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# The Proximate Location Claim

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## Abstract

The Entity Attestation Token (EAT) is an extensible attestation version of a CBOR Web Token (CWT). EAT defines a location claim, but does not define a proximate location claim. This document proposes a claim in which an attester can relay detected relative location of a target.

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## Table of Contents

- [1. Introduction](#)
- [2. The Proximate Location Claim \(proxloc\)](#)
- [3. IANA Considerations](#)
- [4. Normative References](#)
- [Author's Address](#)

## 1. Introduction

The Entity Attestation Token i.e. EAT [[EAT.Draft](#)] provides a method for sending attestation-related data in the form of a CBOR Web Token (CWT) [[RFC8392](#)]. Attested location is claim provided in the EAT specification wherein an attester can provide location data in the form of a standard geodetic coding system (WGS 84).

Secure ranging involves the process of determining the relative location of a device (entity) with respect to a receiver. In this case, the receiver may actually attest to the location of the device in a similar manner to how the Entity Attestation Token conveys location data. However, there are major differences between the EAT conveyance of location and a secure ranging receiver: (1) the EAT location is that of the entity to which the attester created the token, while the secure ranging receiver is conveying the detected location of the entity, and (2) the receiver is providing the relative location of the entity.

In this document, a new claim - the proximate location claim - is specified that will distinguish location determined via secure ranging from location conveyed by as part of a entity's attestation evidence. Although this claim could appear in a CWT for non-attestation scenarios, it can be conveyed as part of a delegated attestation (i.e. the secure ranging receiver attests to the location on behalf of the target entity). A sample architecture is provided in [Figure 1](#). The secure ranging receiver in this case makes an angle-of-arrival (AoA) and distance determination based upon a transmitted signal from a target device. The receiver (assuming it can determine its own location) can project these measurements to a geodetic coordinate system and attest to it.

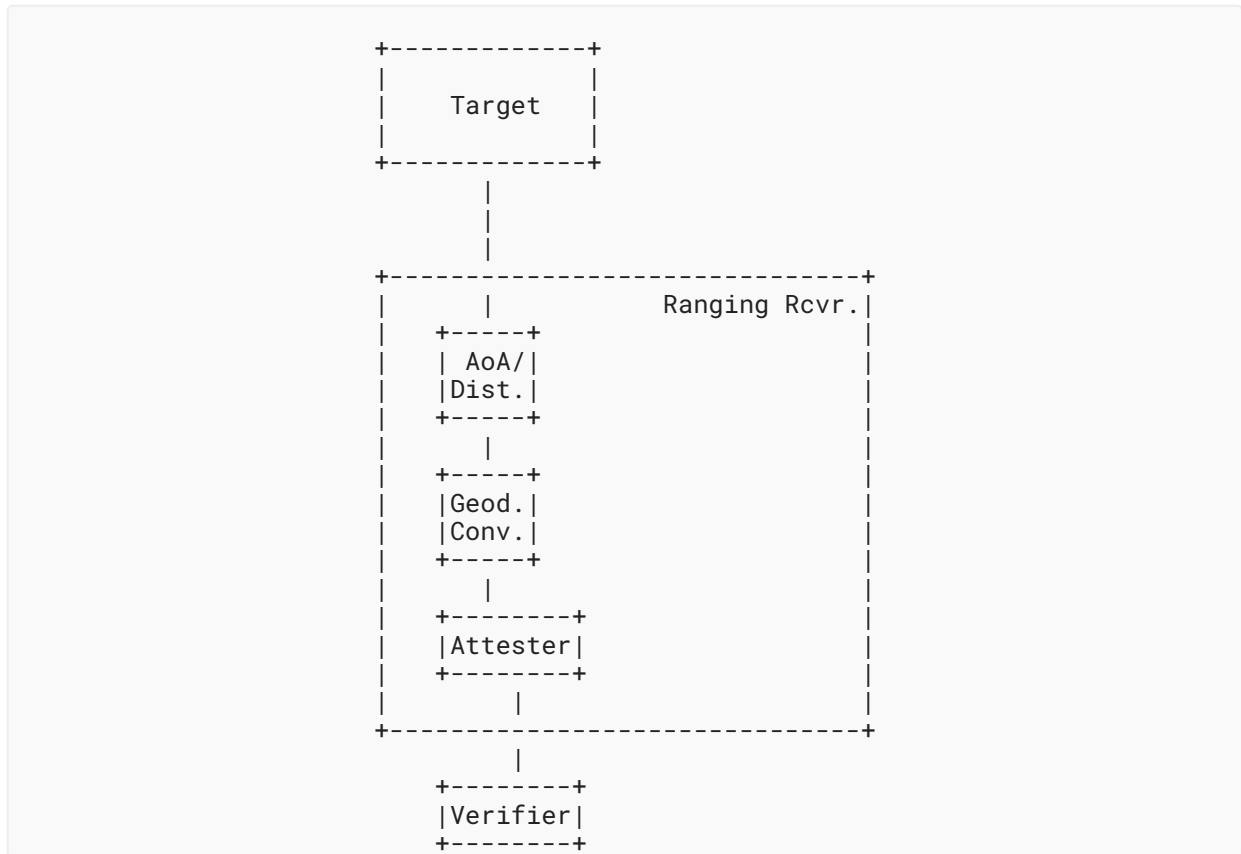


Figure 1: Secure Ranging and Attestation

## 2. The Proximate Location Claim (proxloc)

The proximate location claim provides the location of a target entity based on what a secure ranging receiver derives. If the secure ranging receiver is capable of determining its own location, then it can project the entity's location to an appropriate geodetic coordinate system based on the relative location of the entity. It is partially derived from the EAT location claim [EAT.Draft], but includes the uuid claim to uniquely identify the entity.

If the location cannot be derived as per the EAT specification, then the relative angle-of-arrival, angle-of-elevation, and ranging distance may be sent (the angular measurements in radians and the distance in meters).

```
proxloc-label => proxloc-type

proxloc-type = {
  target-ueid => ueid, ; derived from EAT claim ueid
  ? target-location => location ; derived from EAT claim location if WGS-84
  coordinate projection possible
  ? aoa => float ; angle-of-arrival optionally sent
  ? distance => float ; ranging distance optionally sent
  ? aoe =? float ; angle-of-elevation optionally sent
}
```

Note that this claim may be extended in the future for other coordinate systems.

### 3. IANA Considerations

This document requests registration of the following claim in the "CBOR Web Token (CWT) Claims Registry" (<http://www.iana.org/assignments/cwt>).

- Claim Name: proxloc
- Claim Description: The Proximate Location Claim
- JWT Claim Name: "proxloc"
- CWT Claim Key: TBD
- Claim Value Type(s): map
- Change Controller: IESG
- Specification Document(s): **this document**

### 4. Normative References

- [EAT.Draft] Lundblade, L., Mandyam, G., O'Donoghue, J., and C. Wallace, "The Entity Attestation Token (EAT)", Work in Progress, Internet-Draft, draft-ietf-rats-eat-19, 19 December 2022, <<https://datatracker.ietf.org/doc/html/draft-ietf-rats-eat-19>>.
- [RFC8392] Jones, M., Wahlstroem, E., Erdtman, S., and H. Tschofenig, "CBOR Web Token (CWT)", RFC 8392, DOI 10.17487/RFC8392, May 2018, <<https://www.rfc-editor.org/rfc/rfc8392>>.

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