Internet Engineering Task Force (IETF)
Request for Comments: 7249
Category: Informational
ISSN: 2070-1721

R. Housley
Vigil Security

May 2014

Internet Numbers Registries

Abstract

RFC 7020 provides information about the Internet Numbers Registry System and how it is used in the distribution of autonomous system (AS) numbers and globally unique unicast Internet Protocol (IP) address space.

This companion document identifies the IANA registries that are part of the Internet Numbers Registry System at this time.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for informational purposes.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Not all documents approved by the IESG are a candidate for any level of Internet Standard; see Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc7249.

1. Introduction

In accordance with the IETF-IANA Memorandum of Understanding [RFC2860], RFC 7020 [RFC7020] provides information about the Internet Numbers Registry System and how it is used in the distribution of autonomous system (AS) numbers and globally unique unicast Internet Protocol (IP) address space.

This companion document identifies the IANA registries that are part of the Internet Numbers Registry System at this time.

2. Internet Numbers Registries

Three IANA registries are associated with the Internet Numbers Registry System: "Autonomous System (AS) Numbers", "IANA IPv4 Address Space Registry", and "IPv6 Global Unicast Address Assignments". However, in each case, there are special-purpose values, and those special-purpose values are outside the Internet Numbers Registry System.

2.1. Autonomous System Numbers

For historical reasons, there are 16-bit AS numbers and 32-bit AS numbers. However, the 16-bit AS numbers are really just zero through 65535 of the 32-bit AS number space.

The allocation and registration functions for all non-reserved AS numbers are handled by the Internet Numbers Registry System in accordance with policies developed by the Regional Internet Registries (RIRs) in accordance with their processes.

Some special-purpose AS numbers have been reserved. Section 3 of this document establishes an IANA registry for special-purpose AS Numbers that have already been reserved. Future additions to this registry can be made through "IETF Review" as defined in [RFC5226]. Once a reservation is approved, it is recorded in the special-purpose AS numbers registry with a reference to the IESG-approved RFC that documents the reservation.

2.2. IPv4 Addresses

The allocation and registration functions for all non-reserved, globally unique unicast IPv4 addresses are handled by the Internet Numbers Registry System in accordance with policies developed by the RIRs in accordance with their processes.

Reservations of special-purpose IPv4 addresses can be found in the IANA registry [IANA-IPv4-Reg]. Future additions to this registry can be made through "IETF Review" as defined in [RFC5226]. Once a reservation is approved, it is recorded in the special-purpose IPv4 address registry with a reference to the IESG-approved RFC that documents the reservation.

2.3. IPv6 Addresses

The vast bulk of the IPv6 address space (approximately 7/8ths of the whole address space) is reserved by the IETF [RFC4291], with the expectation that further assignment of globally unique unicast address space will be made from this reserved space in accordance with future needs.

The allocation and registration functions for all non-reserved globally unique unicast IPv6 addresses are handled by the Internet Numbers Registry System in accordance with policies developed by the RIRs in accordance with their processes.

Reservations of special-purpose IPv6 addresses can be found in the IANA registry [IANA-IPv6-Reg]. Future additions to this registry can be made through "IETF Review" as defined in [RFC5226]. Once a reservation is approved, it is recorded in the special-purpose IPv6 address registry with a reference to the IESG-approved RFC that documents the reservation.

3. IANA Considerations

IANA has created the "Special-Purpose AS Numbers" registry. Future additions to this registry can be made through "IETF Review" as defined in [RFC5226]. At this time, the special-purpose AS numbers are:

AS Numbers	Reason for Reservation
0	Reserved by [AS0-PROCESS]
23456	AS_TRANS; reserved by [RFC6793]
64496-64511	For documentation and sample code; reserved by [RFC5398]
64512-65534	For private use; reserved by [RFC6996]
65535	Reserved by [RFC1930]
65536-65551	For documentation and sample code; reserved by [RFC5398]
4200000000-4294967294	For private use; reserved by [RFC6996]
4294967295	Reserved by [LAST-AS-RES]

4. Security Considerations

This document identifies the IANA registries that are part of the Internet Numbers Registry System at the time of publication. It does not change the security posture of the Internet in any way.

Network operators should take care that special-purpose numbers and addresses are used on the public Internet in a manner that is consistent with their reserved purpose.

5. References

5.1. Normative References

[RFC2860] Carpenter, B., Baker, F., and M. Roberts, "Memorandum of Understanding Concerning the Technical Work of the Internet Assigned Numbers Authority", RFC 2860, June 2000.

[RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 5226, May 2008.

[RFC7020] Housley, R., Curran, J., Huston, G., and D. Conrad, "The Internet Numbers Registry System", RFC 7020, August 2013.

5.2. Informative References

[AS0-PROCESS]
Kumari, W., Bush, R., Schiller, H., and K. Patel, "Codification of AS 0 processing", Work in Progress, August 2012.

[IANA-IPv4-Reg]
IANA, "IANA IPv4 Special-Purpose Address Registry", <http://www.iana.org/assignments/iana-ipv4-special-registry>.

[IANA-IPv6-Reg]
IANA, "IANA IPv6 Special-Purpose Address Registry", <http://www.iana.org/assignments/iana-ipv6-special-registry>.

[LAST-AS-RES]
Haas, J. and J. Mitchell, "Reservation of Last Autonomous System (AS) Numbers", Work in Progress, April 2014.

[RFC1930] Hawkinson, J. and T. Bates, "Guidelines for creation, selection, and registration of an Autonomous System (AS)", BCP 6, RFC 1930, March 1996.

[RFC4291] Hinden, R. and S. Deering, "IP Version 6 Addressing Architecture", RFC 4291, February 2006.

[RFC5398] Huston, G., "Autonomous System (AS) Number Reservation for Documentation Use", RFC 5398, December 2008.

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

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

Acknowledgements

Many thanks to Jari Arkko, Scott Bradner, Brian Carpenter, David Conrad, John Curran, David Farmer, Adrian Farrel, Stephen Farrell, Brian Haberman, Geoff Huston, George Michaelson, S. Moonesamy, and Thomas Narten for their insightful review and comment.

Author's Address

Russell Housley
Vigil Security, LLC
918 Spring Knoll Drive
Herndon, VA 20170
USA
EMail: housley@vigilsec.com