draft-ietf-stir-certificates-ocsp draft-peterson-stir-certificates-shortlived

IETF 113i (virtual)

STIR WG

Jon

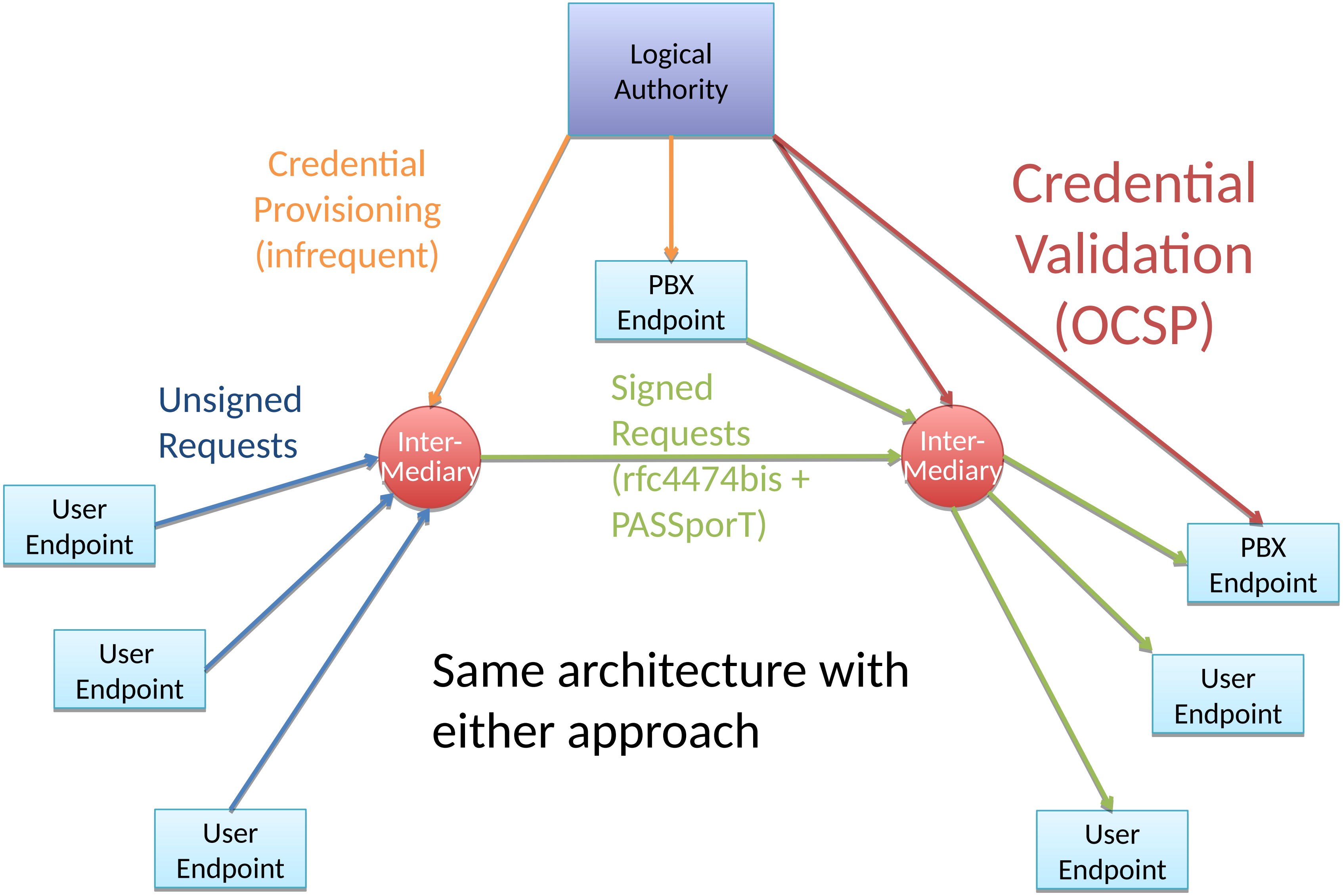
Who Cares about Freshness?

- This is a rerun from IETF 98 (!)
- Freshness is different for STIR certs than regular PKI certs
  - This is due to TNAuthList
    - Not for SPCs, really, just for TNs
  - The problem is the inherent dynamism of number assignment
    - Relying parties want to know if a cert is still valid for a number right now
- So why are these back on the menu?
  - Because of certificate delegation, and the use of TN's by-reference in delegate certs especially
  - Need a way to verify that a particular number is valid for a cert that does not involve downloading an entire TNAuthList

Two paths

- Refreshed some ancient drafts: OCSP and short-lived certs
  - They have very different privacy properties, potentially
- Basically, I propose we explore both paths a bit and see what the experience yields
  - Still (!) – because the drafts have been updated to be about the TN use of TNAuthList for certificate delegation in particular
  - Not intended to compete with any CRLs for SPC use of TNAuthList, be they centralized or federated

Real-time Credential Validation



Logical Authority

Credential Provisioning (infrequent)

PBX Endpoint

Credential Validation (OCSP)

Unsigned Requests

Inter-Mediary

Signed Requests (rfc4474bis + PASSporT)

Inter-Mediary

User Endpoint

User Endpoint

User Endpoint

PBX Endpoint

User Endpoint

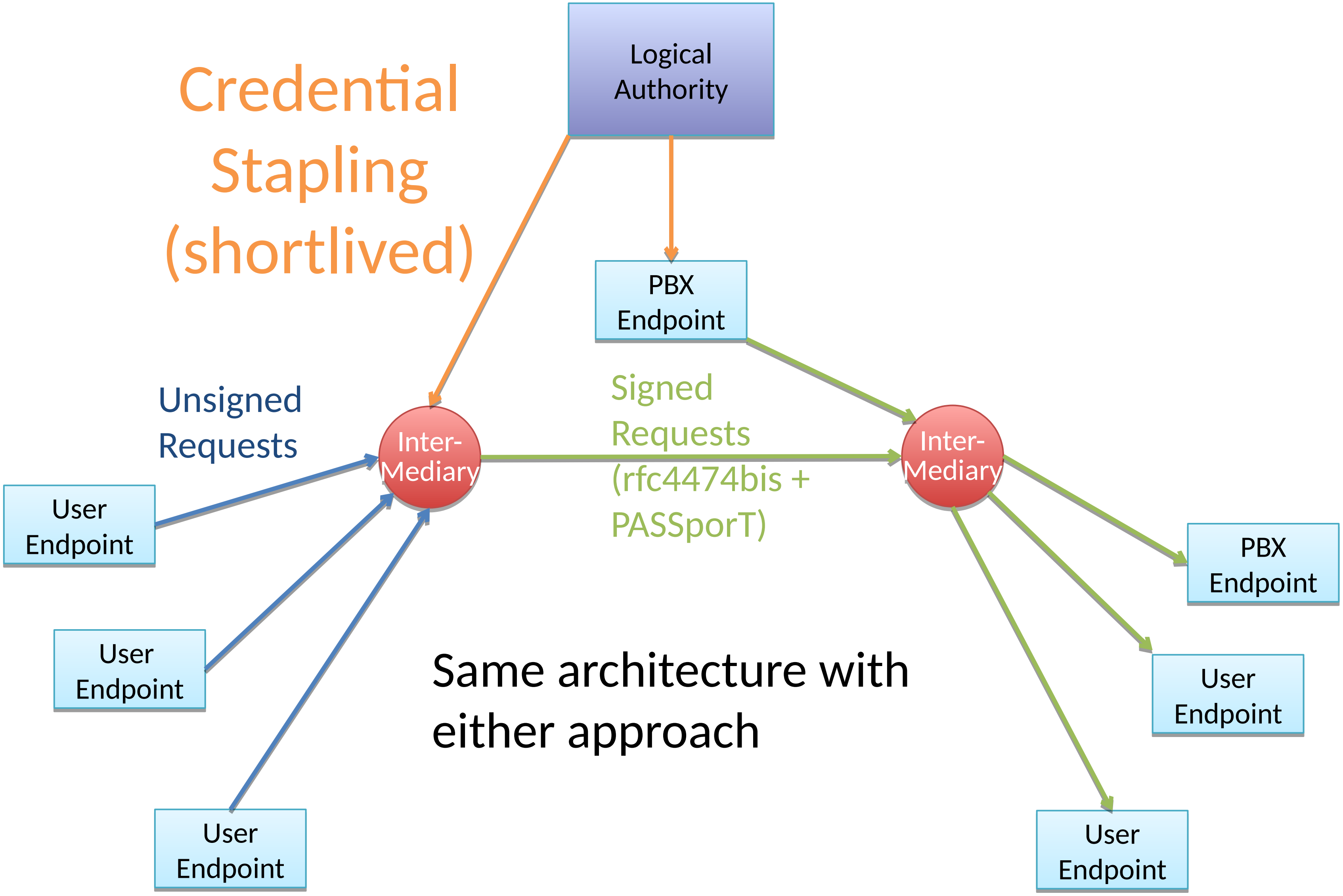
User Endpoint

Same architecture with either approach

The OCSP Path

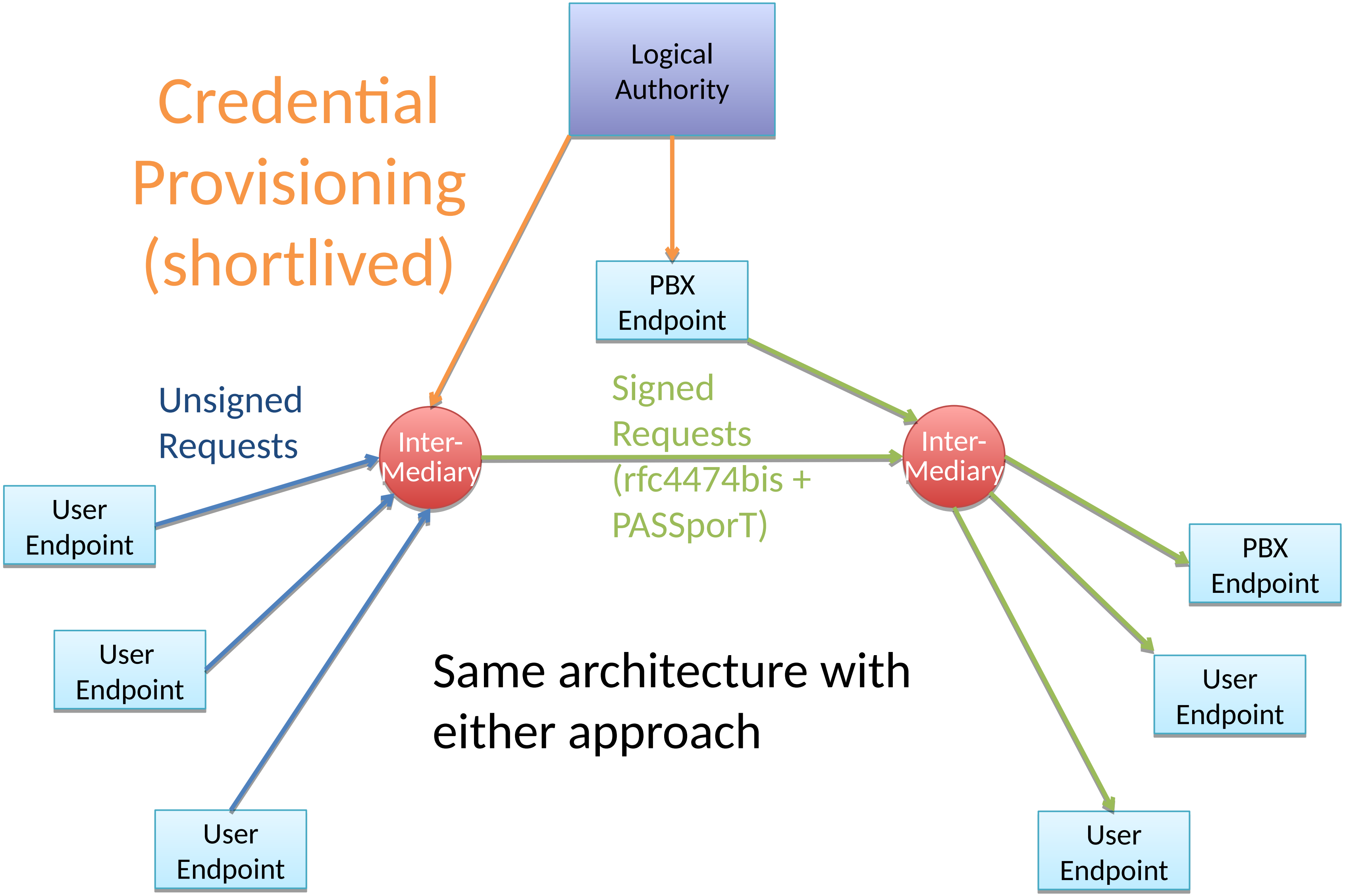
- Two ways: either terminating side or stapled
  - Terminating side is where much of the privacy leak occurs
- Probably, we would recommend stapling
  - We would define a SIP header for carrying a staple
    - Probably a general SIP feature, actually, not just for STIR
  - Staple basically says “the cert is valid for this number right now”
- The properties of stapling and short-lived certs start to look real, real similar

Stapled Validation



Same architecture with either approach

Short-lived Credentials



Logical Authority

Credential Provisioning (shortlived)

PBX Endpoint

Unsigned Requests

Inter-Mediary

Signed Requests (rfc4474bis + PASSporT)

Inter-Mediary

User Endpoint

User Endpoint

User Endpoint

PBX Endpoint

User Endpoint

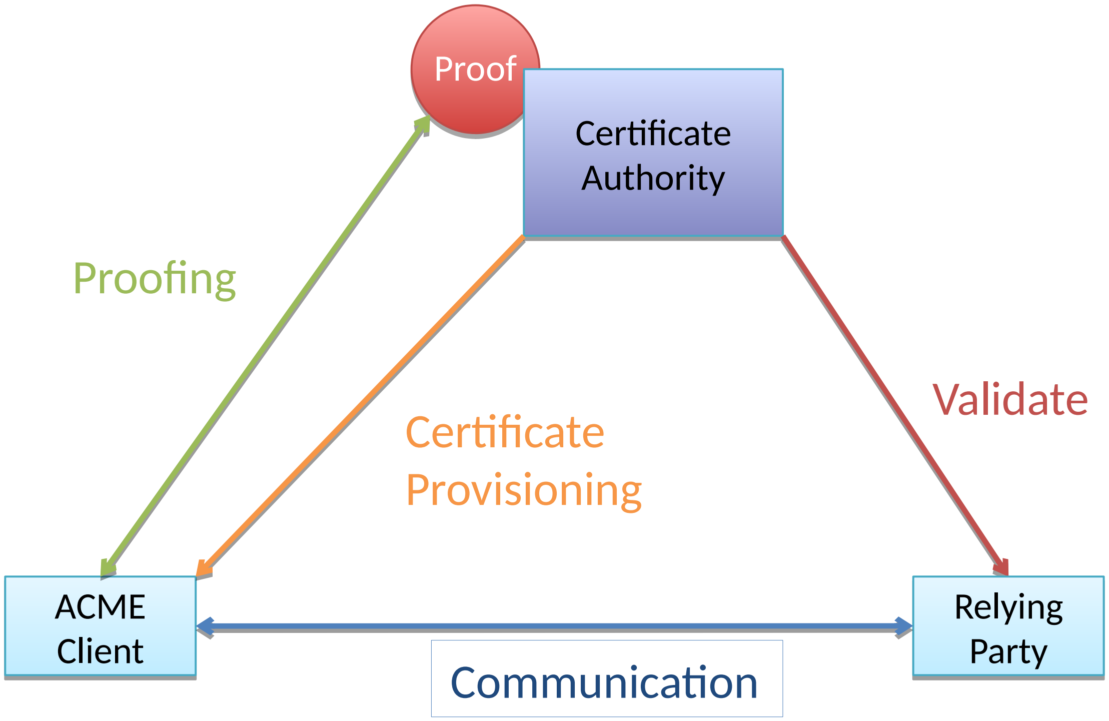
User Endpoint

Same architecture with either approach

Short-lived

- Issuing certs that expire soon
  - Could be for individual numbers even (or ranges)
  - Basically says, “this cert is valid for this number right now”
    - Also obviates the need for relying parties to talk to the CA
- What does short-lived mean?
  - Hours? Days? Not months or years anyway.
  - Part of our job is to decide what is appropriate
- The hard part is getting the new cert… but…

ACME makes short-lived easy



Proof

Certificate Authority

Proofing

Certificate Provisioning

Validate

ACME Client

Relying Party

Communication

Individual TN certs: not just for end users

- ACME allows CSPs that control large number blocks to use disposable, single-number certs
  - A CSP basically uses an ACME "account" to get certs issued for numbers under its control as needed
  - Relying parties only know that the cert attests a number – doesn't reveal the SPC unless you want to
  - Might be useful for some SHAKEN-like environments
- Similar mechanisms could work for enterprises
- Solves privacy concerns without requiring new protocol work for OCSP, new staple header, etc.

So what to do?

- I (still) say let’s explore both a bit, see which story is better
- Not much harm in kicking the tires on both approaches out there in implementation
  - In fact, they aren’t really incompatible, both could coexist in the marketplace
- Should we advance either/both?