

Network Working Group
Internet-Draft
Intended status: Informational
Expires: November 17, 2013

J. Haas
Juniper Networks
J. Mitchell
Microsoft Corporation
May 16, 2013

Last Autonomous System (AS) Reservations
draft-jhjm-idr-last-as-reservations-00

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 recommends they not be used by operators.

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 November 17, 2013.

Copyright Notice

Copyright (c) 2013 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.

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 BGP [[RFC4271](#)] network operators. Since the introduction of BGP Support for Four-Octet AS Number Space [[RFC6793](#)], IANA has also reserved the ASN of the 32 bit autonomous system number range, 4294967295. These reservations have been documented in the IANA Autonomous System Numbers Registry [[IANA.AS](#)]. Although these "Last ASNs" border on Private Use ASN ranges, they are not defined as Private Use ASNs by [[I-D.ietf-idr-as-private-reservation](#)]. This document describes the reasoning for these reservations and provides guidance both to operators and to authors of future protocol enhancements 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 ASN Reservations

The primary reason for reserving the Last ASNs of the 16 bit and 32 bit ASN ranges is that these numbers are also at the end of typical computational data structures holding the underlying number. Programmatic errors are more common when handling of end of range values, and sometimes last values (binary all ones) have been used as "magic numbers", to represent a different number or behavior.

Secondly, a subset of the standard BGP communities of the last ASN of the 16 bit range, 65535, are reserved for use by Well-known communities as described in [RFC 1997](#) [[RFC1997](#)] and IANA [[IANA.WK](#)]. Although this not currently true of ASN 4294967295, if there is a future need for a Special Use ASN that is not designed to be globally routable, or the associated BGP attributes (such as communities) of such an ASN, this may be a valid candidate for such purpose. This document does not prescribe any such purpose to this ASN.

4. Operational Considerations

Operators MUST NOT use Last ASNs as if they are Private Use ASNs, or

for any other purpose, since they are reserved and implementations may have errors in regards to handling these ASNs. Implementations SHOULD NOT handle Last ASNs in the same fashion as Private Use ASNs. Operators are accustomed to being able to fully utilize the communities associated with the ASN's they have deployed utilizing

the format described in [RFC 1997](#) [[RFC1997](#)], even in the case of Private Use ASNs. In the case of usage of ASN 65535 as if it was a Private Use ASN, operators might not recognize these communities are reserved as BGP Well-known community values [[IANA.WK](#)], causing undesirable routing behavior if prefixes are tagged with such communities within the network.

Operators that choose to filter or provide tools that filter AS_PATH, MAY choose to filter Last ASNs in the same way as Private Use ASNs, to prevent the use of these reserved ASNs on their networks.

[5.](#) Acknowledgements

The author would like to thank Michelle Cotton and Elwyn Davis for encouraging the proper documentation of the reservation of these ASNs.

[6.](#) IANA Considerations

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

IANA has also reserved 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 Numbers Registry [[IANA.AS](#)].

[7.](#) Security Considerations

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

[8.](#) References

[8.1.](#) Normative References

- [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.

Haas & Mitchell

Expires November 17, 2013

[Page 3]

Internet-Draft

Last AS Reservations

May 2013

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

[8.2.](#) Informative References

- [I-D.ietf-idr-as-private-reservation] Mitchell, J., "Autonomous System (AS) Reservation for Private Use", [draft-ietf-idr-as-private-reservation-04](#) (work in progress), April 2013.
- [IANA.AS] IANA, "Autonomous System (AS) Numbers", May 2013, <<http://www.iana.org/assignments/as-numbers/>>.
- [IANA.WK] IANA, "Border Gateway Protocol (BGP) Well-known Communities", May 2013, <<http://www.iana.org/assignments/bgp-well-known-communities/>>.
- [RFC1997] Chandrasekeran, R., Traina, P., and T. Li, "BGP Communities Attribute", [RFC 1997](#), August 1996.

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