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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

This memo documents an Internet Best Current Practice.

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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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