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W. Kumari
Google
R. Bush
Internet Initiative Japan
H. Schiller
Verizon

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Codification of AS 0 processing. draft-wkumari-idr-as0-01

Abstract

This document proscribes the use of AS 0 in BGP OPEN and AS-PATH BGP attribute.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

Autonomous System 0 is listed in the IANA Autonomous System Number Registry as "Reserved - May be use to identify non-routed networks" ([IANA.AS_Numbers]).

[I-D.ietf-sidr-iana-objects] specifies that AS number zero in a ROA is used to mark an NLRI which is to be marked as Invalid.

No clear statement that AS 0 was proscribed could be found in any BGP specification.

As at least two implementations discard routes containing AS 0 (and to allow approaches such as the above) this document codifies this behavior.

1.1. Requirements notation

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 [RFC2119].

2. Behavior

This document specifies that a BGP speaker MUST NOT originate or propapate an announcement with an AS number of zero, and a BGP listener MUST NOT accept an announcement which has an AS number of zero in the AS-PATH attribute, and SHOULD log the fact that it has done so.

In addition if a BGP listener recives zero as the peer AS in an OPEN message, it MUST abort the connection and send a NOTIFICATION with Error Code "OPEN Message Error" and subcode "Bad Peer AS" (see [RFC4271] Section 6.2). Obviosuly enough, a router MUST NOT initialte a connection claiming to be AS number zero.

3. IANA Considerations

The IANA is requested to update the Reference for number 0 in the "Autonomous System (AS) Numbers" registry to refernce this document.

4. Security Considerations

By allowing resource holders to say that AS 0 is the only valid origin for a route, we allow them to state that a particular address

resource is not in use. By ensuring that all implementations that see AS 0 in a route ignore that route, we prevent a malicious party from announcing routes containing AS 0 in an attempt to hijack those resources.

In addition, by standardizing the behavior upon reception of an AS PATH containing AS 0, this document makes the behavior better defined, and security gotchas often lurk in the undefined spaces.

5. Acknowledgements

The authors wish to thank the BGPsec design team, and especially Randy Bush for providing most of the text.

6. References

6.1. Normative References

[IANA.AS_Numbers] IANA, "Autonomous System (AS) Numbers", <http://www.iana.org/assignments/as-numbers>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

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

6.2. Informative References

[I-D.ietf-sidr-iana-objects] Manderson, T., Vegoda, L., and S. Kent, "RPKI Objects issued by IANA", draft-ietf-sidr-iana-objects-03 (work in progress), May 2011.

Appendix A. Changes / Author Notes.

[RFC Editor: Please remove this section before publication]

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Authors' Addresses

Warren Kumari
Google
1600 Amphitheatre Parkway
Mountain View, CA 94043
US

Email: warren@kumari.net

Randy Bush
Internet Initiative Japan
5147 Crystal Springs
Bainbridge Island, WA 98110
US

Email: randy@psg.com

Heather Schiller
Verizon
22001 Loudoun County Parkway
Ashburn 20147
US

Email: heather.schiller@verizon.com