Multiple Publication Points

draft-rogaglia-sidr-multiple-publication-points-01

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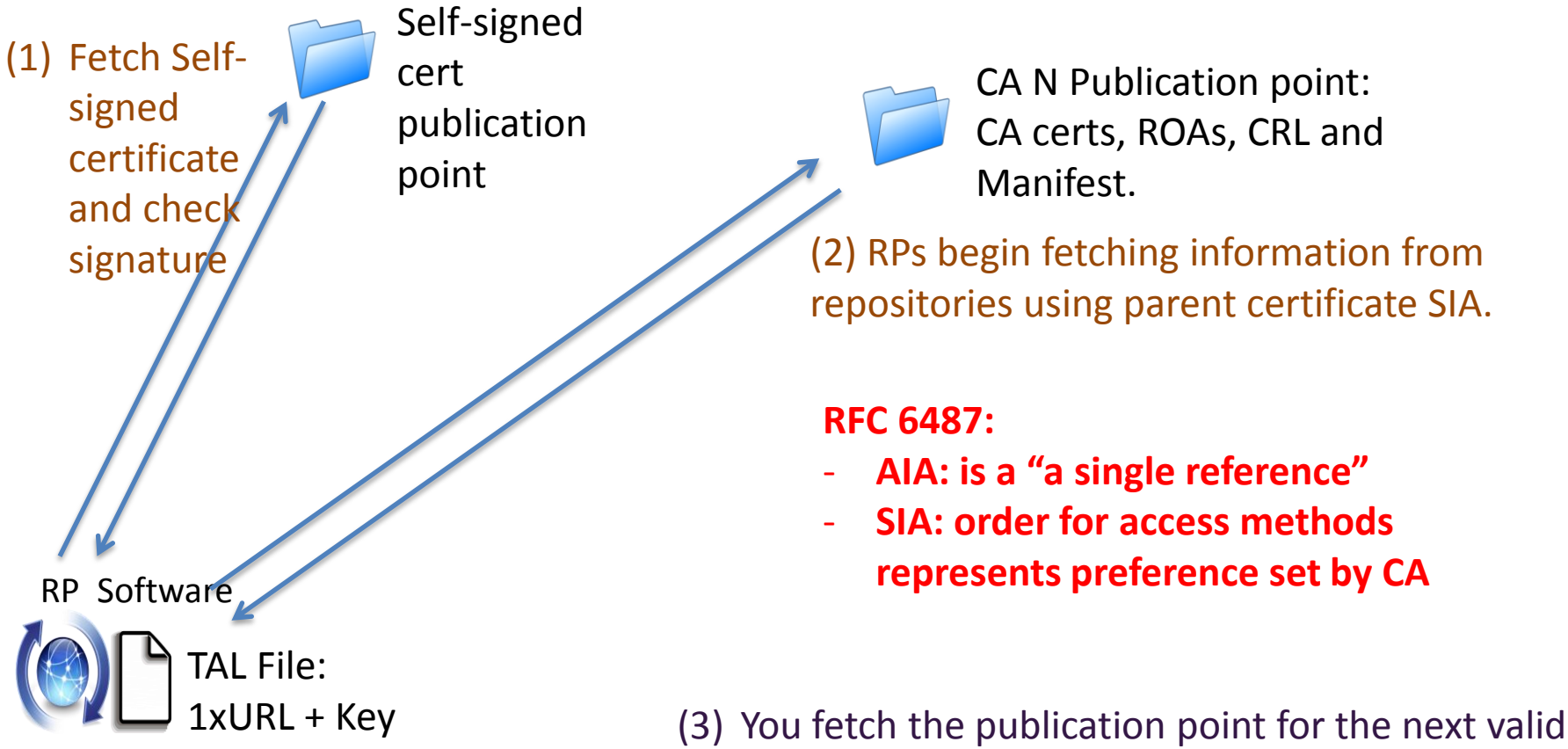
The idea

- Provide a means for repository operators to indicate the presence of *multiple publication points* of repository data
- Motivation
  - An additional tool for repository HA engineering
  - Multiple transport protocols for the same repo data
  - Break free from DNS tyranny ☺
  - Address some “layer 9” concerns

RPKI Repository structure + fetching today (top down)



Proposal:

- New TAL format:

```
rsync://rpki.operator1.org/rpki/hedgehog/root.cer
rsync://rpki.operator2.net/rpki/hedgehog/root.cer
rsync://rpki.operator3.biz/rpki/hedgehog/root.cer

MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAovWQL2lh6knDx
GUG5hbtCXvvh4AOzjhDkSHlj22gn/1oiM9IeDATIwP44vhQ6L/xvuk7W6
Kfa5ygmqQ+xOZOwTWPcrUbqaQyPNxokuivzyvqVZVDecOEqs78q58mSp9
nbtxmLRW7B67SJCBSzfa5XpVyXYEgYAjkk3fpmefU+AcxtxvvHB5OVPIa
BfPcs80ICMgHQX+fphvute9XLxjfJKJWkhZqZ0v7pZm2uhkcPx1PMGcrG
ee0WSDC3fr3erLueagpiLsFjwwpX6F+Ms8vqz45H+DKmYKvPSstZjCCq9
aJ0qANT9OtnfSDOS+aLRPjZryCNyvvBHxZXqj5YCGKtwIDAQAB
```

- Change proposal: RFC 6490 section 2.1

The TAL is an ordered sequence of: 1) ~~An~~ At least one rsync URI [RFC5781], 2) A <CRLF> or <LF> line break after each URI, and 3) A subjectPublicKeyInfo [RFC5280] in DER format [X.509], encoded in Base64 (see Section 4 of [RFC4648]). ‘

- Each “Root Operator” will host a copy of the self signed certificate
- Each “Root Operator” can scale its infrastructures using any available mechanisms
- No single dependency in DNS name resolution.
  - Could even use IP addresses in URIs
- RP can select “Root Operator” with similar algorithms as DNS resolvers
  - Yes, you create more complexity on the RP side.
  - Reduce “Layer 9” noise as you create a root operators group (just like DNSSEC)

Scalable RPKI repository:

- Multiple CRL DP, AIA and SIA extensions (Showing CA cert only)

```
Authority Information Access:
    CA Issuers - URI:rsync://rpki.operator1.net/rpki/hedgehog/root.cer
    CA Issuers - URI:rsync://rpki.operator1.org/rpki/hedgehog/root.cer
    ...
    CA Issuers - URI:rsync://rpki.operator1.net/rpki/hedgehog/root.cer


 Subject Information Access:
    CA Repository - URI:rsync://rpki.operator1.net/member1/
    Manifest - URI:rsync://rpki.operator1.net/member1/CVPQSg.mft
    CA Repository - URI:rsync://rpki.operator2.org/member1/
    Manifest - URI:rsync://rpki.operator2.org/member1/CVPQSg.mft
    ...
    CA Repository - URI:rsync://rpki.operator3.net/member1/
    Manifest - URI:rsync://rpki.operator3.net/member1/CVPQSg.mft


X509v3 CRL Distribution Points:
    URI:rsync://rpki.operator1.net/member1/CVPQSg.mft
    URI:rsync://rpki.operator2.org/member1/CVPQSg.mft
     ...
    URI:rsync://rpki.operator3.net/member1/CVPQSg.mft
```

- Compatible with current proposals for new fetching methods: HTTP, zones, deltas
- accessMethod selection can be decided by RP, taking CA stated pref into account
- Small changes to existing documents:
  - AIA support for multiple operators
  - SIA order irrelevant

Progress since Vancouver

- Concerns were raised on the impact on RP implementations
- Received feedback indicates that it is indeed possible to do it but will require substantial changes to current code

Moving forward

- Diffs from -00 to -01
  - Added new author (Terry)
  - Included a <LF> or <CRLF> line break between the URI list and key signature
- Plans for -02
  - Better composed problem statement
  - Include implementation hints, particularly PP selection rules

THANK YOU !