

Network working group
Internet Draft
Intended status: Standards Track
Expires: April 2011

Q. Zeng
J. Dong
Huawei Technologies
Z. Huang
China Telecom
October 22, 2010

One-time Address-Prefix Based Outbound Route Filter for BGP-4

[draft-zeng-one-time-prefix-orf-01.txt](#)

Abstract

This document defines a new Outbound Router Filter (ORF) type for BGP, termed "One-time Address Prefix Outbound Route Filter", which would allow a BGP speaker to send to its BGP peer a route refresh request with a set of address-prefix-based filters to make the peer re-advertise only the specific routes matching the filters to the speaker. This ORF-type enables a BGP speaker to recover some specific "problematic" routes without requiring its peer to re-advertise the whole Adj-RIB-Out of specific address family, which makes the trouble shooting operation (such as packets tracking) more efficient and reduces the impact on network stability. This filter does not change the outbound route filters on BGP peers and should only be used for one-time filtering.

Status of this Memo

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

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

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."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/1id-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on April 22, 2011.

Copyright Notice

Copyright (c) 2010 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.

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 [RFC-2119](#) [[RFC2119](#)].

Table of Contents

1.	Introduction.....	2
2.	One-time Address Prefix ORF-Type.....	3
3.	Operation.....	4
4.	Security Considerations.....	4
5.	IANA Considerations.....	4
6.	Acknowledgments.....	4
7.	References.....	4
	7.1. Normative References.....	4
	Authors' Addresses.....	6

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.

During some network maintenance, BGP speaker only needs to retrieve some specific "problematic" routes from its peer if the routes are possibly lost or contain some problematic attributes for some reason, but send ROUTE-REFRESH will lead to the peer re-advertising its

whole Adj-RIB-Out. Such large numbers of updates include a lot of unnecessary routes which would make trouble shooting operation (such as packets tracking) more difficult, and is a waste of processing resources and bandwidth. With the increase of IPV6 deployment, this problem could be more significant. Even configured with ORF mechanism as defined in [[RFC5291](#)], on receipt of a ROUTE-REFRESH message, the peer will re-advertise all the routes matching current outbound route filters, i.e., the whole Adj-Rib-Out for this BGP speaker. Since in this case the BGP speaker does not want to change the outbound route filters on its peer, this problem cannot be solved by current ORF mechanism.

This document defines a new Outbound Router Filter (ORF) type for BGP, termed "One-time Address Prefix Outbound Route Filter", which would allow a BGP speaker to send to its BGP peer a route refresh request with a set of address-prefix-based filters to make the peer re-advertise only the specific routes matching the filters to the speaker. This ORF-type enables a BGP speaker to recover some specific "problematic" routes without requiring its peer to re-advertise the whole Adj-RIB-Out of specific address family, which makes the trouble shooting operation (such as packets tracking) more efficient and reduces the impact on network stability. This filter does not change the outbound route filters on BGP peers and should only be used for one-time filtering.

2. One-time Address Prefix ORF-Type

This document defines a new ORF type: One-time Address Prefix ORF.

As specified in the [[RFC5291](#)], an ORF entry is a tuple of the form <AFI/SAFI, ORF-Type, Action, Match, ORF-value> an ORF consists of one or more ORF entries that have a common AFI/SAFI and ORF-Type. An ORF is identified by <AFI/SAFI, ORF-Type>.

The format of One-time Address Prefix ORF-Type entry is the same as the encoding of Address Prefix ORF in [[RFC5292](#)], the specific fields are defined as follows:

Since the semantics of this new ORF-Type is always "one-time filtering" and has no impact on existing ORFs, so the Action field MUST be ignored.

The matching rules of the One-time Address Prefix ORF are the same as defined in Address-Prefix-Based ORF [[RFC-5292](#)].

The ORF entries of this type are used as one-time filters that MUST not change any previously installed ORF entry on the remote peer.

3. Operation

The capability negotiation of <AFI/SAFI, One-time Address Prefix ORF> MUST NOT delay the advertisement of routes with this AFI/SAFI.

The received One-time Address Prefix ORF entries SHOULD only be used for one-time route filtering and MUST NOT be saved locally. The received One-time Address Prefix ORF entries MUST NOT modify the outbound route filters on the receiver (either locally configured or received from peer through ORF).

On receipt of ROUTE-REFRESH message with One-time Address Prefix ORF entries, the receiver SHOULD re-advertise to the peer the routes from the Adj-RIB-Out associated with the peer which pass the entries carried in the One-time Address Prefix ORF and taking into account the locally saved ORFs (if any) received from the peer.

4. Security Considerations

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

5. IANA Considerations

This document specifies a new Outbound Route Filtering (ORF) type, One-time Address-Prefix ORF. The value of the ORF-type needs to be assigned by the IANA.

6. Acknowledgments

The authors would like to thank Keyur Patel, Enke Chen, Rob Shakir, Susan Hares, Haibo Wang, Jiawei Dong, Yaqun Xiao, Mach Chen for their valuable suggestions and comments to this document.

7. References

7.1. Normative References

- [RFC4271] Rekhter, Y., Ed., Li, T., Ed., and S. Hares, Ed., "A Border Gateway Protocol 4 (BGP-4)", [RFC 4271](#), January 2006.
- [RFC2918] Chen, E., "Route Refresh Capability for BGP-4", [RFC 2918](#), September 2000.

- [RFC5291] Chen, E. and Y. Rekhter, "Outbound Route Filtering Capability for BGP-4", [RFC 5291](#), August 2008.
- [RFC5292] Chen, E. and S. Sangli, "Address-Prefix-Based Outbound Route Filter for BGP-4", [RFC 5292](#), August 2008.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC4020] Kompella, K. and A. Zinin, "Early IANA Allocation of Standards Track Code Points", [BCP 100](#), [RFC 4020](#), February 2005.
- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 5226](#), May 2008.

Authors' Addresses

Qing Zeng

Huawei Technologies Co.,Ltd.
Huawei Building, No.3 Xinxu Rd.,
Hai-Dian District
Beijing, 100085
P.R. China

Email: zengqing@huawei.com

Jie Dong

Huawei Technologies Co.,Ltd.
Huawei Building, No.3 Xinxu Rd.,
Hai-Dian District
Beijing, 100085
P.R. China

Email: dongjie_dj@huawei.com

ZhiLan Huang

China Telecom
109 West Zhongshan Ave,
Tianhe District, Guangzhou, 510630, P.R.C

Email: huangzl@gsta.com