

IPv6 Prefix Length Recommendation for Routing Protocols
draft-boucadair-6man-prefix-routing-reco-00

Abstract

The length of IP prefixes to be manipulated by forwarding and routing processes is policy-based; no maximum length must be assumed by design. This document sketches a recommendation to be followed by forwarding and routing designs with regards to the prefix length. The aim is to avoid hard-coded routing and forwarding designs that exclude some IP prefix lengths.

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 [RFC 2119](#) [[RFC2119](#)].

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[1.](#) Introduction

Recent discussions on the 64-bit boundary in IPv6 addressing ([[I-D.ietf-6man-why64](#)]) revealed a need for a clear recommendation on which bits must be used by routing protocols (including route decision-making processes).

A detailed analysis of the 64-bit boundary in IPv6 addressing, and the implication for end-side prefix assignment, is documented in [[I-D.ietf-6man-why64](#)]. No recommendation is included in [[I-D.ietf-6man-why64](#)].

It is fundamental to not link routing and forwarding to the IPv6 prefix/address semantic [[RFC4291](#)]. This document includes a recommendation for that aim.

[2.](#) Recommendation

Forwarding and routing protocols MUST NOT restrict by design the length of IPv6 prefixes. In particular, forwarding and routing processes MUST be designed to accept prefixes of any length up to /128.

Obviously, policies can be enforced to restrict the length of IP prefixes advertised within a given domain or in a given interconnection link. These policies are deployment-specific and/or driven by administrative (interconnection) considerations.

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This recommendation does not conflict with the 64-bit boundary followed for end-side prefix assignments.

3. IANA Considerations

This document does not require any action from IANA.

4. Security Considerations

This document does not introduce security issues in addition to what is discussed in [[RFC4291](#)].

5. References

5.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC4291] Hinden, R. and S. Deering, "IP Version 6 Addressing Architecture", [RFC 4291](#), February 2006.

5.2. Informative References

- [I-D.ietf-6man-why64]
Carpenter, B., Chown, T., Gont, F., Jiang, S., Petrescu, A., and A. Yourtchenko, "Analysis of the 64-bit Boundary in IPv6 Addressing", [draft-ietf-6man-why64-01](#) (work in progress), May 2014.

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