            Reservation of Last Autonomous System (AS) Numbers

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. This document updates Section 10 of RFC 1930.

Status of This Memo

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1. Introduction

   Over a decade ago, IANA reserved the last Autonomous System Number
   (ASN) of the 16-bit ASN range, 65535, with the intention that it not
   be used by network operators running BGP [RFC4271]. Since the
   introduction of "BGP Support for Four-Octet Autonomous System (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 (AS) 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 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 Reservation of the Last ASNs

   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 for 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 undesirable routing behavior.

   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 Last ASNs are reserved, they remain valid ASNs from a BGP
   perspective. Therefore, implementations of BGP [RFC4271] SHOULD NOT
   treat the use of Last ASNs as any type of protocol error. However,
   if a Last ASN is configured as the local AS, implementations MAY
   generate a 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 Last
   ASNs.

6. IANA Considerations

   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.

   These reservations have been documented in the IANA "Autonomous
   System (AS) Numbers" registry [IANA.AS] and the IANA "Special-Purpose
   Autonomous System (AS) Numbers" registry [IANA.SpecialAS].

7. Security Considerations

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

8. References

8.1. Normative References

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

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

   [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", <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

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