

Network Working Group
Internet Draft
Intended Status: Standards Track
Updates: RFC [4271](#)
Expiration Date: November 5, 2011

E. Chen
J. Yuan
Cisco Systems
May 4, 2011

AS-wide Unique BGP Identifier for BGP-4

[draft-ietf-idr-bgp-identifier-14.txt](#)

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/1id-abstracts.html>

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

This Internet-Draft will expire on November 5, 2011.

Copyright Notice

Copyright (c) 2011 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.

Abstract

To accommodate situations where the current requirements for the BGP Identifier are not met, this document relaxes the definition of the BGP Identifier to be a 4-octet unsigned, non-zero integer, and relaxes the "uniqueness" requirement so that only AS-wide uniqueness of the BGP Identifiers is required. These revisions to the base BGP specification do not introduce any backward compatibility issue.

[1. Introduction](#)

Currently the BGP Identifier of a BGP speaker is specified as a valid IPv4 host address assigned to the BGP speaker [[RFC4271](#)]. In addition, the deployed BGP code requires that two BGP speakers be of distinct BGP Identifiers in order to establish a BGP connection.

To accommodate situations where the current requirements for the BGP Identifier are not met (such as in the case of an IPv6-only network), this document relaxes the definition of the BGP Identifier to be a 4-octet unsigned, non-zero integer, and relaxes the "uniqueness" requirement so that only AS-wide uniqueness of the BGP Identifiers is required. These revisions to the base BGP specification do not introduce any backward compatibility issue.

[2. Protocol Revisions](#)

The revisions to the base BGP specification [[RFC4271](#)] include the definition of the BGP Identifier and procedures for a BGP speaker that supports the AS-wide Unique BGP Identifier.

[2.1. Definition of the BGP Identifier](#)

For a BGP speaker that supports the AS-wide Unique BGP Identifier, the BGP Identifier is specified as the following:

The BGP Identifier is a 4-octet unsigned, non-zero integer that should be unique within an AS. The value of the BGP Identifier for a BGP speaker is determined on startup and is the same for every local interface and every BGP peer.

[2.2.](#) Open Message Error Handling

For a BGP speaker that supports the AS-wide Unique BGP Identifier, the OPEN message error handling related to the BGP Identifier is modified as follows:

If the BGP Identifier field of the OPEN message is zero, or if it is the same as the BGP Identifier of the local BGP speaker and the message is from an internal peer, then the Error Subcode is set to "Bad BGP Identifier".

[2.3.](#) Connection Collision Resolution

For a BGP speaker that supports the AS-wide Unique BGP Identifier, the procedures for connection collision resolution are extended as follows to deal with the case in which the two BGP speakers share the same BGP Identifier (thus it is only applicable to an external peer):

If the BGP Identifiers of the peers involved in the connection collision are identical, then the connection initiated by the BGP speaker with the larger AS number is preserved.

This extension covers cases in which the four-octet AS numbers are involved [[RFC4893](#)].

[3.](#) Remarks

It is noted that a BGP Identifier allocated based on [[RFC4271](#)] fits the revised definition.

In case of BGP Confederation, the whole confederation is considered as one AS for the purpose of supporting the AS-wide Unique BGP Identifier.

A BGP speaker that supports the AS-wide Unique BGP Identifier can not share a BGP Identifier with its external neighbor until the remote BGP speaker is upgraded with software that supports the specified revisions.

In addition to the OPEN message, the BGP Identifier is currently also used in the following areas:

- o In the AGGREGATOR attribute of a route where the combination of a BGP Identifier and an AS number uniquely identifies the BGP speaker that performs the route aggregation.

- o In the Route Reflection within an AS, where only the BGP Identifier of an internal neighbor may be propagated in the route reflection related attributes.
- o In the route selection, where the BGP Identifier is not used in comparing a route from an internal neighbor and a route from an external neighbor. In addition, routes from BGP speakers with identical BGP Identifiers have been dealt with (e.g., parallel BGP sessions between two BGP speakers).

Therefore it is concluded that the revisions specified in this document do not introduce any backward compatibility issue with the current usage of the BGP Identifier.

[4.](#) Security Considerations

This extension to BGP does not introduce new security considerations. BGP security considerations are discussed in [[RFC4271](#)].

[5.](#) IANA Considerations

This document has no actions for IANA.

[6.](#) Acknowledgments

The authors would like to thank members of the IDR Working Group for discussions on the "IPv6-only Network" related issues that inspired this document.

[7.](#) Normative References

[RFC4271] Rekhter, Y., T. Li, and S. Hares, "A Border Gateway Protocol 4 (BGP-4)", [RFC 4271](#), January 2006.

[RFC4893] Vohra, Q., and E. Chen, "BGP Support for Four-octet AS Number Space", [RFC 4893](#), May 2007.

8. Authors' Addresses

Enke Chen
Cisco Systems, Inc.
170 W. Tasman Dr.
San Jose, CA 95134

EMail: enkechen@cisco.com

Jenny Yuan
Cisco Systems, Inc.
170 W. Tasman Dr.
San Jose, CA 95134

EMail: jenny@cisco.com

