Reservation of Last Autonomous System (AS) Numbers
draft-ietf-idr-last-as-reservation-06

Abstract

   This document reserves two Autonomous System numbers (ASNs) at the
   end of the 16 bit and 32 bit ranges, described in this document as
   "Last ASNs" and provides guidance to implementers and operators on
   their use.

Status of This Memo

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

   Internet-Drafts are working documents of the Internet Engineering
   Task Force (IETF). Note that other groups may also distribute
   working documents as Internet-Drafts. The list of current Internet-
   Drafts is at http://datatracker.ietf.org/drafts/current/.

   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."

   This Internet-Draft will expire on October 26, 2014.

1. Introduction

   IANA has reserved the last Autonomous System Number (ASN), 65535, of
   the 16 bit autonomous system number range for over a decade with the
   intention that it not be used by network operators running BGP
   [RFC4271]. Since the introduction of BGP Support for Four-Octet AS
   Number Space [RFC6793], IANA has also reserved the last ASN of the 32
   bit autonomous system number range, 4294967295. This reservation has
   been documented in the IANA Autonomous System Numbers Registry
   [IANA.AS]. Although these "Last ASNs" border on Private Use ASN
   [RFC6996] ranges, they are not defined or reserved as Private Use
   ASNs by [IANA.AS]. This document describes the reasoning for
   reserving these Last ASNs and provides guidance both to operators and
   to implementers on their use.

2. 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].

3. Reasons for Last ASNs Reservation

   A subset of the BGP communities of ASN 65535, the last ASN of the 16
   bit range, are reserved for use by Well-known communities as
   described in [RFC1997] and [IANA.WK]. Although this is not currently
   true of ASN 4294967295, if there is a future need for another Special
   Use ASN that is not designed to be globally routable, or the
   associated BGP communities of such an ASN, ASN 4294967295 could be a
   valid candidate for such purpose. This document does not prescribe
   any such Special Use to this ASN at the time of publication.

4. Operational Considerations

   Operators SHOULD NOT use these Last ASNs for any other purpose or as
   Private Use ASNs. Operational use of these Last ASNs could have
   undesirable results. For example; use of AS 65535 as if it were a
   Private Use ASN, may result in inadvertent use of BGP Well-known
   Community values [IANA.WK], causing undesireable routing behavior.

   These last ASNs MUST NOT be advertised to the global Internet within
   AS_PATH or AS4_PATH attributes. Operators SHOULD filter Last ASNs
   within the AS_PATH and AS4_PATH attributes.

5. Implementation Considerations

While these Last ASNs are reserved, they remain valid ASNs from a BGP
protocol perspective. Therefore, implementations of BGP [RFC4271]
SHOULD NOT treat the use of these Last ASNs as any type of protocol
error. However, implementations MAY generate a local warning message
indicating improper use of a reserved ASN.

Implementations that provide tools that filter Private Use ASNs
within the AS_PATH and AS4_PATH attributes MAY also include these
Last ASNs.

6. IANA Considerations

[Note to IANA, TO BE REMOVED BEFORE PUBLICATION: IANA please update
the reservations for values 65535 and 4294967295 in the three
registries mentioned below to reference this document. Please note
at the time of this comment the "Special-Purpose AS Numbers registry"
has not yet been created but should be before publication of this
document.]

IANA has reserved last Autonomous System number 65535 from the
"16-bit Autonomous System Numbers" registry for the reasons described
in this document.

IANA has also reserved last Autonomous System number 4294967295 from
the "32-bit Autonomous System Numbers" registry for the reasons
described in this document.

This reservation has been documented in the IANA Autonomous System
Numbers Registry [IANA.AS].

This reservation has also been documented in the IANA Special-Purpose
AS Numbers Registry as described by [I-D.housley-number-registries].

7. Security Considerations

This document does not introduce any additional security concerns in
regards to usage of Last ASNs. Although the BGP protocol is designed
to allow usage of these Last ASNs, security issues related to BGP
implementation errors could be triggered by Last ASN usage.

8. References

8.1. Normative References

   [I-D.housley-number-registries]
              Housley, R., "Internet Numbers Registries", draft-housley-
              number-registries-04 (work in progress), February 2014.

   [IANA.AS] IANA, , "Autonomous System (AS) Numbers", April 2014,
              <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.

   [RFC6793] Vohra, Q. and E. Chen, "BGP Support for Four-Octet
              Autonomous System (AS) Number Space", RFC 6793, December
              2012.

8.2. Informative References

   [IANA.WK] IANA, , "Border Gateway Protocol (BGP) Well-known
              Communities", April 2014, <http://www.iana.org/assignments
              /bgp-well-known-communities/>.

   [RFC1997] Chandrasekeran, R., Traina, P., and T. Li, "BGP
              Communities Attribute", RFC 1997, August 1996.

   [RFC6996] Mitchell, J., "Autonomous System (AS) Reservation for
              Private Use", BCP 6, RFC 6996, July 2013.

Appendix A. Acknowledgments

   The authors would like to thank Michelle Cotton and Elwyn Davis for
   encouraging the proper documentation of the reservation of these ASNs
   and David Farmer for his contributions to the document.

Authors' Addresses

   Jeffrey Haas
   Juniper Networks

   Email: jhaas@juniper.net

   Jon Mitchell
   Microsoft Corporation
   One Microsoft Way
   Redmond, WA 98052
   USA

   Email: Jon.Mitchell@microsoft.com