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**BGP Extended Community for Identifying the Target Nodes**  
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Abstract

BGP has been used to distribute different types of routing and policy information. In some cases, the information distributed may be only intended for one or a particular group of BGP nodes in the network. Currently BGP does not have a generic mechanism of designating the target nodes of the routing information. This document defines a new type of BGP Extended Community called "Node Target". The mechanism of using the Node Target Extended Community to steer BGP route distribution to particular BGP nodes is specified.

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](#)].

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## [1.](#) Introduction

BGP [[RFC4271](#)] has been used to distribute different types of routing and policy information. In some cases, the information distributed may be only intended for one or a particular group receiving BGP nodes in the network. One typical use case is the distribution of BGP Flow Spec [[RFC8955](#)] [[RFC8956](#)] rules only to a particular group of BGP nodes. Such a targeting mechanism is considered useful that it can save the resources on nodes which do not need that information.

Currently BGP does not have a generic mechanism of designating the set of nodes to which the information is to be distributed. Route Target (RT) as defined in [[RFC4364](#)] was designed for the matching of VPN routes into the target VPN Routing and Forwarding tables (VRFs) on PE nodes. Although [[I-D.ietf-idr-segment-routing-te-policy](#)] introduces the mechanism of steering the SR policy information to the target head end node based on RT, it is only defined for the SR Policy Address Family. Although it is possible to reuse RTs to



Target BGP Identifier (4 octets): The BGP Identifier of a target node. It is a 4-octet, unsigned, non-zero integer as defined in [\[RFC6286\]](#).



Reserved field (2 octets): Reserved for future use, MUST be set to zero on transmission and ignored on receipt.

One or more Node Target extended communities MAY be carried in an Update message to designate a group of target BGP nodes.

### **3. Procedures**

In this section, the mechanism for intra-domain scenario is described, the mechanism for inter-domain scenario is for further study. The domain here refers to an administrative domain, which may consists of one or multiple ASes managed by a single operator.

When a network controller or BGP speaker plans to advertise some BGP routing or policy information only to one or a group of BGP nodes in the network, it MUST put the BGP Identifier of each target node into the Node Target extended communities, and attach the Node Target extended communities to the routes or policies to be advertised.

When a BGP speaker receives a BGP Update which contains one or more Node Target extended communities, it MUST check the target BGP Identifiers carried in the Node Target extended communities of the Update.

- o If the target BGP Identifier in any of the Node Target extended community matches with the local BGP Identifier, this node is one of the target nodes of the Update, the information in the Update is eligible to be kept and installed on this node.
- \* If this node is a Route Reflector, and in the Update there is one or more Node Target extended communities which contains non-local BGP Identifiers, information in the Update are eligible be reflected to its peers according to the rules defined in [[RFC4456](#)]. Depends on a configurable policy, the RR MAY check the BGP Identifiers of its peers to determine the set of peers which are the target nodes of the Update, and only reflect the information in the Update to the matched BGP peers.
- \* If this node is an Autonomous System Border Router (ASBR), and the BGP Identifiers of one or more of its EBGP peers match with the Node Target extended communities in the Update, information in the Update is eligible to be advertised to the matched EBGP peers.
- o If the target BGP Identifier in any of the Node target extended community does not match with the local BGP Identifier, this node is not the target node of Update, the information in the Update is not eligible to be installed on this node.



- \* If this node is a Route Reflector, information in the Update is eligible to be reflected to its peers according to the rules defined in [[RFC4456](#)]. Depends on a configurable policy, the RR MAY check the BGP Identifiers of its peers to determine the set of peers which are the target nodes of the Update, and only reflect the information in the Update to the matched BGP peers.

#### **4. Compatibility Considerations**

The Node Target extended community introduced in this document can be deployed incrementally in the network. For BGP speakers which understand the Node Target extended community, it is used to determine whether the nodes are the target nodes of the Update. For BGP speakers which do not understand the Node Target extended community, it will be ignored and the information in the Update will be processed and advertised based on normal BGP procedure. Although this could ensure that the target nodes can always obtain the information needed, this may result in unnecessary state maintained on legacy BGP speakers. And if the information advertised is the Flow Spec rules, the legacy BGP speakers may install unnecessary flowspec rules, this may have impact on traffic which matches such rules, thus may result in unexpected traffic steering or filtering behaviors on such nodes. This may be mitigated by setting appropriate routing policies on the legacy BGP nodes.

#### **5. IANA Considerations**

This document requests that IANA assigns one new sub-type for "Node Target Extended Community" from the "Transitive IPv4-Address-Specific Extended Community" registry of the "BGP Eextended Communities" registry.

This document requests that IANA assigns the same sub-type for "Node Target Extended Community" from the "Non-Transitive IPv4-Address-Specific Extended Community" registry of the "BGP Eextended Communities" registry.

#### **6. Security Considerations**

TBD

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