

**VPN Address Prefix Based Outbound Route Filter for BGP-4  
draft-xu-idr-vpn-prefix-orf-00**

**Abstract**

This document defines a new Outbound Router Filter (ORF) type for BGP, referred to as "VPN Address Prefix Outbound Route Filter", that can be used to perform VPN 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 VPN address families. The VPN Address Prefix ORF is applicable in the context of Virtual Subnet and may also be applicable in other BGP/MPLS IP VPN environments.

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## [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 VPN 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 "VPN Address Prefix Outbound Route Filter (VPN Address Prefix ORF)", that can be used to perform VPN address-prefix-based route filtering. The VPN 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 VPN address families. The VPN Address Prefix ORF is applicable in the context of Virtual Subnet [[I-D.xu-l3vpn-virtual-subnet](#)] and may also be applicable in other BGP/MPLS IP VPN [[RFC4364](#)] environments.

### [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. VPN Address Prefix ORF Encoding**

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

## **4. VPN Address Prefix ORF Matching**

When performing route matching search on those VPN routes which are associated with the Route Target as specified in the received VPN Address Prefix ORF, the Address-Prefix-ORF-specific matching rules 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 type code of the VPN 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.



[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.xu-l3vpn-virtual-subnet]  
Building, K., Hares, S., Yongbing, F., Jacquenet, C.,  
Boyes, T., and B. Fee, "Virtual Subnet: A L3VPN-based  
Subnet Extension Solution", [draft-xu-l3vpn-virtual-subnet-01](#) (work in progress), September 2013.

[RFC4364] Rosen, E. and Y. Rekhter, "BGP/MPLS IP Virtual Private Networks (VPNs)", [RFC 4364](#), February 2006.

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