Nonce-based Freshness for Remote Attestation in CSRs for CMP and EST

draft-tschofenig-lamps-nonce-cmp-est-01

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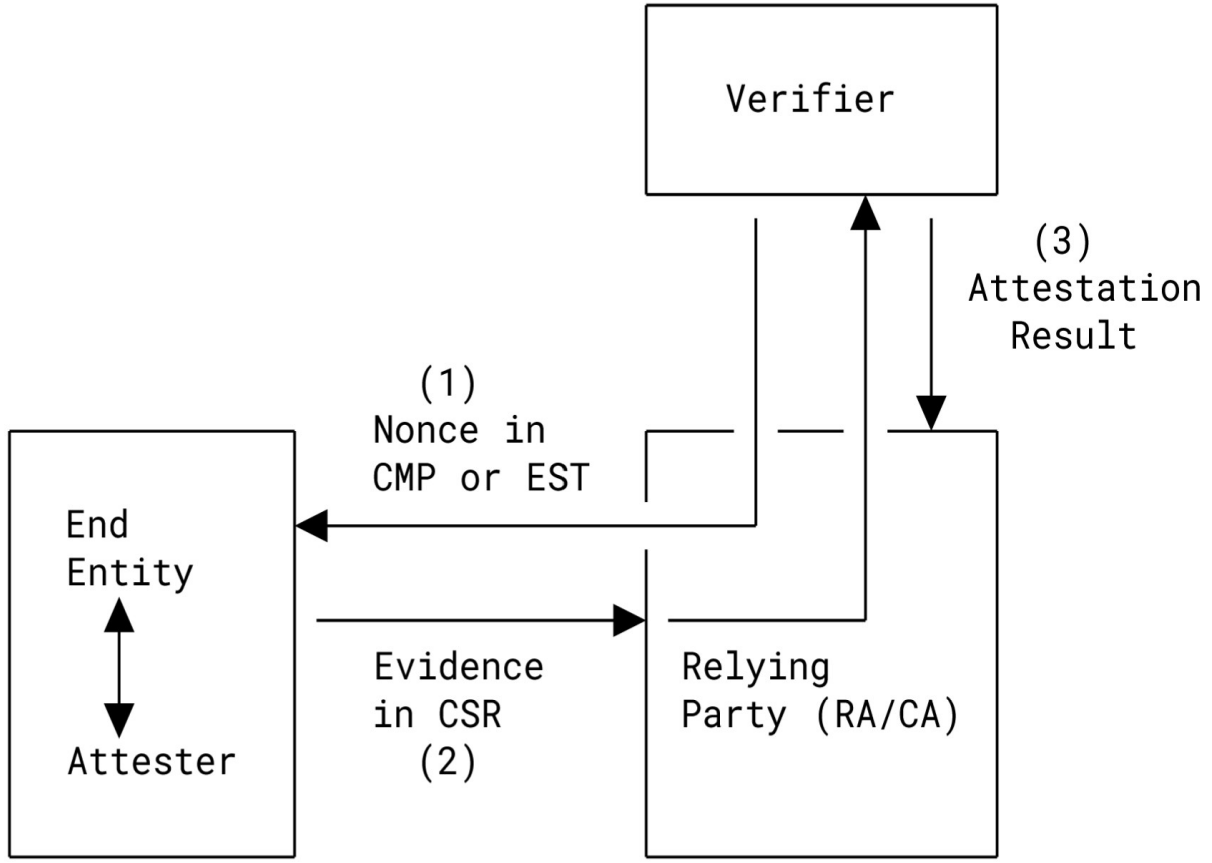
Motivation

- **draft-ietf-lamps-csr-attestation** defines the ability to carry attestation evidence in a CSR
- CSR is a one-shot message and the draft discusses freshness of evidence:

> “Evidence generated by an Attester generally needs to be fresh to provide value to the Verifier since the configuration on the device may change over time.
>
> …
>
> Developers, operators, and designers of protocols, which embed Evidence-carrying-CSRs, MUST consider what notion of freshness is appropriate and an available in-context; thus the issue of freshness is left up to the discretion of protocol designers and implementers.
> ”

Design Approach

- New messages for CMP/EST defined based on IETF#118 hackathon experience.
- Section 10 of RFC 9334 discusses different approaches for providing freshness:
  - a nonce-based approach,
  - the use of timestamps, and
  - an epoch-based technique.
- draft-tschofenig-lamps-nonce-cmp-est-01 defines how to exchange nonces in CMP and EST.



A little more details

- CMP

```
GenMsg:    {id-it TBD1}, NonceRequestValue
GenRep:    {id-it TBD2}, NonceResponseValue | < absent >

id-it-NonceRequest OBJECT IDENTIFIER ::= { id-it TBD1 }
NonceRequestValue ::= SEQUENCE {
   len INTEGER OPTIONAL,
   -- indicates the required length of the requested nonce
   hint EvidenceHint OPTIONAL
   -- indicates which Verifier to request a nonce from
}

id-it-NonceResponse OBJECT IDENTIFIER ::= { id-it TBD2 }
NonceResponseValue ::= SEQUENCE {
   nonce OCTET STRING
   -- contains the nonce of length len
   -- provided by the Verifier indicated with hint
   expiry Time OPTIONAL
   -- indicates how long the Verifier considers the
   -- nonce valid
}
```

- EST

Message type (per operation)	Media type(s)
Nonce Request	N/A (for GET) or application/json (for POST)
Nonce Response	application/json

Next Steps

- Missing component in the key attestation architecture.
- Relatively simple but DDoS mitigation technique may need to be addressed using stateless ticket approach.
- Call for adoption?