.wu@huawei.com)

Jeff Tantsura  
Nuage Networks

Email: [jefftant.ietf@gmail.com](mailto:jefftant.ietf@gmail.com)