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Extended Community Based Outbound Route Filter for BGP-4  
draft-chen-bgp-ext-community-orf-01.txt

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## Abstract

This document defines two new Outbound Router Filter types for BGP, termed "Extended Community Outbound Route Filter Type I", and "Extended Community Outbound Route Filter Type II", that can be used to perform extended community based route filtering.

## 1. Introduction

The Outbound Route Filtering Capability defined in [[RFC5291](#)] provides a mechanism for a BGP speaker to send to its BGP peer a set of Outbound Route Filters (ORFs) that can be used by its peer to filter its outbound routing updates to the speaker.

This document defines two new Outbound Router Filter type for BGP [[RFC4271](#)], termed "Extended Community Outbound Route Filter Type I", and "Extended Community Outbound Route Filter Type II", that can be used to perform the extended community [[RFC4360](#), [RFC5760](#)] based route filtering. The former can be used only for the 8-octet extended communities defined in [[RFC4360](#)], and is retained for backward compatibility. The latter can be used for the extended communities defined in both [[RFC4360](#)] and [[RFC5701](#)]. This document also specifies procedures for performing route filtering when both types are supported.

### 1.1. Specification of Requirements

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](#)].

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## [2.](#) Extended Communities ORF Type I

The Extended Community ORF Type I allows to express ORFs in terms of the 8-octet BGP Extended Communities defined in [[RFC4360](#)]. That is, the Extended Communities ORF Type I provides the 8-octet Extended Community based route filtering.

Conceptually the ORF entry of the Extended Communities ORF Type I consists of a single Extended Community of 8 octets.

The sender SHOULD set the value of the Match field to PERMIT; the receiver SHOULD ignore the value of the Match field.

The remote peer should consider only those routes whose Extended Communities attribute has at least one Extended Community in common with the Extended Communities list specified in the ORF.

### [2.1.](#) Encoding

The value of the ORF-Type for the Extended Communities ORF Type I is 3.

The type-specific part of the Extended Communities ORF Type I consists of a single Extended Community as specified in [[RFC4360](#)].

## [3.](#) Extended Communities ORF Type II

The Extended Community ORF Type II allows to express ORFs in terms of the BGP Extended Communities defined in both [[RFC4360](#)] and [[RFC5701](#)]. That is, the Extended Communities ORF Type II provides Extended Community based route filtering.

Conceptually the ORF entry of the Extended Communities ORF-Type consists of a single Extended Community, of either 8 octets, or 20

octets.

The sender SHOULD set the value of the Match field to PERMIT; the receiver SHOULD ignore the value of the Match field.

The remote peer should consider only those routes whose Extended Communities attribute has at least one Extended Community in common with the Extended Communities list specified in the ORF.

### [3.1](#). Encoding

The value of the ORF-Type for the Extended Communities ORF Type II is <TBD>.

The type-specific part of the Extended Communities ORF Type II consists of a single Extended Community encoded as the following

```
+-----+
|  Ext-community Length (1 octet)  |
+-----+
|  Ext-community value (8 or 20 octets)  |
+-----+
```

where the "Ext-community Length" field contains the number of octets of the extended community in the "Ext-community value" field.

## [4](#). Operations

In addition to the general procedures defined in [[RFC5291](#)], the following procedures are specified for the Extended Community ORF types.

As the Extended Community ORF Type I can only handled the extended communities defined in [[RFC4360](#)], clearly it SHOULD NOT be enabled over a BGP session that exchanges routes with the extended

communities defined in [[RFC5701](#)].

The Extended Community ORF Type I is retained for backward compatibility. An implementation SHOULD migrate to the Extended Community ORF Type II in order to handle the extended communities defined in both [[RFC4360](#)] and [[RFC5701](#)].

During the lifetime of a BGP session, ORF entries of only one of the two types would be carried in the ROUTE-REFRESH message, and be used in route filtering. When both types are allowed, respectively, by the "Send/Receive" fields in the Outbound Route Filtering Capability and the procedures specified in [[RFC5291](#)], Type II would be used. When only one of the two types is allowed by the "Send/Receive" fields in the Outbound Route Filtering Capability and the procedures specified in [[RFC5291](#)], that particular type would be used.

## [5.](#) IANA Considerations

This document specifies two new Outbound Route Filtering (ORF) types, Extended Community ORF Type I (with ORF-type value 3), and the Extended Community ORF Type II (with ORF-type value <TBD>).

## [6.](#) Security Considerations

This extension to BGP does not change the underlying security issues in BGP [[RFC4271](#)].

## [7.](#) Acknowledgements

We would like to thank Yakov Rekhter for his contribution on this work.

## [8.](#) Normative References

[RFC4271] Rekhter, Y., Ed., Li, T., Ed., and S. Hares, Ed., "A

Border Gateway Protocol 4 (BGP-4)", [RFC 4271](#), January 2006.

- [RFC4360] Sangli, S., Tappan, D., and Y. Rekhter, "BGP Extended Communities Attribute", [RFC 4360](#), February 2006.
- [RFC5701] Rekhter, Y., "IPv6 Address Specific BGP Extended Community Attribute", [RFC 5701](#), November 2009.
- [RFC5291] Chen, E., and Rekhter, Y., "Outbound Route Filtering Capability for BGP-4", [RFC 5291](#), August 2008.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

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