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## Fixing the C-Flag in the Extended Address Registration Option (EARO)

### Abstract

This document updates "Address-Protected Neighbor Discovery for Low-Power and Lossy Networks" (RFC 8928) by changing the position of the C-flag in the Extended Address Registration Option (EARO) and registering it with IANA.

### Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 7841.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at <https://www.rfc-editor.org/info/rfc9927>.

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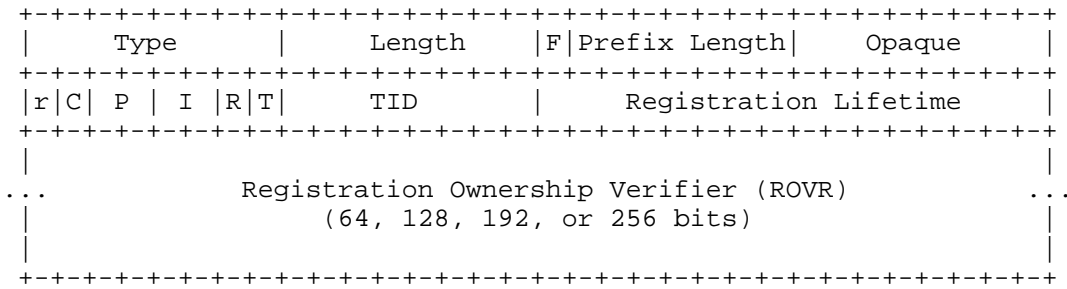


Figure 1: Extended Address Registration Option (EARO) Format for Use in NS Messages

Figure 2 replaces Figure 1 in [RFC8928] in the case of an EARO used in an NA message. The difference between the two formats is in the usage of bits 16 to 23.

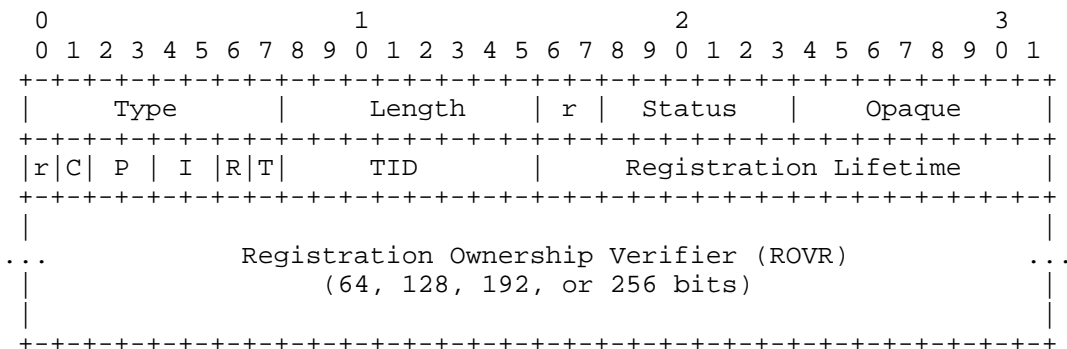


Figure 2: Extended Address Registration Option (EARO) Format for Use in NA Messages

Option fields of interest for this specification:

Type: 33

Length: Defined in [RFC8505]

F: Defined in [RFC9926]

Prefix Length: Defined in [RFC9926]

Status: 6-bit unsigned integer. This field is used in NA(EARO) response messages only to indicate the status of a registration. This field is defined in [RFC8505] and resized by [RFC9010]. The values for the Status field are available in [IANA.ICMP.ARO.STAT]. This field MUST be set to 0 in NS(EARO) messages unless the registration is for a prefix, in which case the F-flag is set and the prefix length is provided.

Opaque: Defined in [RFC8505]

r (reserved): 1-bit reserved field in NS(EARO) and NA(EARO) as depicted in Figure 1 and Figure 2. 2-bit reserved field (most significant bits of Status field) in NA(EARO) as depicted in Figure 2. All reserved field MUST be set to zero by the sender and MUST be ignored by the receiver.

C: 1-bit flag, moved from its position in Figure 1 of [RFC8928]. It is set to indicate that the ROVR field contains a Crypto-ID and that the 6LN MAY be challenged for ownership.

P: 2-bit field for Registered Address Type Indicator (RATInd). Indicates whether the registered address is unicast, multicast,

anycast, or derived from the registered unicast prefix. Used to transport the RATInd in different protocols. The values for the RATInd field are available in [IANA.ICMP.ARO.P-FIELD].

I: Defined in [RFC8505]

R: Defined in [RFC8505]

T: Defined in [RFC8505]

TID (Transaction ID): Defined in [RFC8505]

Registration Lifetime: Defined in [RFC8505]

Registration Ownership Verifier (ROVR): Defined in [RFC8505].  
Variable-length field used to verify who "owns" a registered IPv6 address. When the C-flag is set, this field contains a Crypto-ID [RFC8928].

#### 4. Security Considerations

This specification does not introduce any new security considerations beyond those already discussed in [RFC8928] and [RFC8505].

#### 5. Operational Considerations

The updates introduced in this document are not backward compatible. However, given that there are no known implementations or deployments of [RFC8928], this document does not require any transition plan.

#### 6. IANA Considerations

##### 6.1. Bit Position of the C-flag

IANA has updated the "Address Registration Option Flags" [IANA.ICMP.ARO.FLG] registry in the "Internet Control Message Protocol version 6 (ICMPv6) Parameters" registry group as specified in Table 1 so this document is referenced in addition to [RFC8928] for bit number 1:

Bit Number	Description	Reference
1	C-Flag	RFC 9927 and [RFC8928]

Table 1: Bit Position of the C-flag

#### 7. References

##### 7.1. Normative References

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