

Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: September 21 2015

X. Xu
Huawei
C. Jacquenet
Orange
March 22, 2015

L3VPN Address Prefix Based Outbound Route Filter for BGP-4
draft-xu-bess-l3vpn-prefix-orf-01

Abstract

This document defines a new Outbound Router Filter (ORF) type for BGP, referred to as "L3VPN Address Prefix Outbound Route Filter", that can be used to perform L3VPN address-prefix-based route filtering. This ORF-type supports prefix-length- or range-based matching, wildcard-based address prefix matching, as well as the exact address prefix matching for L3VPN address families. The L3VPN Address Prefix ORF is applicable in the Virtual Subnet context.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on September 21, 2015.

Internet-Draft

March 2015

Copyright Notice

Copyright (c) 2015 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
1.1.	Requirements Language	3
2.	Terminology	3
3.	L3VPN Address Prefix ORF Encoding	3
4.	L3VPN Address Prefix ORF Matching	4
5.	Acknowledgements	4
6.	IANA Considerations	4
7.	Security Considerations	4
8.	References	4
8.1.	Normative References	4
8.2.	Informative References	5
	Authors' Addresses	5

[1.](#) Introduction

The Outbound Route Filtering (ORF) Capability defined in [[RFC5291](#)] provides a mechanism for a BGP speaker to send to its BGP peer a set of ORFs that can be used by its peer to filter its outbound routing updates to the speaker. The Address Prefix ORF defined in [[RFC5292](#)] is used to perform address-prefix-based route filtering. However, the Address Prefix ORF is not much suitable for L3VPN [[RFC4364](#)] route filtering since there is no Route-Target (RT) field contained in the Address Prefix ORF entry.

This document builds on [[RFC5292](#)] and defines a new ORF-type for BGP, referred to as "L3VPN Address Prefix Outbound Route Filter (L3VPN Address Prefix ORF)", that can be used to perform L3VPN address prefix-based route filtering. The L3VPN Address Prefix ORF supports prefix-length- or range-based matching, wild-card-based address prefix matching, as well as the exact address prefix matching for L3VPN address families. The L3VPN Address Prefix ORF is applicable

to reduce the RIB size of PE routers in the Virtual Subnet [[I-D.ietf-l3vpn-virtual-subnet](#)] context.

[1.1](#). 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](#)].

[2](#). Terminology

This memo makes use of the terms defined in [[RFC5292](#)] and [[RFC4364](#)].

[3](#). L3VPN Address Prefix ORF Encoding

The ORF-Type for the L3VPN Address Prefix ORF-Type is TBD.

A L3VPN Address Prefix ORF entry includes a Route Target field in addition to those fields which have been contained in the Address Prefix ORF [[RFC5292](#)]. That's to say, a L3VPN Address Prefix ORF entry consists of the following fields <Sequence, Action, Match, Reserved, Route-Target, Minlen, Maxlen, Length, Prefix>. Note that the Prefix field here doesn't include the Route Distinguisher (RD) part of a L3VPN address prefix. For example, in the case of a VPNv4 address prefix, only the IPv4 address prefix part of that VPNv4 address prefix is contained in that Prefix field.

A L3VPN Address Prefix ORF entry is encoded as follows: the "Action", "Match" and "Reserved" fields of the entry are encoded in the common part [[RFC5291](#)], while the remaining fields of the entry are encoded in the "type specific part" [[RFC5291](#)], as shown in Figure 1. When the Action component of an ORF entry specifies REMOVE-ALL, the entry consists of only the common part.

Internet-Draft

March 2015

+-----+		
	Sequence (4 octets)	
+-----+		
	Route Target (8 octets)	
+-----+		
	Minlen (1 octet)	
+-----+		
	Maxlen (1 octet)	
+-----+		
	Length (1 octet)	
+-----+		
	Prefix (variable length)	
+-----+		

Figure 1: Type Specific Part of L3VPN Address Prefix ORF Entry Encoding

[4.](#) L3VPN Address Prefix ORF Matching

When performing route matching search on those L3VPN routes which are associated with the Route Target as specified in the received L3VPN Address Prefix ORF entries, the Address-Prefix-ORF-specific matching rules as defined in [[RFC5292](#)] are almost preserved except that the RD SHOULD be ignored.

[5.](#) Acknowledgements

The authors would like to thank Mach Chen and Shunwan Zhuang for their comments on this document.

[6.](#) IANA Considerations

The ORF-type for the L3VPN Address Prefix ORF needs to be assigned by the IANA.

[7.](#) Security Considerations

This document does not introduce any new security considerations.

[8.](#) References

[8.1.](#) Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC5291] Chen, E. and Y. Rekhter, "Outbound Route Filtering Capability for BGP-4", [RFC 5291](#), August 2008.

Xu, et al.

Expires September 21, 2015

[Page 4]

Internet-Draft

March 2015

- [RFC5292] Chen, E. and S. Sangli, "Address-Prefix-Based Outbound Route Filter for BGP-4", [RFC 5292](#), August 2008.

[8.2.](#) Informative References

- [I-D.ietf-l3vpn-virtual-subnet]
Xu, X., Raszuk, R., Hares, S., Yongbing, F., Jacquenet, C., Boyes, T., and B. Fee, "Virtual Subnet: A L3VPN-based Subnet Extension Solution", [draft-ietf-l3vpn-virtual-subnet-03](#) (work in progress), December 2014.
- [RFC4364] Rosen, E. and Y. Rekhter, "BGP/MPLS IP Virtual Private Networks (VPNs)", [RFC 4364](#), February 2006.

Authors' Addresses

Xiaohu Xu
Huawei

Email: xuxiaohu@huawei.com

Christian Jacquenet
Orange

Email: christian.jacquenet@orange.com