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Special-Purpose Address Registries draft-bonica-special-purpose-00

Abstract

This memo instructs IANA to restructure its IPv4 and IPv6 Special-Purpose Address Registries. Upon restructuring, the aforementioned registries will record all special-purpose address blocks, maintaining a common set of information regarding each address block.

This memo updates [RFC 5736](#) and [RFC 4773](#), which define the current structure of the IPv4 and IPv6 Special-Purpose Address Registries . It also obsoletes [RFC 5735](#) and [RFC 5156](#) which document special-purpose address blocks that are not currently, but will in the future, be recorded in the IPv4 and IPv6 Special-Purpose Address Registries.

Status of this Memo

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1. Introduction

In order to support new protocols and practices, the IETF occasionally reserves an address block for special purpose. For example, [\[RFC1122\]](#) reserves an IPv4 address block (0.0.0.0/8) to represent the local (i.e., "this") network. Likewise, [\[RFC4291\]](#) reserves an IPv6 address block (fe80::/10) to represent link-scoped unicast addresses.

Periodically, the IETF publishes an RFC that catalogs special-purpose address blocks. Currently, [\[RFC5735\]](#) catalogs all IPv4 special-purpose address blocks and [\[RFC5156\]](#) catalogs all IPv6 special-purpose address blocks.

[\[RFC5736\]](#) assigns an IPv4 address block (192.0.0.0/24) to IANA and instructs IANA to allocate special-purpose address blocks from this space. [\[RFC5736\]](#) also instructs IANA to create an IPv4 Special-Purpose Address Registry that records allocations from this address space. However, [\[RFC5736\]](#) does not instruct IANA to record special-purpose address block reservations from outside of the aforementioned space in the IPv4 Special-Purpose Address Registry.

Likewise, [\[RFC2928\]](#) assigns an IPv6 address block (2001:0000::/23) to IANA and instructs IANA to allocate special-purpose address blocks from this space. [\[RFC4773\]](#) instructs IANA to create an IPv6 Special-Purpose Address Registry that records allocations from this address space. However, [\[RFC4773\]](#) does not instruct IANA to record special-purpose address block reservations from outside of the aforementioned space in the IPv6 Special-Purpose Address Registry.

This memo instructs IANA to restructure its IPv4 and IPv6 Special-Purpose Address Registries. Therefore, this document updates [\[RFC5736\]](#) and [\[RFC4773\]](#) which define the current structure of the aforementioned registries.

Specifically, this memo instructs IANA to record all special-purpose address blocks in the aforementioned registries. These include, but are not limited to, IPv4 allocations from 192.0.0.0/24 and IPv6 allocations from 2001:0000::/23. When the aforementioned registries include all special-purpose address blocks, [\[RFC5735\]](#) and [\[RFC5156\]](#) will become redundant with the registries. Therefore, this memo obsoletes [\[RFC5735\]](#) and [\[RFC5156\]](#).

Furthermore, this memo defines:

- o a common set of information that the registries will maintain regarding each special-purpose address block

- o a common set of requirements for future entries

2. IANA Considerations

IANA will restructure the following registries:

- o IPv4 Special-Purpose Address Registry
- o IPv6 Special-Purpose Address Registry

The IPv4 Special-Purpose Address Registry will record all IPv4 special-purpose address blocks. These reservations will include, but not be limited to, allocations from the 192.0.0.0/24 address block. Likewise, the IPv6 Special-Purpose Address Registry will record all IPv6 special-purpose address blocks. These reservations will include, but not be limited to, allocations from the 2001:0000::/23 address block.

[Section 2.1](#) of this document describes information that both registries will maintain for each entry. Initially, IANA will populate the IPv4 Special-Purpose Address Registry with information taken from [Section 2.2](#) of this document. Likewise, IANA will populate the IPv6 Special-Purpose Address Registry with information taken from [Section 2.3](#) of this document.

IANA will update the aforementioned registries as requested in the "IANA Considerations" section of an IESG-reviewed document. The "IANA Considerations" section must include all of the information specified in [Section 2.1](#) of this document.

2.1. Information Requirements

The IPv4 and IPv6 Special-Purpose Address Registries will maintain the following information regarding each entry:

- o Prefix - An IPv4 or IPv6 prefix that identifies the special-purpose address block
- o Name - A descriptive name for the special-purpose address block
- o RFC - The RFC though which the special-purpose address block was requested
- o Allocation Date - The date upon which the special purpose address block was allocated

- o Termination Date - The date upon which the allocation is to be terminated. This field is applicable for limited-use allocations only.
- o Source - A boolean value indicated whether an address from the allocated special-purpose address block is valid when used as the source address of an IP datagram that transits two devices
- o Destination - A boolean value indicated whether an address from the allocated special-purpose address block is valid when used as the destination address of an IP datagram that transits two devices
- o Routable - A boolean value indicating whether a IP datagram whose destination address is drawn from the allocated special-purpose address block is routable (i.e., may traverse more than a single IP interface)
- o Global - A boolean value indicating whether a IP datagram whose destination address is drawn from the allocated special-purpose address block is routable beyond a specified administrative domain.

If the value of "Destination" is FALSE, the values of "Routable" and "Global" must also be false.

2.2. IPv4 Special-Purpose Address Registry Entries

Table 1 through Table 17, below, represent entries with which the IANA will initially populate the IPv4 Special-Purpose Address Registry.

Attribute	Value
Prefix	0.0.0.0/8
Name	"This" Network
RFC	[RFC1122] Section 3.2.1.3
Allocation Date	September, 1981
Termination Date	N/A
Source	True
Destination	True
Routable	False
Global	False

Table 1: "This" Network

Attribute	Value
Prefix	10.0.0.0/8
Name	Private-Use
RFC	[RFC1918]
Allocation Date	February 1996
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 2: Private-Use Networks

Attribute	Value
Prefix	100.64.0.0/10
Name	Shared Address Space
RFC	[RFC6598]
Allocation Date	April 2012
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 3: Shared Address Space

Attribute	Value
Prefix	127.0.0.0/8
Name	Loopback
RFC	[RFC1122] Section 3.2.1.3
Allocation Date	September 1981
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 4: Loopback

Attribute	Value
Prefix	169.254.0.0/16
Name	Link Local
RFC	[RFC3927]
Allocation Date	May 2005
Termination Date	N/A
Source	True
Destination	True
Routable	False
Global	False

Table 5: Link Local

Attribute	Value
Prefix	172.16.0.0/12
Name	Private-Use
RFC	[RFC1122]
Allocation Date	February 1996
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 6: Private-Use Networks

Attribute	Value
Prefix	192.0.0.0/24
Name	IETF Protocol Assignments
RFC	[RFC5736]
Allocation Date	January 2010
Termination Date	N/A
Source	False[1]
Destination	False[1]
Routable	False[1]
Global	False[1]

Table 7: IETF Protocol Assignments

[1] Unless permitted by a more specific allocation.

Attribute	Value
Prefix	192.0.0.0/29
Name	DS-Lite
RFC	[RFC6333]
Allocation Date	June 2011
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 8: DS-Lite

Attribute	Value
Prefix	192.0.2.0/24
Name	TEST-NET-1
RFC	[RFC5737]
Allocation Date	January 2010
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 9: TEST-NET-1

Attribute	Value
Prefix	192.88.99.0/24
Name	6to4 Relay Anycast
RFC	[RFC3068]
Allocation Date	June 2001
Termination Date	N.A
Source	True
Destination	True
Routable	True
Global	True

Table 10: 6to4 Relay Anycast

Attribute	Value
Prefix	192.168.0.0/16
Name	Private-Use
RFC	[RFC1918]
Allocation Date	February 196
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	Flase

Table 11: Private-Use Networks

Attribute	Value
Prefix	198.18.0.0/15
Name	Benchmarking
RFC	[RFC2544]
Allocation Date	March 1999
Termination Date	N.A
Source	True
Destination	True
Routable	True
Global	False

Table 12: Network Interconnect Device Benchmark Testing

Attribute	Value
Prefix	198.51.100.0/24
Name	TEST-NET-2
RFC	[RFC5737]
Allocation Date	January 2010
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 13: TEST-NET-2

Attribute	Value
Prefix	203.0.113.0/24
Name	TEST-NET-3
RFC	[RFC5737]
Allocation Date	January 2010
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 14: TEST-NET-3

Attribute	Value
Prefix	224.0.0.0/4
Name	Multicast
RFC	[RFC5771]
Allocation Date	March 2010
Termination Date	N/A
Source	False
Destination	True
Routable	True
Global	N/A [2]

Table 15: Multicast

[2] See [\[RFC5771\]](#) for details.

Attribute	Value
Prefix	240.0.0.0/4
Name	Reserved
RFC	[RFC1112] Section 4
Allocation Date	August 1989
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 16: Reserved for Future Use

Attribute	Value
Prefix	255.255.255.255/32
Name	Limited Broadcast
RFC	[RFC0919] Section 7
Allocation Date	October 1984
Termination Date	N/A
Source	False
Destination	True
Routable	False
Global	False

Table 17: Limited Broadcast

2.3. IPv6 Special-Purpose Address Registry Entries

Table 18 through Table 30, below, represent entries with which the IANA will initially populate the IPv6 Special-Purpose Address Registry.

Attribute	Value
Prefix	::1/128
Name	Loopback Address
RFC	[RFC4291]
Allocation Date	February 2006
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 18: Loopback Address

Attribute	Value
Prefix	::/128
Name	Unspecified Address
RFC	[RFC4291]
Allocation Date	February 2006
Termination Date	N/A
Source	True
Destination	False
Routable	False
Global	False

Table 19: Unspecified Address

Attribute	Value
Prefix	::FFFF:0:0/96
Name	IPv4-mapped Address
RFC	[RFC4291]
Allocation Date	February 2006
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	True

Table 20: IPv4-mapped Address

Attribute	Value
Prefix	0100::/64
Name	Discard-Only Prefix
RFC	[RFC6666]
Allocation Date	June 2012
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 21: Discard-Only Prefix

Attribute	Value
Prefix	2001:0000::/23
Name	IETF Protocol Assignments
RFC	[RFC2928]
Allocation Date	September 2000
Termination Date	N/A
Source	False[3]
Destination	False[3]
Routable	False[3]
Global	False[3]

Table 22: IETF Protocol Assignments

[3] Unless allowed by a more specific allocation

Attribute	Value
Prefix	2001:0000::/32
Name	TEREDO
RFC	[RFC4380]
Allocation Date	January 2006
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 23: TEREDO

Attribute	Value
Prefix	2001:0002::/48
Name	Benchmarking
RFC	[RFC5180]
Allocation Date	April 2008
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 24: Benchmarking

Attribute	Value
Prefix	2001:db8::/32
Name	Documentation
RFC	[RFC3849]
Allocation Date	July 2004
Termination Date	N/A
Source	False
Destination	False
Routable	False
Global	False

Table 25: Documentation

Attribute	Value
Prefix	2001:10::/28
Name	ORCHID
RFC	[RFC4843]
Allocation Date	March 2007
Termination Date	March 2014
Source	False
Destination	False
Routable	False
Global	False

Table 26: ORCHID

Attribute	Value
Prefix	2002::/16
Name	6to4
RFC	[RFC3056]
Allocation Date	February 2001
Termination Date	N/A
Source	False
Destination	True
Routable	True
Global	N/A[4]

Table 27: 6to4

See [[RFC3056](#)] for details.

Attribute	Value
Prefix	FC00::/7
Name	Unique-Local
RFC	[RFC4193]
Allocation Date	October 2005
Termination Date	N/A
Source	True
Destination	True
Routable	True
Global	False

Table 28: Unique-Local

Attribute	Value
Prefix	FE80::/10
Name	Linked-Scoped Unicast
RFC	[RFC4291]
Allocation Date	February 2006
Termination Date	N/A
Source	True
Destination	True
Routable	False
Global	False

Table 29: Linked-Scoped Unicast

Attribute	Value
Prefix	FF00::/8
Name	Multicast
RFC	[RFC4291]
Allocation Date	February 2006
Termination Date	N/A
Source	False
Destination	True
Routable	True
Global	

Table 30: Multicast

3. Security Considerations

Security of the Internet's routing system relies on the ability to authenticate an assertion of unique control of an address block. Measures to authenticate such assertions rely on validation that the address block forms part of an existing allocated address block, and that there is a trustable and unique reference in the IANA address registries.

The proposed registry is intended to provide an authoritative source of information regarding the currency and intended purpose of special purpose address blocks that are designated from the IANA-administered Special Purpose registry. This is a small step towards the creation

of a comprehensive registry framework that can be used as a trust point for commencing a chain of address validation. Consideration should be given to IANA registry publication formats that are machine parseable, and also the use of file signatures and associated certificate mechanisms to allow applications to confirm that the registry contents are current, and that they have been published by the IANA.

4. Acknowledgements

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