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**RPKI Route Origin Validation Without Route Refresh**  
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Abstract

A BGP Speaker performing RPKI-based Route Origin Validation should not issue Route Refresh to its neighbors when receiving new VRPs.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [BCP 14](#) [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

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## [1.](#) Introduction

Memory constraints in early routers caused classic [\[RFC4271\]](#) BGP implementations to not keep a full Adj-RIB-In (Sec. 1.1). When doing RPKI-based Route Origin Validation ([\[RFC6811\]](#) and [\[RFC8481\]](#)), if such a BGP speaker receives new ROAs/VRPs, it might not have kept paths previously marked as Invalid. Such an implementation must then request a Route Refresh [\[RFC7313\]](#) from its neighbors to recover the paths which might be covered by these new VRPs. This will be perceived as rude by those neighbors as it passes a serious resource burden on to them. This document recommends implementations keep but mark Invalidated paths so the Route Refresh is no longer needed.

## [2.](#) Related Work

It is assumed that the reader understands BGP, [\[RFC4271\]](#) and Route Refresh [\[RFC7313\]](#), the RPKI [\[RFC6480\]](#), Route Origin Authorizations (ROAs), [\[RFC6482\]](#), The Resource Public Key Infrastructure (RPKI) to Router Protocol [\[I-D.ietf-sidrops-8210bis\]](#), RPKI-based Prefix Validation, [\[RFC6811\]](#), and Origin Validation Clarifications, [\[RFC8481\]](#).

## [3.](#) Operational Considerations

Operators deploying ROV SHOULD ensure that the router implementation is not causing unnecessary Route Refresh requests to neighbors.



If the router does not implement the recommendations here, the operator SHOULD enable "soft reconfiguration inbound," which should cause the Adj-RIB-In to be effectively kept. The operator should then ensure that this stops unnecessary Route Refresh requests to neighbors.

If the router has insufficient resources to support this, it SHOULD not be used for Route Origin Validation.

#### **4. Security Considerations**

This document adds no additional security considerations to those already described by the referenced documents.

#### **5. IANA Considerations**

None

#### **6. References**

##### **6.1. Normative References**

[I-D.ietf-sidrops-8210bis]

Bush, R. and R. Austein, "The Resource Public Key Infrastructure (RPKI) to Router Protocol, Version 2", Work in Progress, Internet-Draft, [draft-ietf-sidrops-8210bis-03](https://www.ietf.org/archive/id/draft-ietf-sidrops-8210bis-03), 15 August 2021, <<https://www.ietf.org/archive/id/draft-ietf-sidrops-8210bis-03.txt>>.

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[RFC4271] Rekhter, Y., Ed., Li, T., Ed., and S. Hares, Ed., "A Border Gateway Protocol 4 (BGP-4)", [RFC 4271](#), DOI 10.17487/RFC4271, January 2006, <<https://www.rfc-editor.org/info/rfc4271>>.

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[RFC6811] Mohapatra, P., Scudder, J., Ward, D., Bush, R., and R. Austein, "BGP Prefix Origin Validation", [RFC 6811](#), DOI 10.17487/RFC6811, January 2013, <<https://www.rfc-editor.org/info/rfc6811>>.



- [RFC7313] Patel, K., Chen, E., and B. Venkatachalapathy, "Enhanced Route Refresh Capability for BGP-4", [RFC 7313](#), DOI 10.17487/RFC7313, July 2014, <<https://www.rfc-editor.org/info/rfc7313>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.
- [RFC8481] Bush, R., "Clarifications to BGP Origin Validation Based on Resource Public Key Infrastructure (RPKI)", [RFC 8481](#), DOI 10.17487/RFC8481, September 2018, <<https://www.rfc-editor.org/info/rfc8481>>.

## **6.2. Informative References**

- [RFC6480] Lepinski, M. and S. Kent, "An Infrastructure to Support Secure Internet Routing", [RFC 6480](#), DOI 10.17487/RFC6480, February 2012, <<https://www.rfc-editor.org/info/rfc6480>>.

## **Appendix A. Acknowledgements**

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