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**Update for IPv6 Host Address Availability Recommendations
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Abstract

The IPv6 Host Address Availability Recommendations Best Current Practice ([RFC 7934](#)), describes why IPv6 hosts should use multiple global addresses when attaching to a network. This document updates [RFC 7934](#) by removing a recommendation for networks to give the host the ability to use new addresses without requiring explicit requests.

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 [[RFC2119](#)].

Status of This Memo

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[1.](#) Introduction

The IPv6 Host Address Availability Recommendations Best Current Practice document [[RFC7934](#)] describes why IPv6 hosts should use multiple global addresses when attaching to a network. The recommendations in [Section 8](#) of this document included the text:

Due to the drawbacks imposed by requiring explicit requests for address space (see [Section 4](#)), it is RECOMMENDED that the network give the host the ability to use new addresses without requiring explicit requests.

This text could be interpreted as recommending that IPv6 networks should not use not DHCPv6 [[RFC3736](#)], which provides new addresses in response to explicit requests. This interpretation is based on the fact that a host which uses DHCPv6 IA_NA or IA_TA cannot use new addresses without requesting them from a DHCPv6 server on the network.

[2.](#) Updates to [RFC7934](#)

This document updates [[RFC7934](#)] to remove the second and third paragraphs of [Section 8](#), so that the recommendations section of [[RFC7934](#)] reads in its entirety as follows:

In order to avoid the problems described above and preserve the Internet's ability to support new applications that use more than one IPv6 address, it is RECOMMENDED that IPv6 network deployments provide multiple IPv6 addresses from each prefix to general-

purpose hosts. To support future use cases, it is NOT RECOMMENDED to impose a hard limit on the size of the address pool assigned to a host. Particularly, it is NOT RECOMMENDED to limit a host to only one IPv6 address per prefix.

3. Rationale

It has been argued in the v6ops Working Group that the first sentence second paragraph technically relegates the status of DHCPv6 to "NOT RECOMMENDED" on IPv6 networks, as it formally recommends that new addresses should be assigned without explicit requests. This implicitly excludes all address assignment mechanisms, including DHCPv6, which are not handled by the host itself. A change of this form to the status of DHCPv6 would be a serious and substantial change to the status of DHCPv6 at the IETF, and not one that could or should have been entertained without extensive debate as to whether it was an appropriate move to make. This debate never happened and the justification provided in [section 4 of \[RFC7934\]](#) is insufficient per-se to warrant changing the recommendation status of such a widely-deployed Standards Track protocol as DHCPv6.

The IPv6 self-selection addressing model does not necessarily suit the deployment requirements for many types of ipv6 networks, including enterprise, provider hosting, and various access network protocols (e.g. docsis / gpon / ipoe); if the status of DHCPv6 were changed to "NOT RECOMMENDED", then there would be no recommended IETF model for stateful / operator-assigned IPv6 addressing, and this would leave a glaring hole in the IPv6 host specification.

The subsequent sentences in the second paragraph provide alternatives to DHCPv6, and are superfluous in the absence of the first paragraph.

The third paragraph notes that DHCPv6 stateful address assignment (IA_NA or IA_TA) can be used to provide multiple addresses when the host connects to the network, but does not mention that the host can issue multiple dhcpv6 requests, thereby allowing arbitrary numbers of assignments rather than the stated limit of approximately 30. As the text in this paragraph is incorrect, it too has been removed.

4. IANA Considerations

There are no IANA considerations.

5. 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, <<http://www.rfc-editor.org/info/rfc2119>>.
- [RFC3736] Droms, R., "Stateless Dynamic Host Configuration Protocol (DHCP) Service for IPv6", [RFC 3736](#), DOI 10.17487/RFC3736, April 2004, <<http://www.rfc-editor.org/info/rfc3736>>.
- [RFC7934] Colitti, L., Cerf, V., Cheshire, S., and D. Schinazi, "Host Address Availability Recommendations", [BCP 204](#), [RFC 7934](#), DOI 10.17487/RFC7934, July 2016, <<http://www.rfc-editor.org/info/rfc7934>>.

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