Tigress Working Group

Transfer dIGital cREdentialS Securely

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Authors and Contributors

- Dmitry Vinokurov
- Alex Pelletier
- Nick Sha
- Casey Astiz
- Matt Byington
- Matthias Lerch

- Ben Chester
- Jean-Luc Giraud
- Yogesh Karandikar
- Alexey Bulgakov
- Tommy Pauly
- Crystal Qin
- Adam Bar-Niv
- Manuel Gerster
- Igor Gariev

Problem

Problem Statement

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Today, no standardized method exists in a cross-platform, cross-vertical capacity that would enable users to share secure credentials.

Goals

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Created by Flatart
from the Noun Project

Minimize Friction for Sharing

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Minimize Friction for Sharing

Maintain Access Control

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Security and Privacy

Problem Vocabulary

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Credential Authority

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Credential Authority

Credential Information

Problem Vocabulary

Credential Authority

Provisioning Information

Credential Information

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Provisioning Information

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Sender Device

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Provisioning Information

Receiver Device

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Problem Vocabulary

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Provisioning Information

Receiver Device

Credential Information

Sender Device

Relay Server

Use Cases

Use Cases

Vehicle

Friend

Valet

Use Cases

Residential

Visitor

Housekeeper

Use Cases

Hotel

Partner

Friends

Requirements

Solution Expectations

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- Allow share initiation over any channel

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- Allow share initiation over any channel
- Allow share invitation preview
- Allow multiple round trip communications
- Allow sender and recipient online at different times
- Allow opaque message content
- Allow a variety of types of credentials to be transferred
- Allow management of share by Sender or Receiver

Security Goals

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- Ensure only the intended recipient is able to provision

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- Ensure only the intended recipient is able to provision
- Ensure credential can only be provisioned once (anti-replay)
- Ensure sender has the intent to transfer

Privacy Values

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- Server should not be able to associate sender and receiver

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- Server should not be able to associate sender and receiver
- Server should not see shared content

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- Server should not be able to associate sender and receiver
- Server should not see shared content
- Server should not be able to intercept or redeem

Out of Scope

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- Mechanism for receiver to accept share with credential authority

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- Mechanism for receiver to accept share with credential authority
- Mechanism for sender to get provisioning information from credential authority

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- User Interface (UI) for sender or receiver

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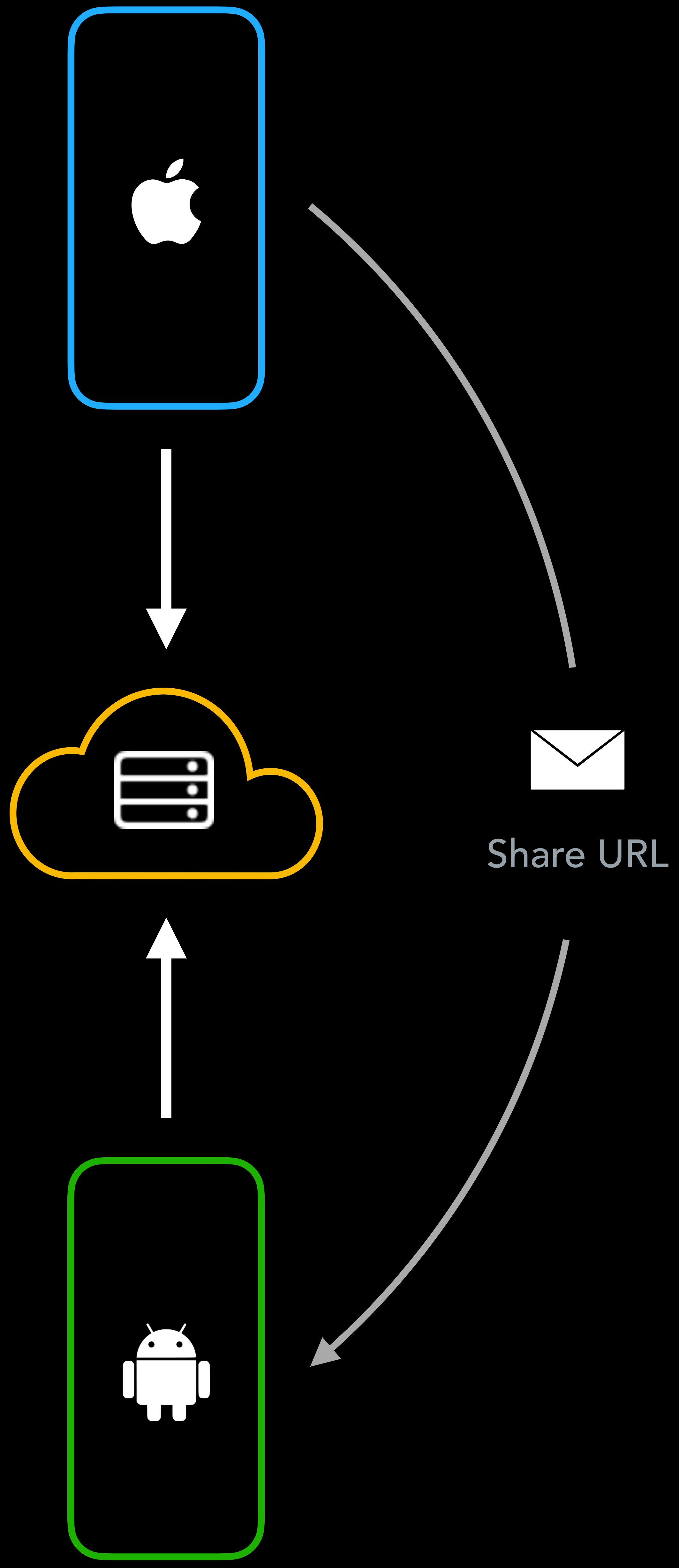
- Mechanism for receiver to accept share with credential authority
- Mechanism for sender to get provisioning information from credential authority
- User Interface (UI) for sender or receiver
- Format or content of encrypted data

Q&A

Technical Solution

Relay Server

- Establishes “connectivity” between sender and recipient
- Simple mailbox, decoupled from provisioning logic
- Only sees encrypted data and metadata



Sender

Upload
Provisioning Information

Relay Server

Share URL

Fetch
Provisioning Information

Recipient

Stateless and Stateful flows

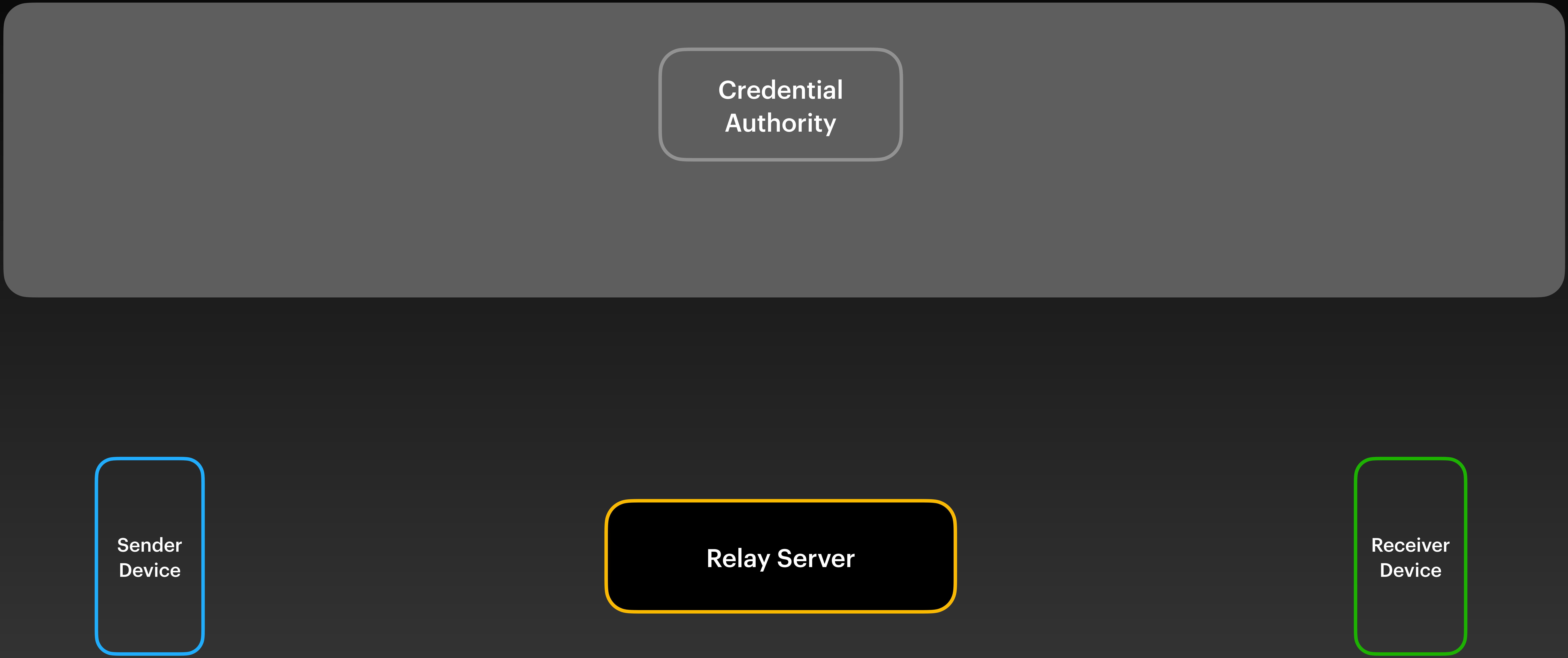
- In Stateless flow there is a single credential data transfer:
  - Sender -> Relay -> Receiver

- In Stateful flow there are multiple data transfers between Sender, Relay and Receiver to prepare credential data for registering or provisioning by Receiver
  - Sender -> Relay -> Receiver
  - Additional round trip between Receiver and Sender for new credential authorization

APIs

- **C**reate Mailbox: POST /{version}/m
- Read Display Information from Mailbox: GET /{version}/m/{mailboxIdentifier}
- **R**ead Secure Content from Mailbox: POST /{version}/m/{mailboxIdentifier}
- **U**pdate Mailbox: PUT /{version}/m/{mailboxIdentifier}
- **D**elete Mailbox: DELETE /{version}/m/{mailboxIdentifier}

Sharing Process



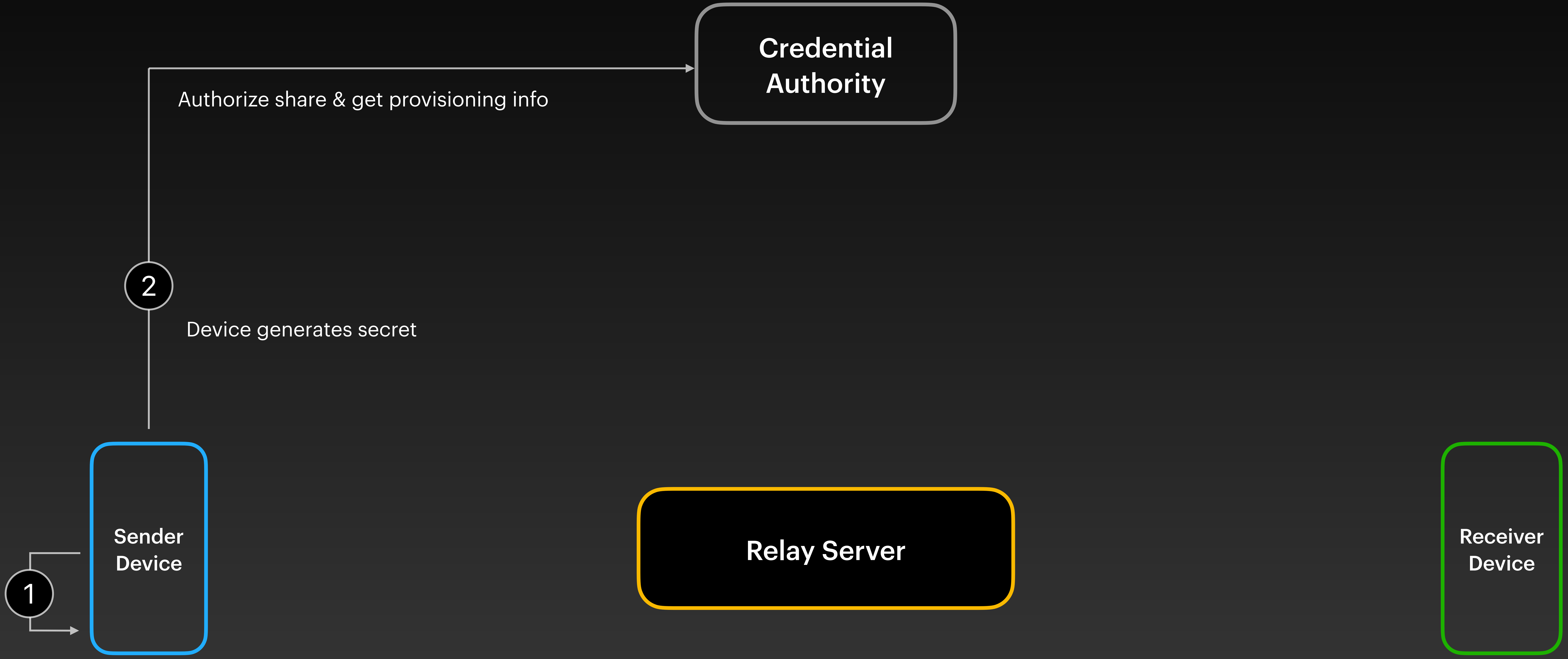
Credential Authority

Sender Device

Relay Server

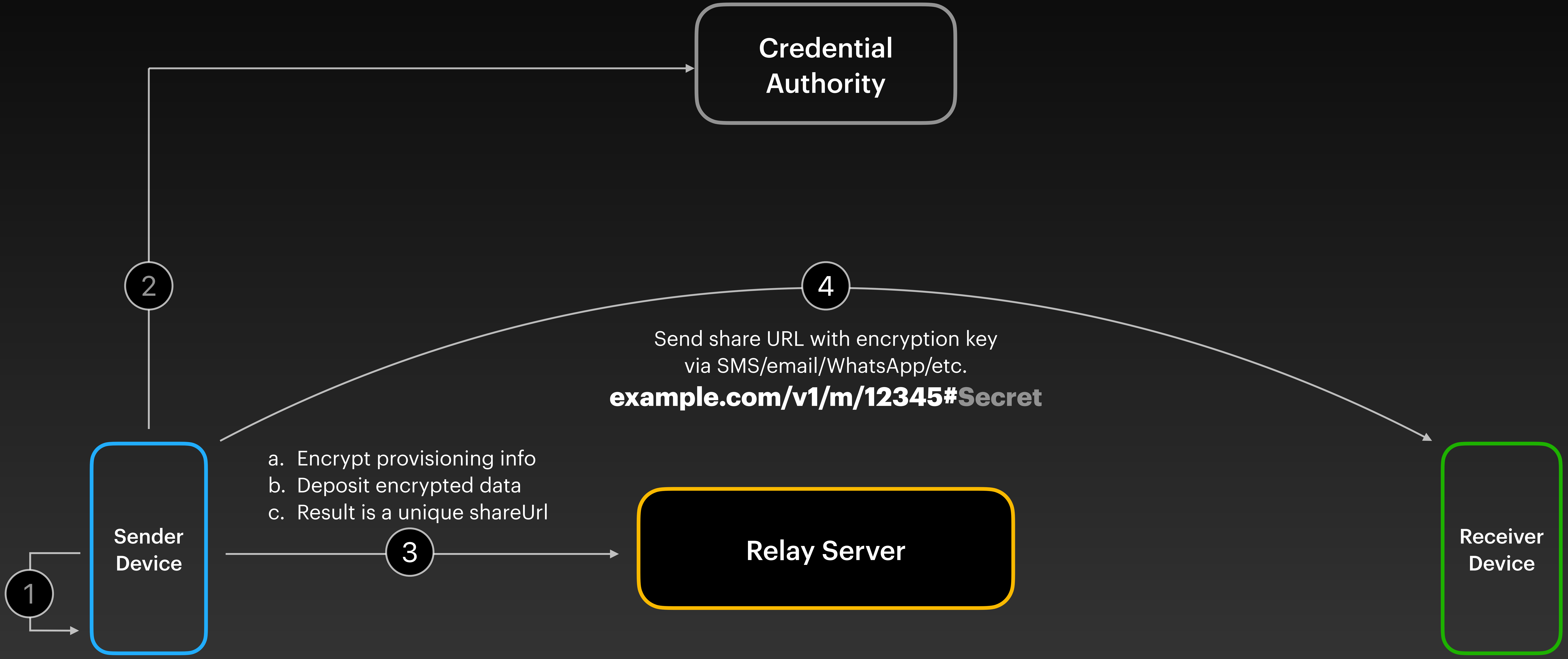
Receiver Device

Stateless Sharing Process



a. Sender initiates Wallet sharing process
b. Sender configures recipient’s entitlements & capabilities

Stateless Sharing Process

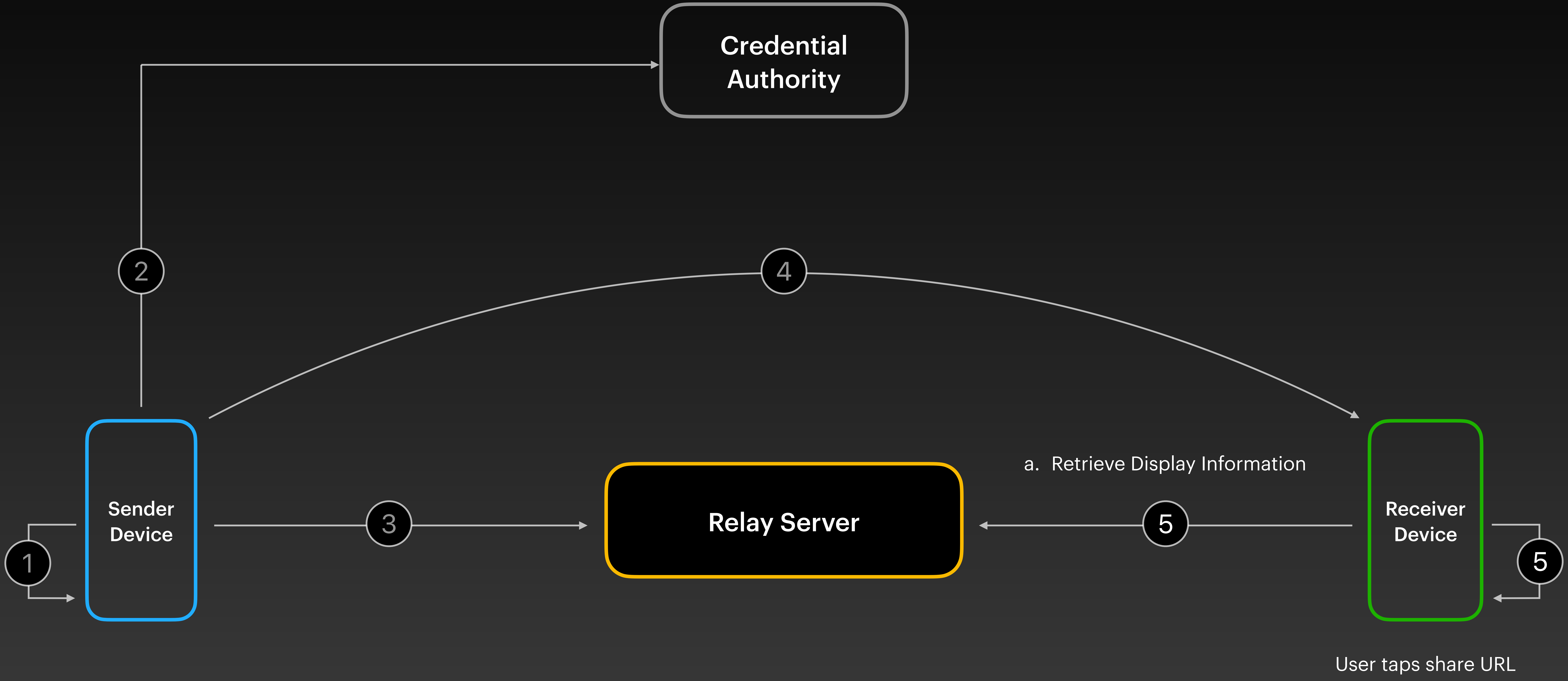


Send share URL with encryption key via SMS/email/WhatsApp/etc.

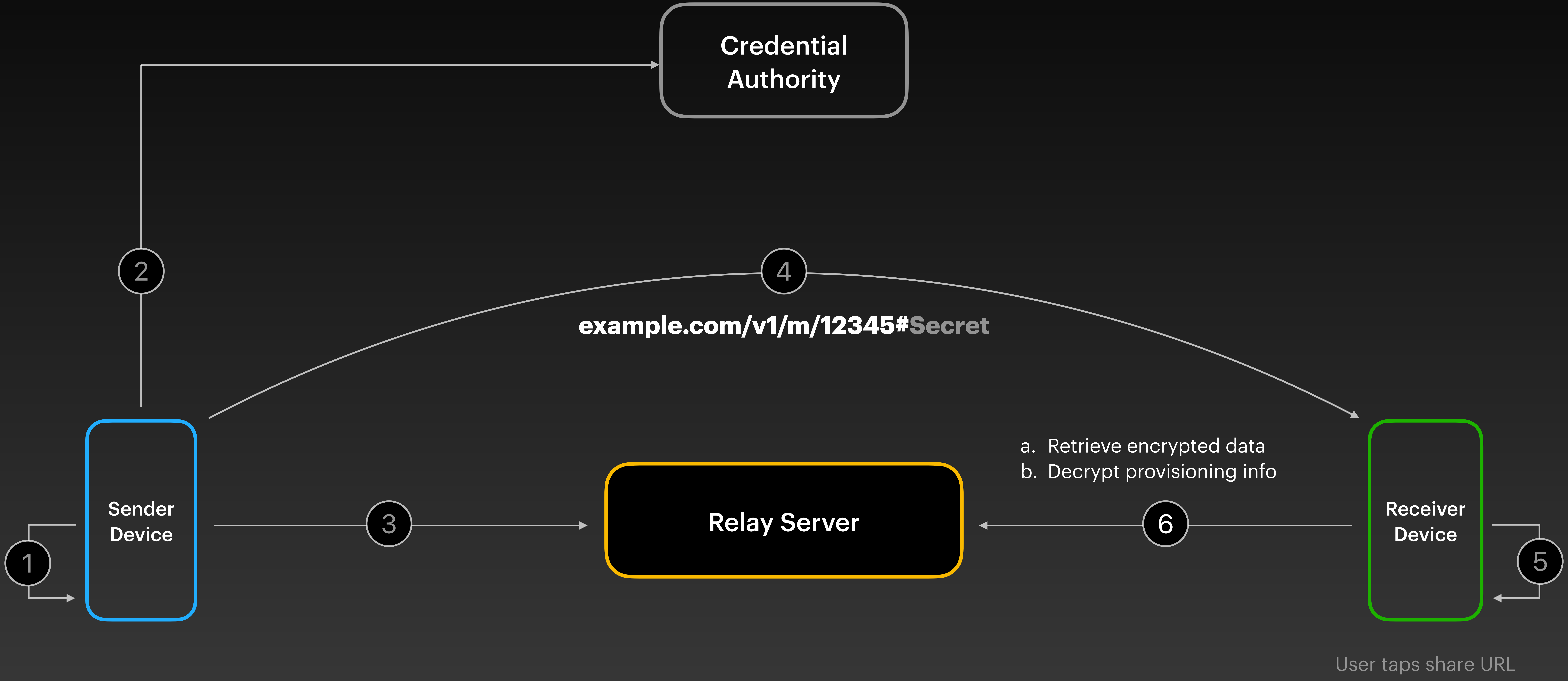
example.com/v1/m/12345#Secret

a. Encrypt provisioning info
b. Deposit encrypted data
c. Result is a unique shareUrl

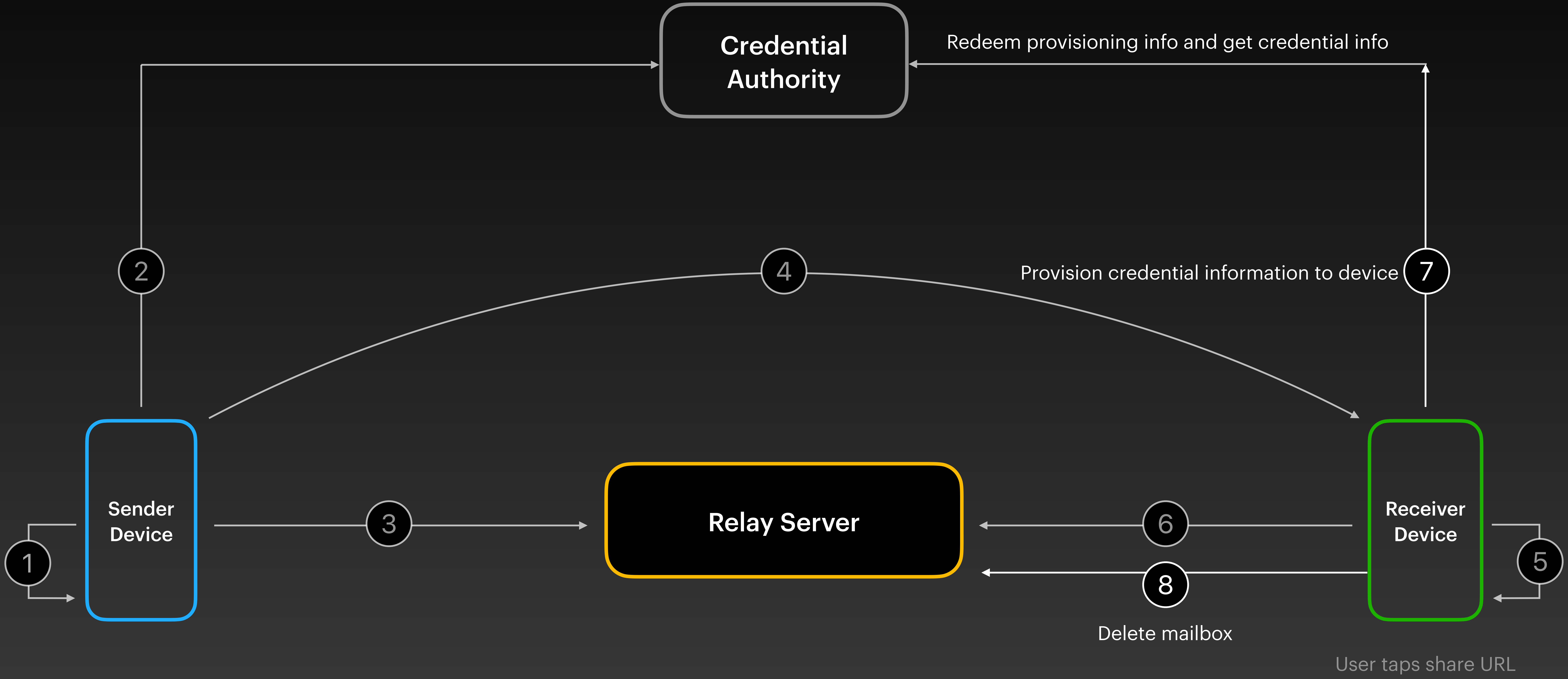
Stateless Sharing Process



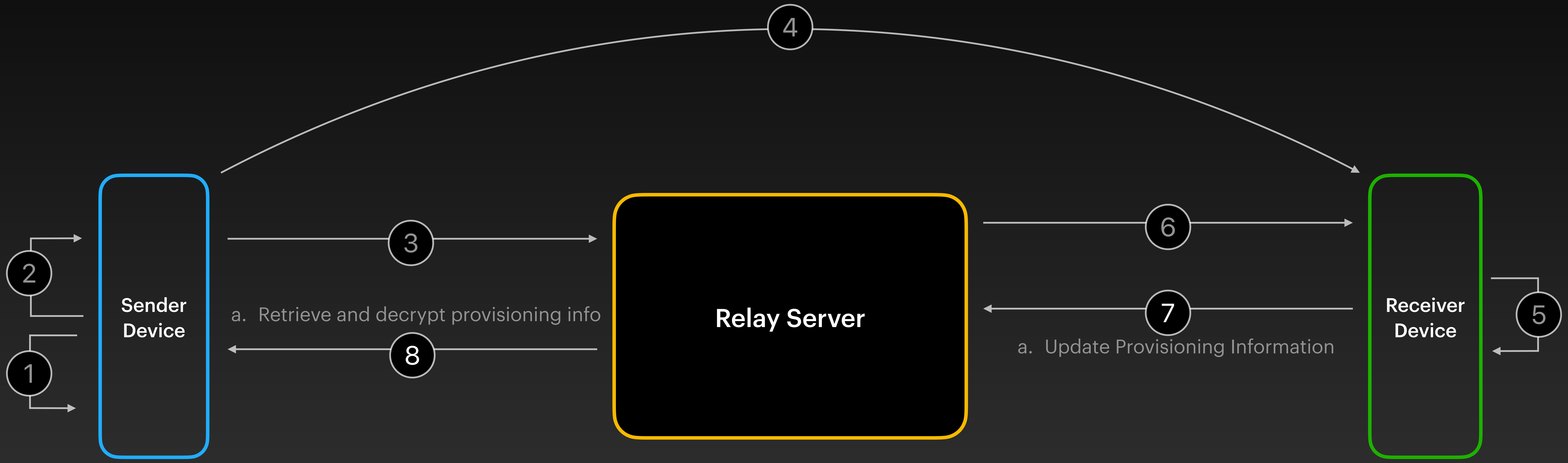
Stateless Sharing Process



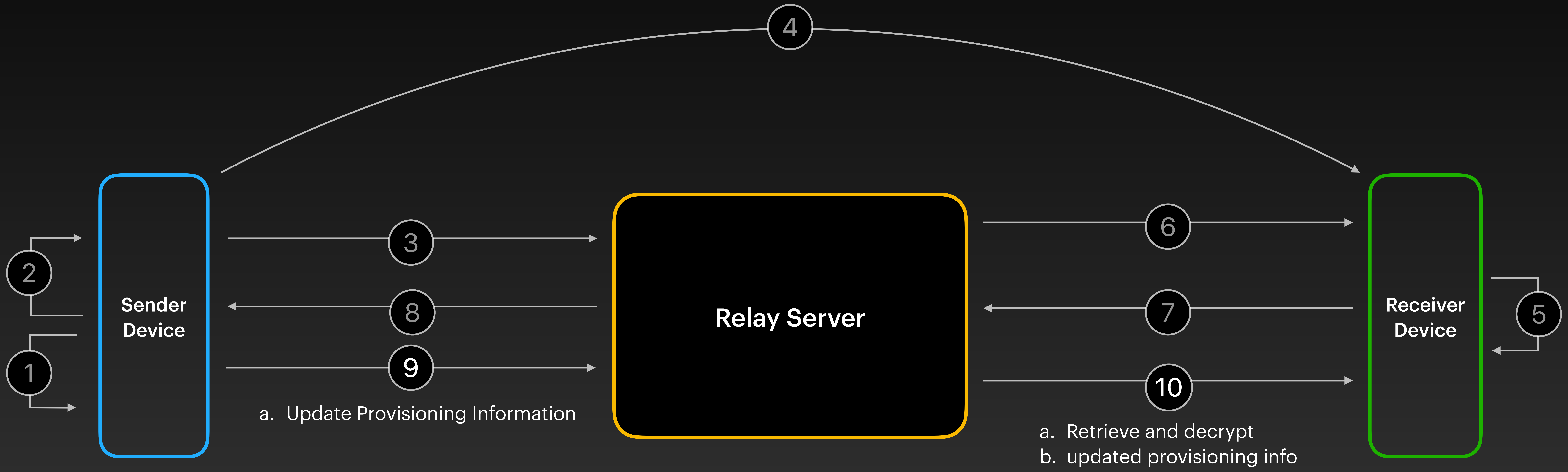
Stateless Sharing Process



Stateful Sharing Process


4
2
1
Sender Device
3
a. Retrieve and decrypt provisioning info
8
Relay Server
6
7
a. Update Provisioning Information
Receiver Device
5

Stateful Sharing Process



a. Update Provisioning Information

a. Retrieve and decrypt
b. updated provisioning info

User taps share URL

Ending Notes

- Tigress Problem and Solution.
- Goals.
- IETF adoption.
- https://datatracker.ietf.org/doc/draft-secure-credential-transfer/

Thank you!

Q&A