Independent Submission E. Lewis
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ICANN
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Loopback Prefix for IPv6
draft-ipversion6-loopback-prefix-00

Abstract

The IPv6 address range of 0::/64 is reserved for loopback addresses.
This expands from the single loophack address already defined for IPv6,
::1, to allow for a set of addresses to be used when packets are intended
to stay within a host system. Multiple loopback addresses allow for
simultaneous varied uses of the loopback addresses as has proven, albeit
in limited ways, in IPv4. And exception is made to accomodate the
::0/128, already defined as The Unspecified Address.

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This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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0. NOTE TO RFC EDITOR AND REVIEWERS

This section should be removed prior to publication.

1. Introduction

The "IP Version 6 Addressing Architecture" [RFC 4291] defines a single IPv6 loopback address as ::1/128. In "Special-Purpose IP Address Registries"
[RFC6890], 127.0.0.0/8 is assigned for loophack addresses, with usually just 127.0.0.1/32 implemented by default.

Ordinarily, just one address (whether IPv4 or IPv6) is sufficient for loopback addressing on a node but there have been a few use cases showing
that it is desireable to have more than 1 (but less than the over 16 million that are in an IPv4 /8).

One use case is testing or prototyping, desiring to mimic a small network
of processes on one node. To demonstrate a particular protocol's server
running on a well-known port, having multiple addresses where packets can "travel" within the host is useful.

Another use case has arisen from ICANN's Controlled Interruption approach
[need reference] which directs errant traffic to a loopback address with
two distinct goals in mind. One is to prevent the leakage of packets that

are known to be erroneously sent and two is to leave "bread crumbs" in log
files for operators to use to help track why the erroneous packets are being
sent.

The use of ::0/64 is (proposed) to represent an address range (or block)
encompassing The Unspecified Address and loopback addresses.

2. Use of ::0/64 Addresses

The Unspecified Address, or ::0/128, remains as defined in RFC 4291's section
2.5.2. **That definition is included by reference here so as to prevent** any unintentional changes to the original text.

For all other addresses within ::0/64, the rules for using are the same as
the rules in RFC 4291's section 2.5.3, again included by reference so as
not to introduce any unintentional changes.

3. IANA Considerations

Registration in the IANA IPv6 Special-Purpose Address Registry

The IANA is directed to add ::0/64 to the "IANA IPv6 Special-Purpose
Address Registry" specified in [RFC6890] as follows:

Address Block: ::0/64

Name: Loopback and Unspecified Addresses

RFC: [THIS DOCUMENT]

Allocation Date: [APPROVAL DATE]

Termination Date: N/A

Source: True [1]

Destination: False

Forwardable: False

Global: False

Reserved-by-Protocol: True

[1] True for ::0/128, False for all other addresses in ::0/64

The IANA is directed to remove Table 17 and Table 18 a
defined in RFC 6890, section 2.2.3.

4. Security Considerations

Security is not (yet) a consideration

5. Acknowledgements

We all this all to David Conrad.

6. References

6.1. Normative References

[RFC 4291] "IP Version 6 Addressing Architecture", Hinden & Deering, Feb 2006
[RFC 6890] "Special-Purpose IP Address Registries:, Cotton, Vegoda, Bonica & Haberman, Apr 2013

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