

# **IPv6 Mapping Prefix PDU for the RPKI-Router Protocol**

**<draft-dong-sidrops-rpki-rtr-moa-pdu-00>**

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# Overview of This Draft

This draft defines a new payload PDU that conveys a set of IPv4 prefixes authorized by a single IPv6 mapping prefix.

Its purpose is to carry MOA data from the RPKI cache to routers in IPv6-only environments.

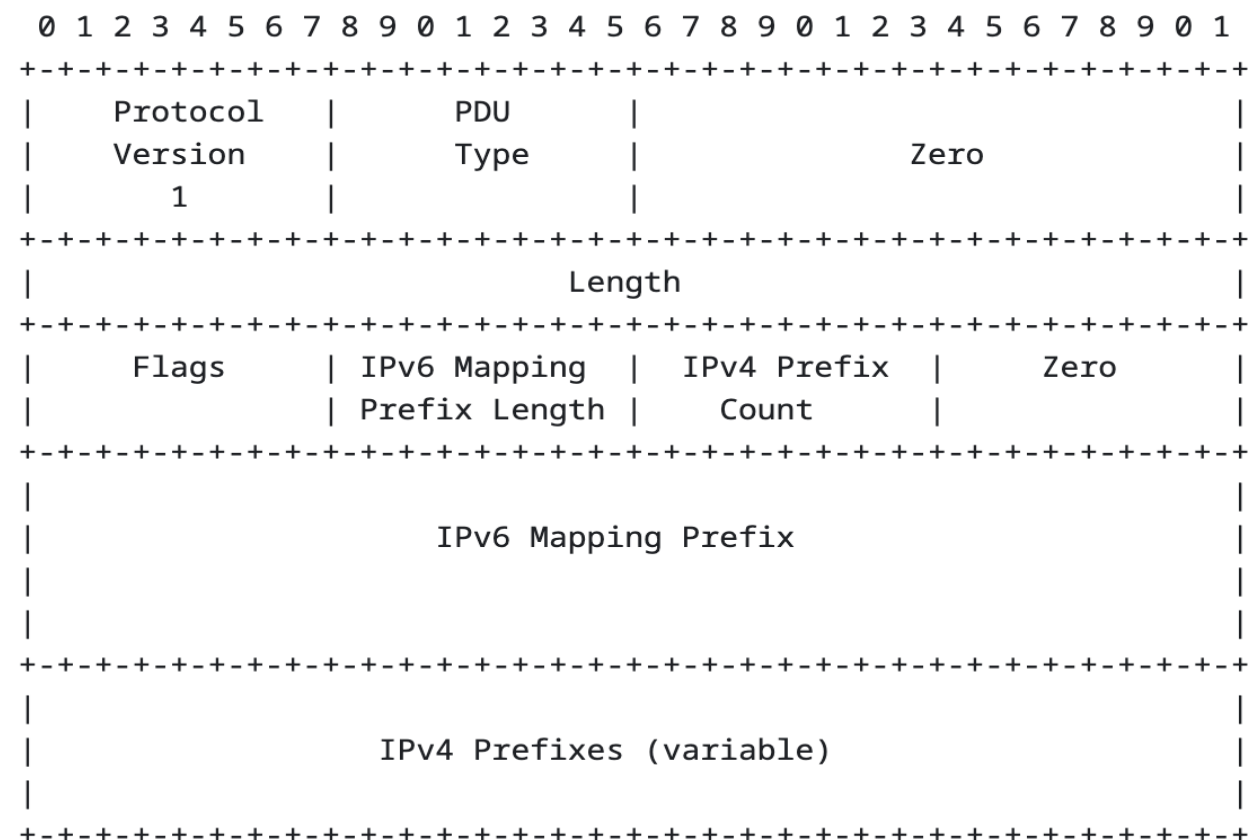
**At IETF 125 Meeting**, after draft-ietf-sidrops-moa-profile was presented to request WGLC, the WG chair suggested that this PDU protocol extension should be delivered in parallel with the MOA Profile to enable full deployment.

# Background Review

- In IPv6-only network, IPv6 mapping prefixes are configured at the PE to identify the location of each IPv4 network (proposed in [draft-ietf-v6ops-framework-md-ipv6only-underlay]).
- Mapping relations are distributed via MP-BGP ([draft-ietf-idr-mpbgp-extension-4map6]).
- MOA(Mapping Origin Authorizations): A cryptographically signed RPKI object defined in [draft-ietf-sidrops-moa-profile]. It authorizes an IPv6 mapping prefix to originate mapping for one or more IPv4 prefixes. The legitimate holder of an IPv4 address block can authorize which IPv6 mapping prefix is allowed to map that block.

**Without validation, attackers can hijack IPv4 traffic by announcing fake mapping prefixes.**

# PDU Format and Key features



The MOA IPv6 Mapping Prefix PDU

The PDU format follows the RFC 8210 structure, lowering the barrier for implementers.

## Key Features:

- Multiple IPv4 prefixes can be packed into one PDU, significantly reducing overhead.
- The Flags field provides clear semantics for both Announcement and Withdrawal of mapping authorizations.

# PDU Generation and Processing

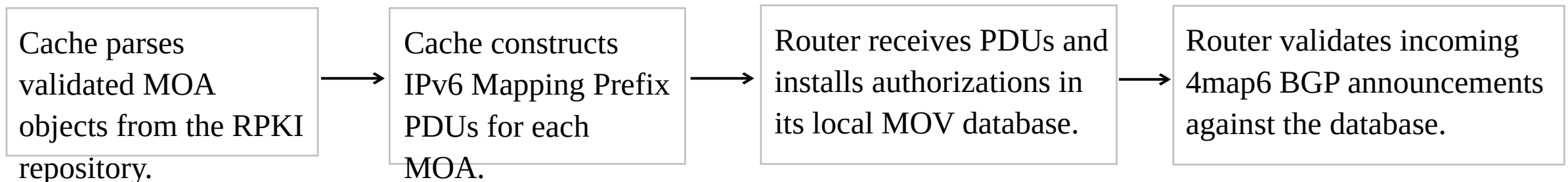
## Cache (PDU Generation):

- Derived from cryptographically validated MOA objects.
- Generate one or more PDUs per MOA; can include all IPv4 prefixes in one PDU for efficiency.
- IPv4 prefixes MUST be presented in canonical ordering.

## Router (PDU Processing):

- Flags=1: Install mapping authorization in the local MOV database.
- Flags=0: Remove the corresponding mapping authorization.
- Use the MOV database to validate incoming 4map6 BGP routes.

## Data Flow :



# Security Considerations

- Follows the RPKI (RFC 6480) and RPKI-Router Protocol (RFC 8210) security models.
- Routers **MUST** have a trust relationship with the cache.
- The cache **MUST** validate MOA signatures before generating PDUs.
- RFC 8210's Serial Number mechanism applies equally to this new PDU.
- Recommendation: Deploy IPv6 ROA validation alongside MOA – the authenticity of the IPv6 mapping prefix itself depends on IPv6 address authorization.

# Next Steps

- Seek feedback from the working group.
- Authors would like to request WG adoption of the draft.

Thanks