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**BGP RPKI-Based Origin Validation on Export**  
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Abstract

It is useful for RPKI-based Origin Validation to classify and mark prefixes for all ingress, redistribution, and egress policies. For egress policy, it is important that the classification uses the effective origin AS of the processed route, which may specifically be altered by the commonly available knobs such as removing private ASs, confederation handling, and other modifications of the origin AS.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in [RFC2119] only when they appear in all upper case. They may also appear in lower or mixed case as English words, without normative meaning.

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## 1. Introduction

As the origin AS may be modified by outbound policy, policy semantics based on RPKI Origin Validation state MUST be able to be applied separately on distribution into BGP and on egress.

When applied to egress policy, the effective origin AS MUST be used to determine the Origin Validation state. The effective origin AS is that which will actually be the origin AS in the announcement. It might be affected by removal of private AS(s), confederation, AS migration, etc. If there are any AS\_PATH modifications resulting in origin AS change, then these MUST be taken into account.

## 2. Suggested Reading

It is assumed that the reader understands BGP, [[RFC4271](#)], the RPKI, [[RFC6480](#)], Route Origin Authorizations (ROAs), [[RFC6482](#)], RPKI-based Prefix Validation, [[RFC6811](#)], and Origin Validation Clarifications, [[RFC8481](#)].

## 3. Egress Processing

BGP implementations supporting RPKI-based origin validation SHOULD provide the same policy configuration primitives for decisions based on validation state available for use in ingress, redistribution, and egress policies. When applied to egress policy, validation state MUST be determined using the effective origin AS of the route as it will (or would) be announced to the peer. The effective origin AS may differ from that of the route in the RIB due to commonly available knobs such as: removal of private ASs, AS path manipulation, confederation handling, etc.



Egress policy handling can provide more robust protection for outbound eBGP than relying solely on ingress (iBGP, eBGP, connected, static, etc.) redistribution being configured and working correctly - better support for the robustness principle.

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

This document does not create security considerations beyond those of [RFC6811] and [RFC8481].

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

This document has no IANA Considerations.

#### **6. References**

##### **6.1. 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>>.
- [RFC6482] Lepinski, M., Kent, S., and D. Kong, "A Profile for Route Origin Authorizations (ROAs)", [RFC 6482](#), DOI 10.17487/RFC6482, February 2012, <<http://www.rfc-editor.org/info/rfc6482>>.
- [RFC6811] Mohapatra, P., Scudder, J., Ward, D., Bush, R., and R. Austein, "BGP Prefix Origin Validation", [RFC 6811](#), DOI 10.17487/RFC6811, January 2013, <<http://www.rfc-editor.org/info/rfc6811>>.
- [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**

- [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, <<http://www.rfc-editor.org/info/rfc4271>>.
- [RFC6480] Lepinski, M. and S. Kent, "An Infrastructure to Support Secure Internet Routing", [RFC 6480](#), DOI 10.17487/RFC6480, February 2012, <<http://www.rfc-editor.org/info/rfc6480>>.



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