IETF RATS Timestamps in EAT

Remote ATtestation ProcedureS (rats) WG Virtual Meeting: 2020-03-31

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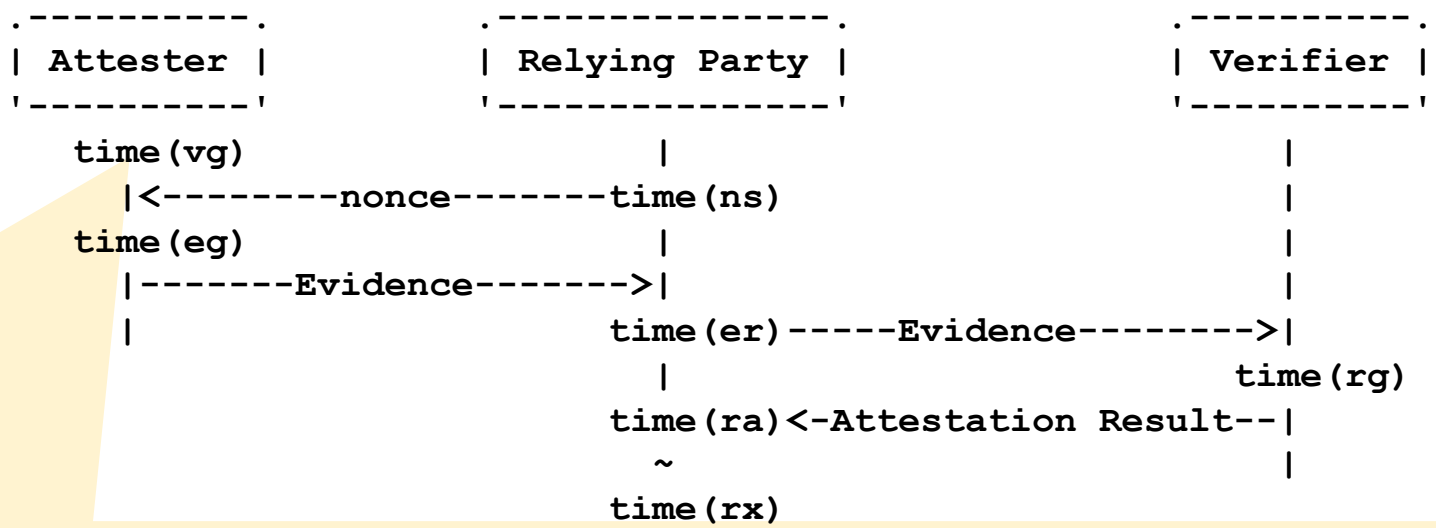
Value Generation

(Thanks to Eric and others for this timing diagram)



- Examples: GPS fix acquired; SW measurement taken
- May happen long before attester is involved in turning data into a claim. For example the GPS subsystem may intrinsically cache locations and report them with time stamps

- Handle this in EAT with claim-specific timestamps. Only a minority of claims will work this way.
- No need for general means to associate an acquisition time with any arbitrary claim
- Thus, Individual claims must be modified
- The proposal for location:

```
location-type = {
    latitude => number,
    longitude => number,
    ? altitude => number,
    ? accuracy => number,
    ? altitude-accuracy => number,
    ? heading => number,
    ? speed => number,
    ? timestamp => time-int,
    ? age => uint
}
```

Discussion on age versus timestamp on next slide

Timestamp / age for Acquisition Time

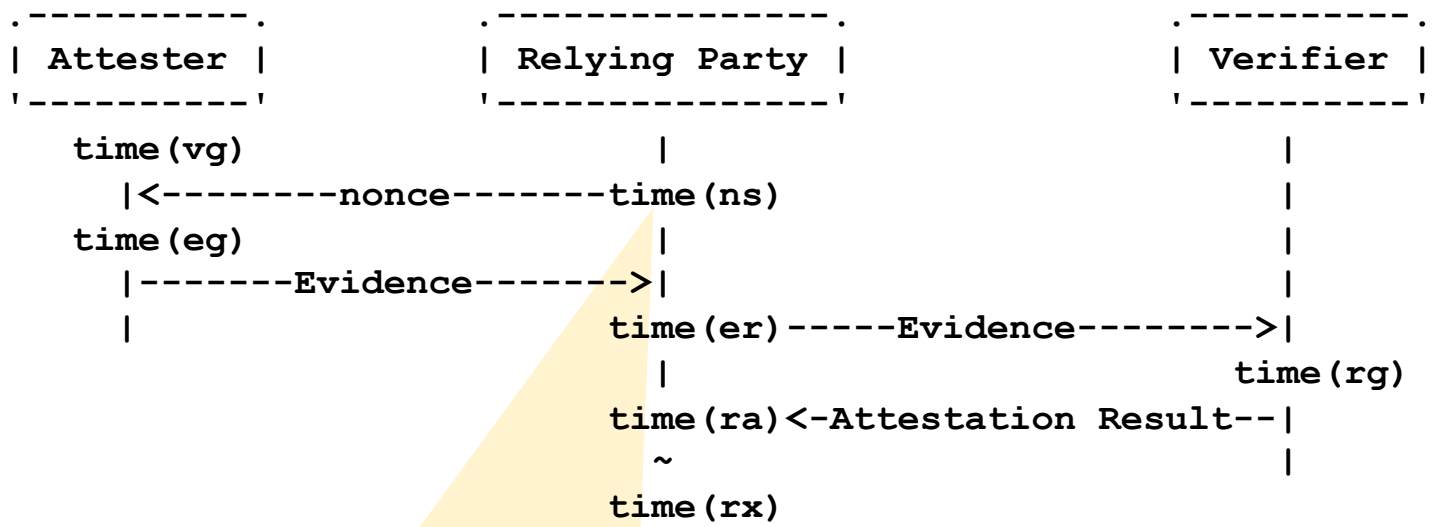
Timestamp

- Absolute time based on UTC/UNIX Epoch time; CBOR tag 1
- Preferred to age
- Disallow floating-point values

Age

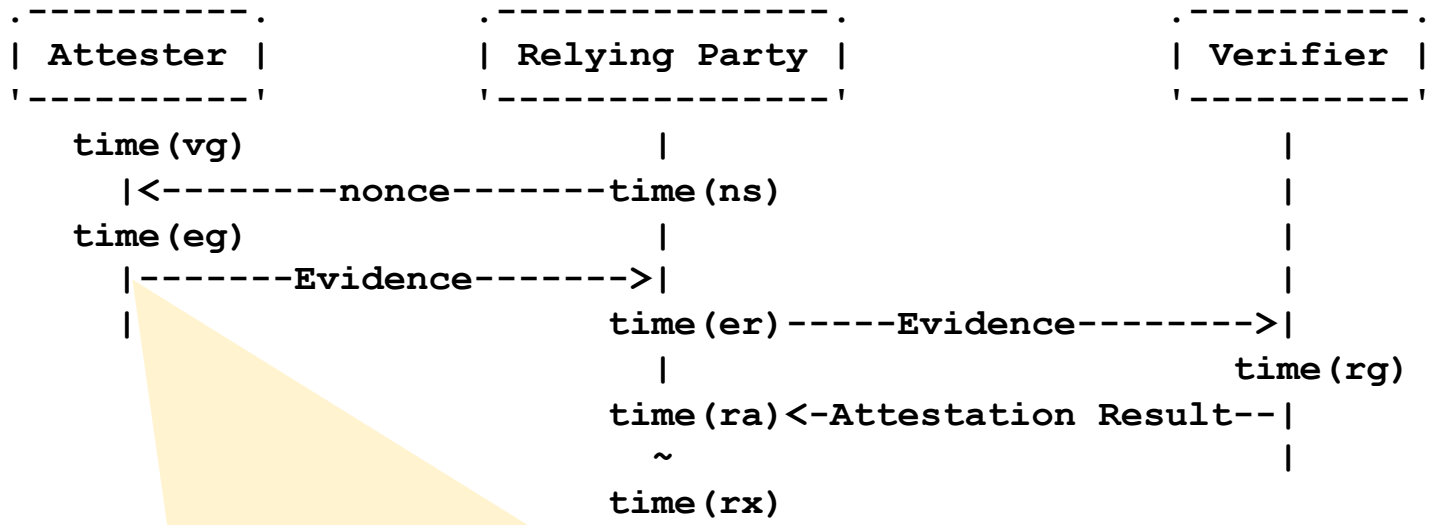
- Alternate for devices that don’t have a clock or whose clock is unset
- Device must have a ticker to measure elapsed time; an uptime ticker will work
- Is elapsed time between acquisition and token assembly; between time(vg) and time(eg)
- Verifier can compute the range of the absolute time of acquisition from time(ns), nonce generation and time(er), evidence receipt. If window is small, this can be quite accurate

Nonce



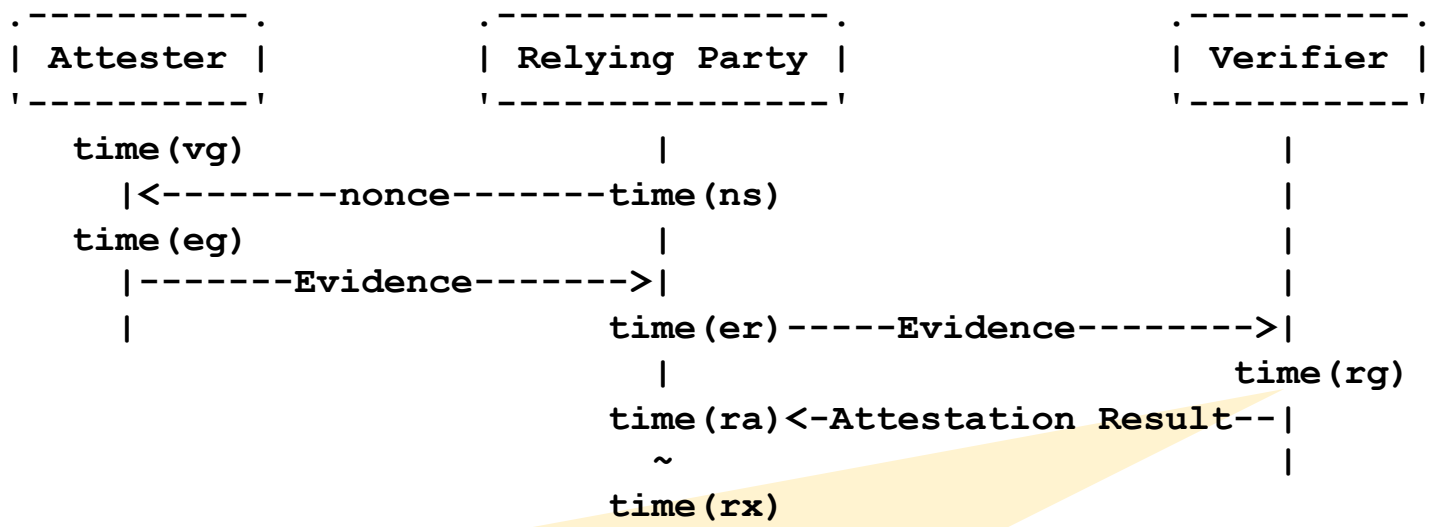
- No need to record time(ns) in a token

Token Creation



- This the time that all claims are formatted and the signature is applied.
- The IssuedAt or “iat” claims from CWT / JWT can be used for this
- It is always an absolute time, never an “age”
- If the device has no clock or the clock is unset, then this claim is omitted and the Verifier has to go by time(ns) and time(er) to establish range.

Results Creation



- Assumption is that the Attestation Results is in EAT format
- The CWT/JWT Expiration claim is used to record time(rx)
- The CWT/JWT IssuedAt time, “iat” claim is used to record time(rg)

Open Issue: how to carry both time(eg) and time(rg) in the Attestation Result?

- Relying party will want to know
- Can’t both be “iat” claim

Some Options

a) Include the full Attestation Evidence as a sub-part of the Attestation Result

b) Define a “results issued at” (“riat”) claim so they can coexist

Other….