Workgroup:	Network Working Group
Internet-Draft:	draft-shytyi-6man-branch-vslaac-00
Published:	13 August 2024
Intended Status:	Standards Track
Expires:	14 February 2025
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VSLAAC, arbitrary length prefixes in Branch networks

Abstract

This documents provides the specification of the steps for a node that is expected to become a network Branch router with adjacent Branch networks (auto configured in stateless manner); and hosts that are expected to perform stateless autoconfiguration of temporary privacy addresses witin Branch networks.

Status of This Memo

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

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This Internet-Draft will expire on 14 February 2025.

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Table of Contents

1. Introduction

This document provides the specification of the steps an Branch router is expected to follow, when becomes a single point of entry and exit, for a limited scope networks; and stateless autoconfiguration of temporary privacy address based hosts within limited scope Branch networks. The stateless autoconfiguration mechanism as described in RFC 4862 [RFC4862] doesn't require manual configuration of hosts, minimal router's configuration and no additional servers. To enable the stateless autoconfiguration for hosts within Branch networks adjacent to the Branch router, the nework advertises to the Branch router in PIO a prefix length in range (65,80) bits. The Branch router itself for it's upstream interface uses 64 bits length prefix to connect to the network. The prefix length in POI is used for Branch networks creation behind the Branch router by advertising the subprefixes in range (65,80) bits. Further hosts within Branch networks receive RA with prefix length in range (65,80) bits and follow the RFC 4862 [RFC4862] stateless autoconfiguration procedure.

2. Terminology

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].

Branch network - a segment of network connected to a Branch router that uses custom addressing schemes (prefix lengths in range (65,80) bits) and MAY pass the traffic throught to its sub-networks but not other networks. It hadles traffic to and from its own devices and larger network it's connected to.

Branch router - A network infrastructure edge router that connects infrastructure network and Branch network.

Branch node - A node inside Branch Network.

3. Design purpose

The purpose of the document is listed below:

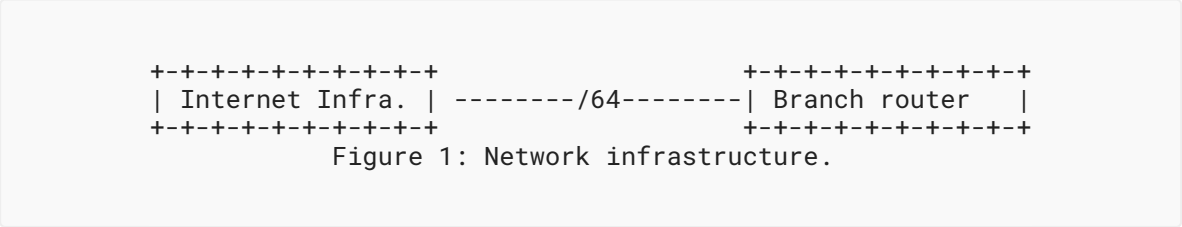
- This document allows temporary privacy address based hosts within the Branch network to connect to internet infrastructure.
- This document does not modify the /64 bit prefixes on internet infrastructure links. The Branch router interface connected to the internet infrastructure keeps the the /64 bit prefix.
- 

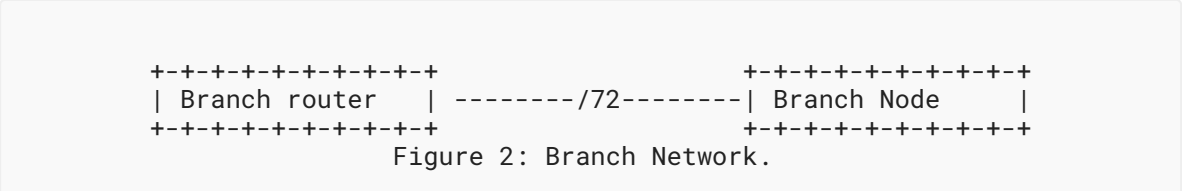
Figure 1: Network infrastructure.
- This document describes prefix length in range (65-80) allocation to the interface connected to the nodes of Branch network.
- 

Figure 2: Branch Network.

4. Mobile Hotspot as Branch router

Temporary Branch Network - use case, where a mobile Hotspot to serve as a temporary Branch network for field operations with temporary privacy address based hosts, or other scenarios where a quick network connection to the internet is needed.

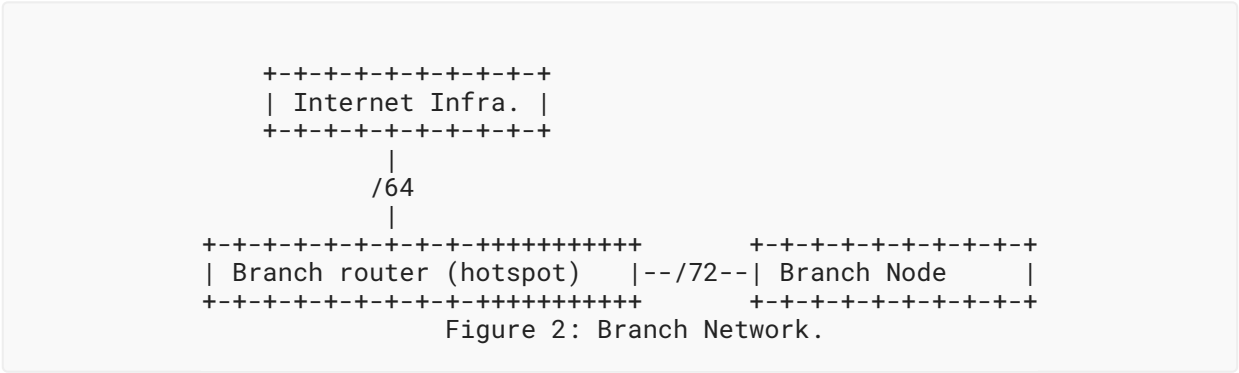


Figure 2: Branch Network.

5. Specification section

This section specifies the behavior of Branch router and nodes in Branch network.

5.1. Host temporary privacy address stateless autoconfiguration

SLAAC RFC 4862 [RFC4862] to be used within Branch networks with prefixes in range (65-80) bits. The nodes within Branch networks to use SLAAC for temporary privacy address generation in stateless autoconfiguration manner.

5.2. Branch Router autoconfiguration

The Branch is presented in the Figure 3.

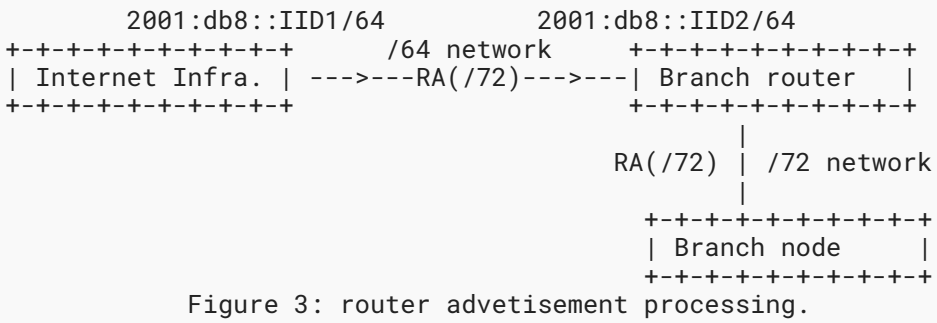


Figure 3: router advetisement processing.

5.2.1. Router Adverticement processing

When Internet Infrastructure sends Router Advertisement RFC 4861 [RFC4861] to Branch router with prefix length in range (65-80) bits, the Branch router configures on this link IPv6 address with prefix length 64. That's said if node is a Branch router, it doesn't use the field prefix len in PIO for Internet Infrastructure facing interface configuration. This behavior is presented in Figure 3.

5.2.2. Router Adverticement generation

The Branch router uses the prefix length in PIO to configure the network prefixes in range (65-80) bits between its interfaces and nodes within the Branch. This behavior is presented in Figure 3.

6. Security Considerations

No Considerations at this time.

7. IANA Considerations

No request to IANA at this time.

8. Acknowledgements

The authors would like to thank:

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for their valuable comments.

9. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/info/rfc2119>.

[RFC4861] Narten, T., Nordmark, E., Simpson, W., and H. Soliman, "Neighbor Discovery for IP version 6 (IPv6)", RFC 4861, DOI 10.17487/RFC4861, September 2007, <https://www.rfc-editor.org/info/rfc4861>.

[RFC4862] Thomson, S., Narten, T., and T. Jinmei, "IPv6 Stateless Address Autoconfiguration", RFC 4862, DOI 10.17487/RFC4862, September 2007, <https://www.rfc-editor.org/info/rfc4862>.

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