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**Bitmask Route Target**  
**draft-zzhang-idr-bitmask-route-target-00**

Abstract

This document specifies a new type of Route Target called Bitmask Route Target as a BGP Community Container. The key element of a Bitmask Route Target is a Bitmask. Two Bitmask Route Targets are considered equivalent for the purpose of controlling route propagation (via Route Target Constraints) and importation if the result of logical "AND" operation of the Bitmask of the two is non-zero.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [BCP 14](#) [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

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## [1.](#) Introduction

The importation and propagation of BGP routes can be controlled using Route Targets [[RFC4364](#)] and Route Target Constrains [[RFC4684](#)]. Both relies on comparing two Route Targets based on full match of the 8-octet encoding.

There are situations where it is desired to consider two Route Targets to be equivalent (hence the route could be imported or propagated) as long as certain bits have matching set values. This document defines a new type of Route Target for that purpose.

An example use case of this Bitmask Route Target is documented in [I-D.zhang-teas-network-slicing-with-flex-te].

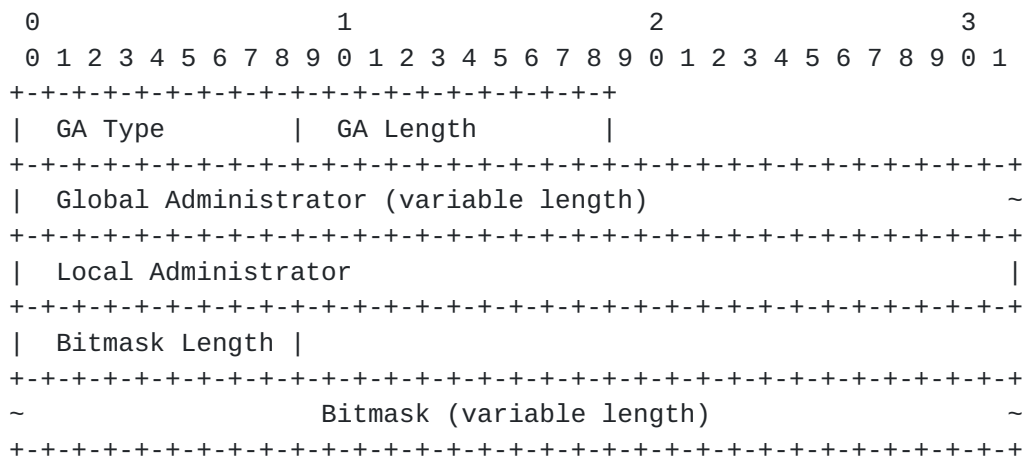
The use of Bitmask Route Target with Route Target Constrains is specified separately in [I-D.zhang-idr-bgp-route-target-constrains-extension].



## 2. Specification

The Bitmask Route Target is a Transitive BGP Community Container of type TBD [[I-D.ietf-idr-wide-bgp-communities](#)].

The container includes a 1-octet Global Administrator (GA) Type, 1-octet GA Length, a variable length GA, a 4-octet Local Administrator (LA), a 1-octet Bitmask Length in number of octets, and the Bitmask.



The following GA Types and corresponding lengths are defined in this document:

- o TBD1: AS Number, 4-octet
- o TBD2: IPv4 Address, 4-octet
- o TBD3: IPv6 Address, 16-octet

A Bitmask Route Targets A is considered to match Bitmask Route Target B for the purpose of controlling propagation and importation of a route with an attached Bitmask Route Target B if the following conditions are met:

- o The GA Type, GA Length, GA, and LA fields in A and B match.
- o The result of the logical "AND" operation of the Bitmask field in A and B is not 0. If A and B have different Bitmask Lengths, the smaller one is used to truncate the longer Bitmask.



### **3. Security Considerations**

This document does not change security aspects as discussed in [RFC4364] and [I-D.ietf-idr-wide-bgp-communities].

### **4. IANA Considerations**

This document requests IANA to assign a BGP Community Container Type for the Bitmask Route Target from the "BGP Community Container Types" registry.

This document requests IANA to setup a "Bitmask Route Target Global Administrator Type Registry" and assign three type values as listed in [Section 2](#). Allocation from the first half of the number is based on standardization and allocation from the second half is First Come First Serve.

### **5. Acknowledgements**

The authors thank John Scudder for his comments and suggestions.

### **6. References**

#### **6.1. Normative References**

- [I-D.ietf-idr-wide-bgp-communities]  
Raszuk, R., Haas, J., Lange, A., Decraene, B., Amante, S., and P. Jakma, "BGP Community Container Attribute", [draft-ietf-idr-wide-bgp-communities-05](#) (work in progress), July 2018.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

#### **6.2. Informative References**

- [RFC4364] Rosen, E. and Y. Rekhter, "BGP/MPLS IP Virtual Private Networks (VPNs)", [RFC 4364](#), DOI 10.17487/RFC4364, February 2006, <<https://www.rfc-editor.org/info/rfc4364>>.



[RFC4684] Marques, P., Bonica, R., Fang, L., Martini, L., Raszuk, R., Patel, K., and J. Guichard, "Constrained Route Distribution for Border Gateway Protocol/MultiProtocol Label Switching (BGP/MPLS) Internet Protocol (IP) Virtual Private Networks (VPNs)", [RFC 4684](https://www.rfc-editor.org/info/rfc4684), DOI 10.17487/RFC4684, November 2006, <<https://www.rfc-editor.org/info/rfc4684>>.

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