WSO2CON 2025

Connecting the Dots with OAuth:

A Guide to New and Upcoming Specifications

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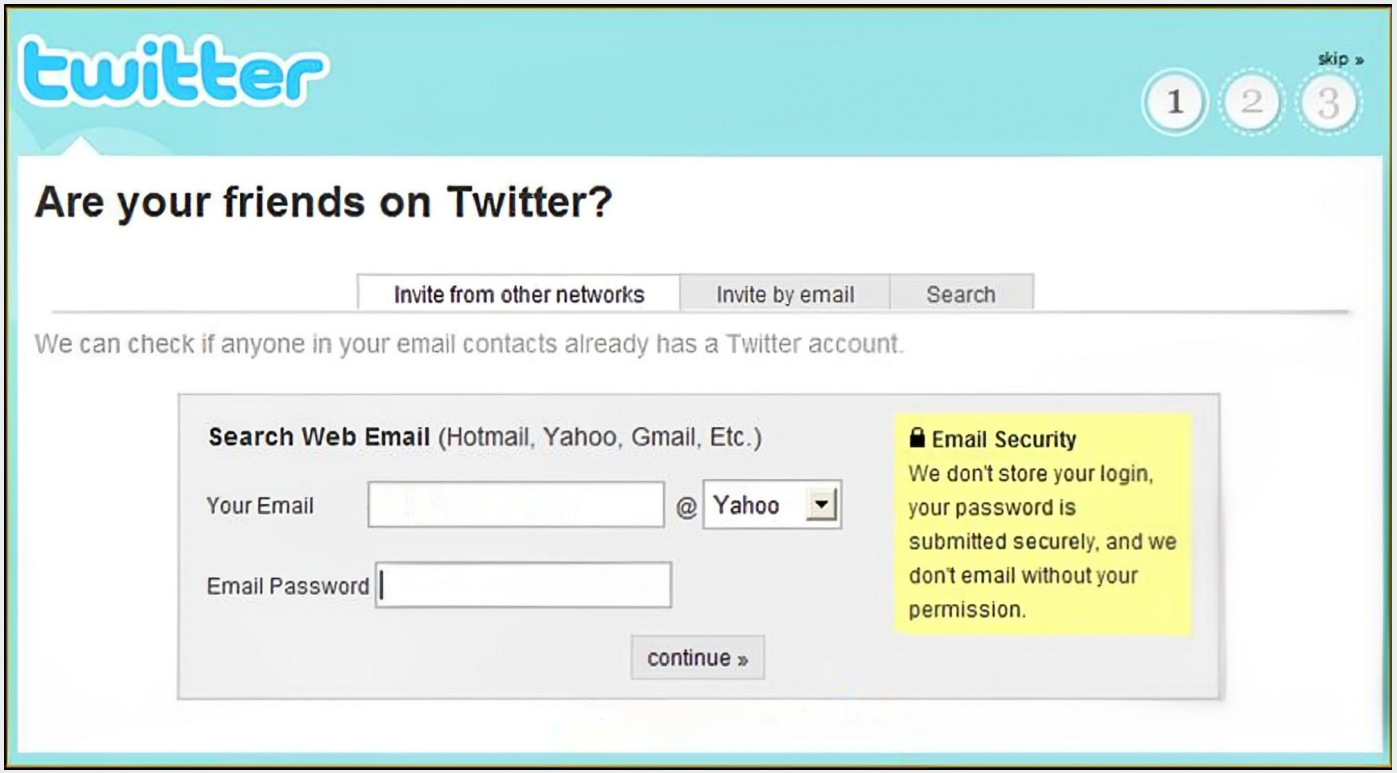
Technical Lead
WSO2


twitter
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Are your friends on Twitter?
Invite from other networks
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We can check if anyone in your email contacts already has a Twitter account.
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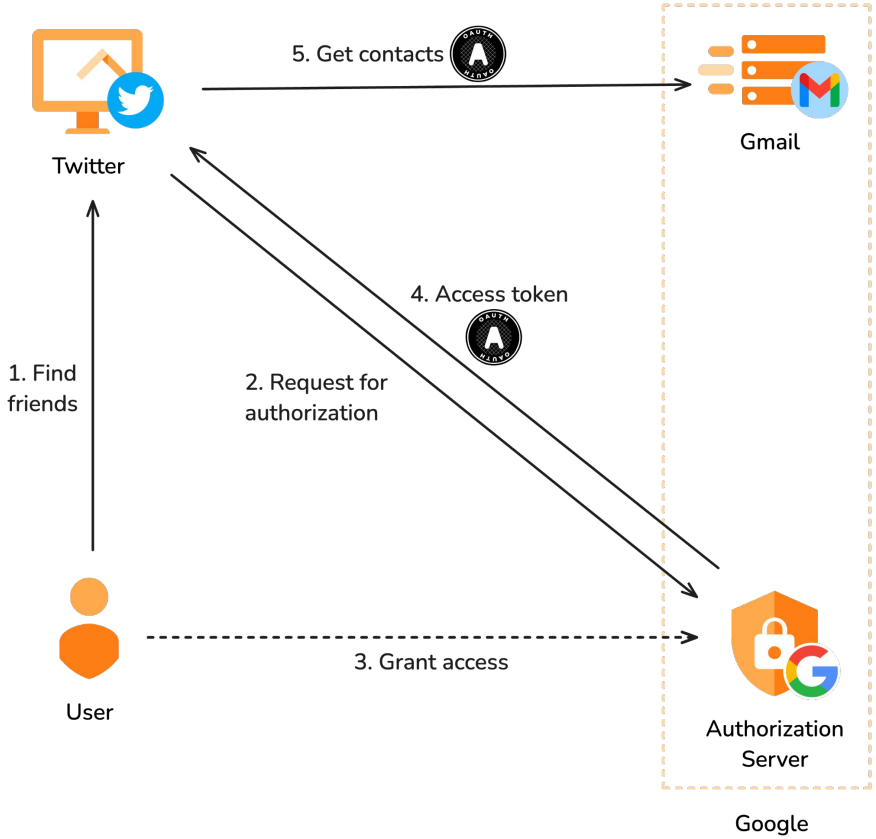
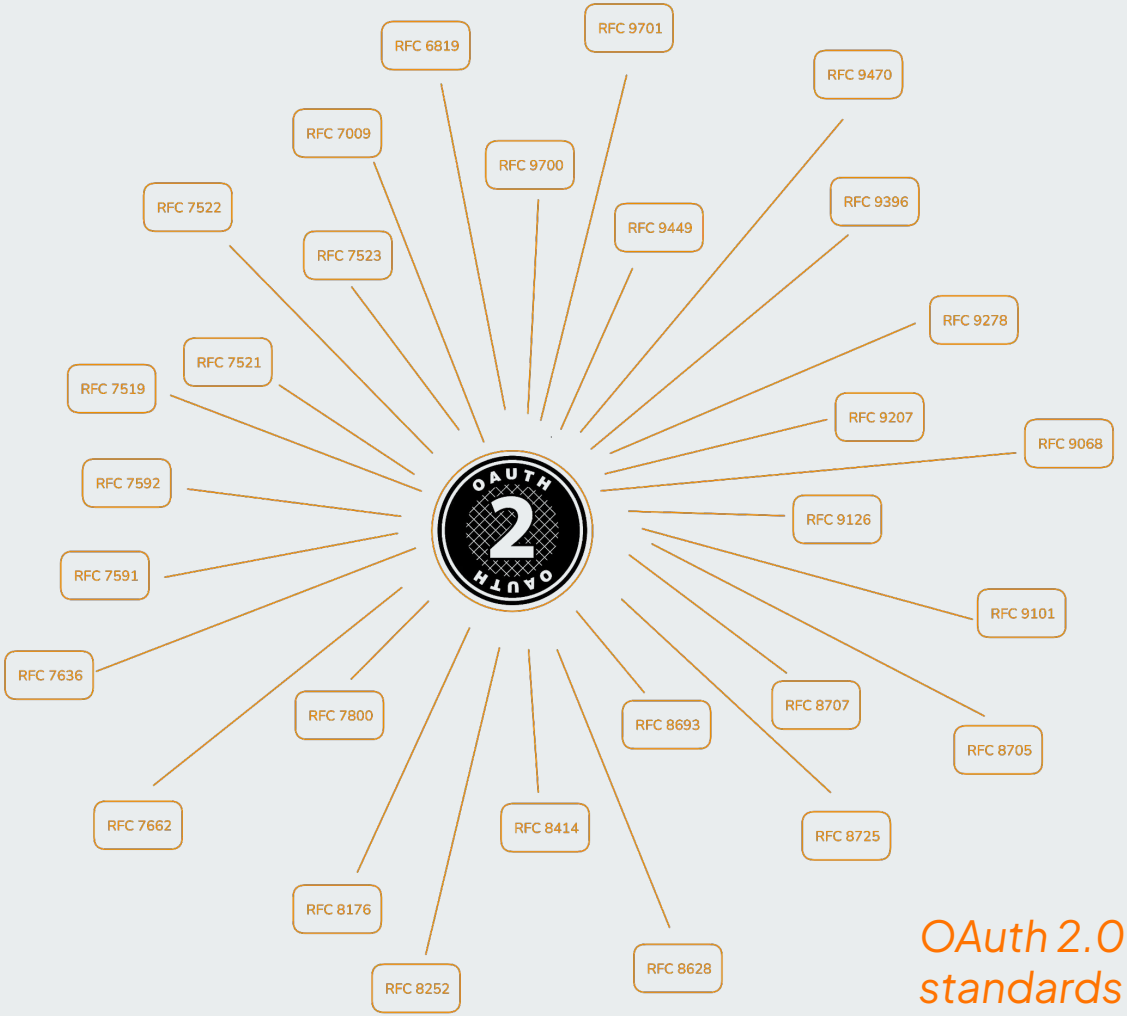
We don't store your login, your password is submitted securely, and we don't email without your permission.

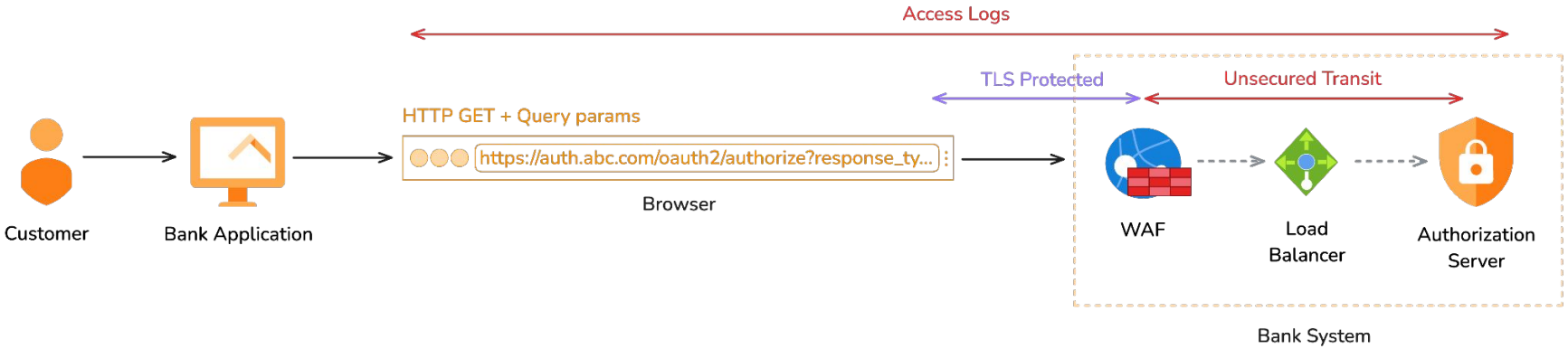
How OAuth Solved Credential Sharing: Access Delegation





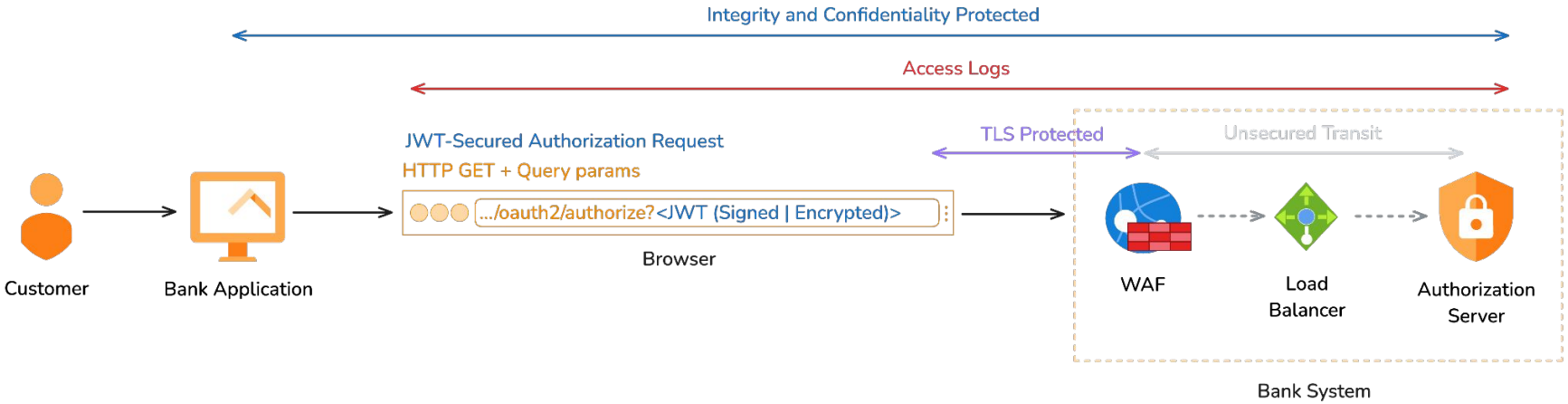
OAuth 2.0 related standards

Enhancing Privacy and Integrity Protection



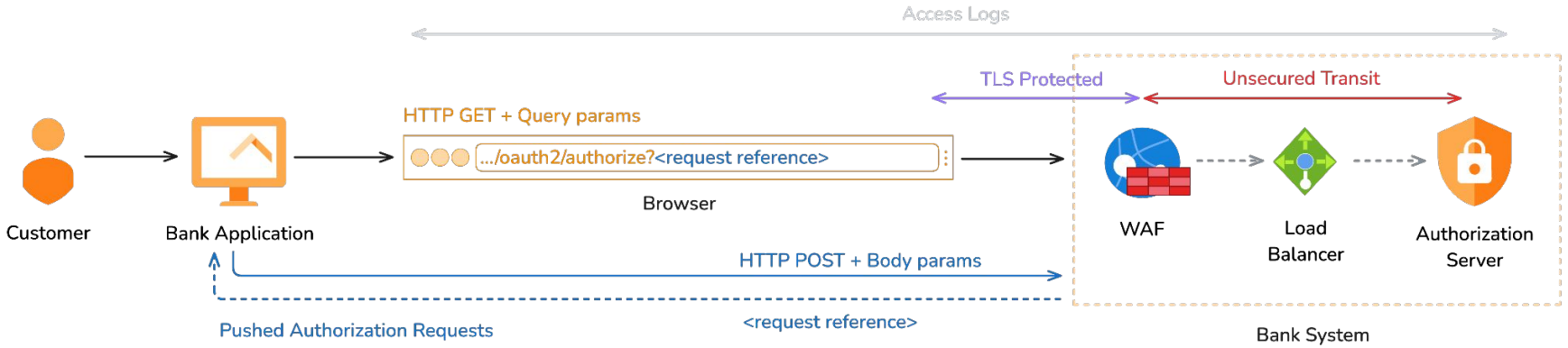
- Http GET request sent through browser with parameters in the URL
  - Sensitive information gets logged at different levels
  - Data could be tampered with
- Solutions from:
  - RFC 9101: The OAuth 2.0 Authorization Framework: JWT-Secured Authorization Request
  - RFC 9126: OAuth 2.0 Pushed Authorization Requests

Enhancing Privacy and Integrity Protection



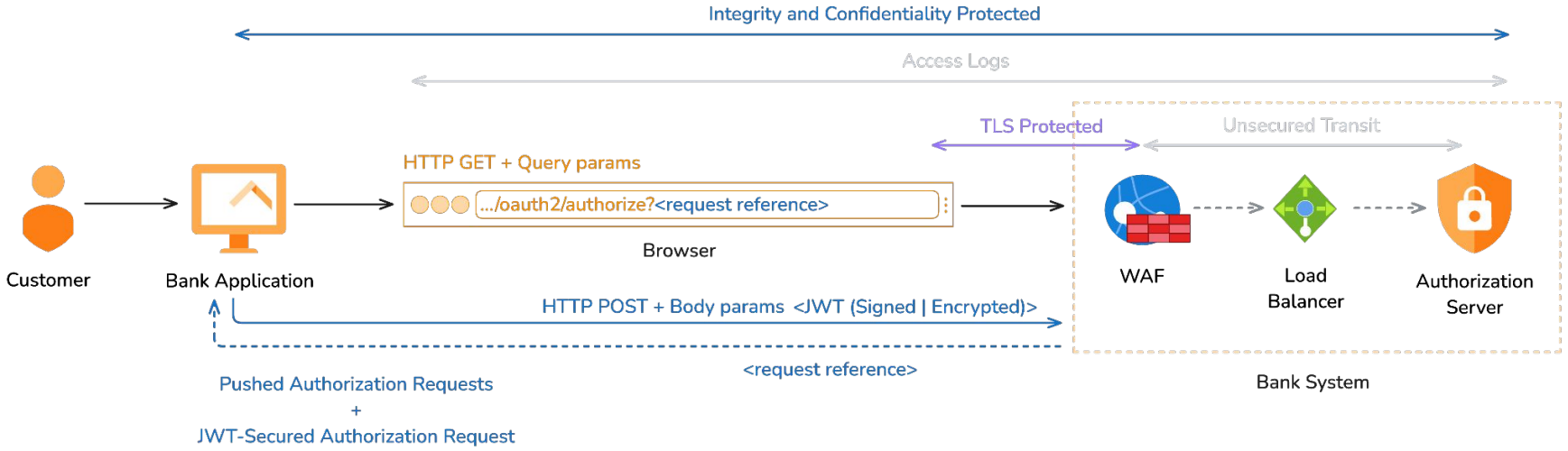
- RFC 9101: JWT-Secured Authorization Request

Enhancing Privacy and Integrity Protection



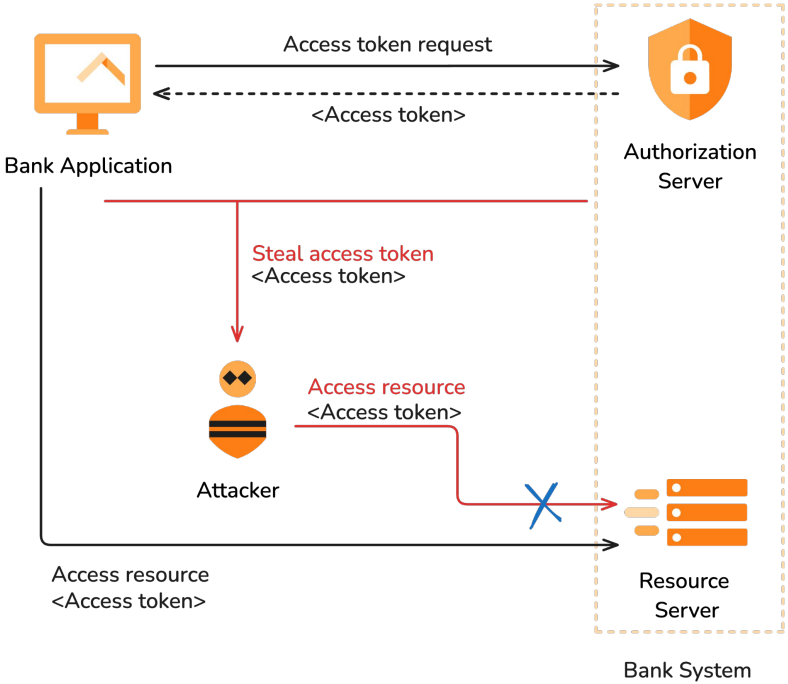
- RFC 9126: Pushed Authorization Requests

Enhancing Privacy and Integrity Protection



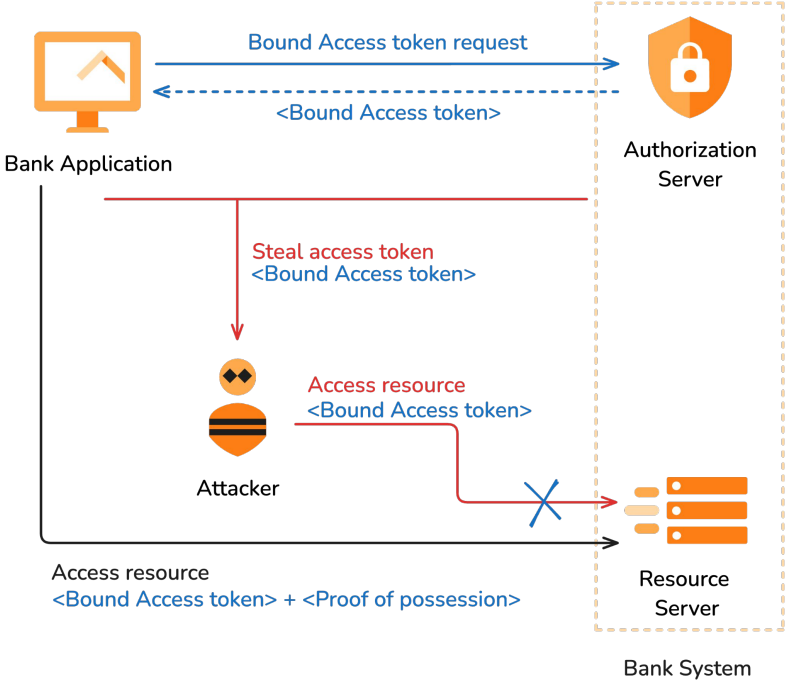
- Combining both specifications

Securing Bearer Tokens



- Bearer tokens are like cash, if you have it you can use it

Securing Bearer Tokens

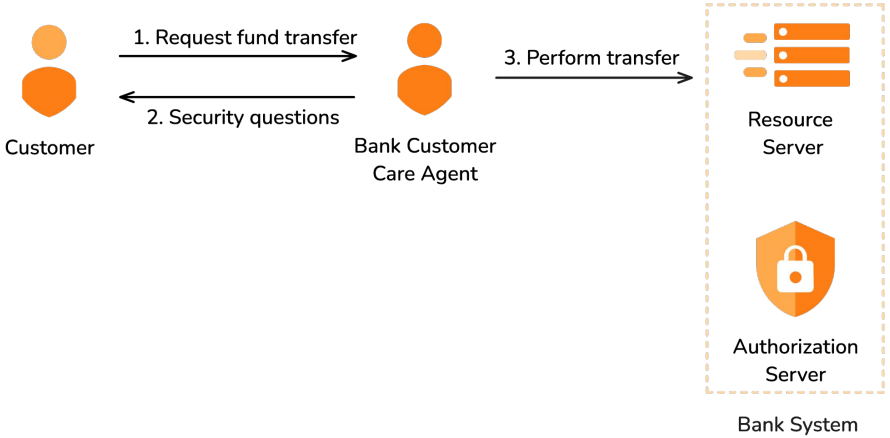


Solutions from:

- RFC 8705: OAuth 2.0 Mutual-TLS Client Authentication and Certificate-Bound Access Tokens
- RFC 9449: OAuth 2.0 Demonstrating Proof of Possession

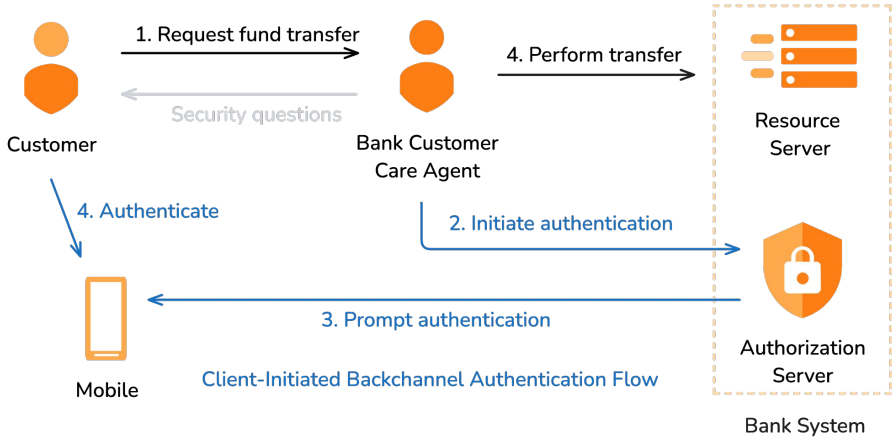
- Bound tokens are like a debit card with a PIN, you need both to use it

Decoupled Authentication



- Stronger authentication?

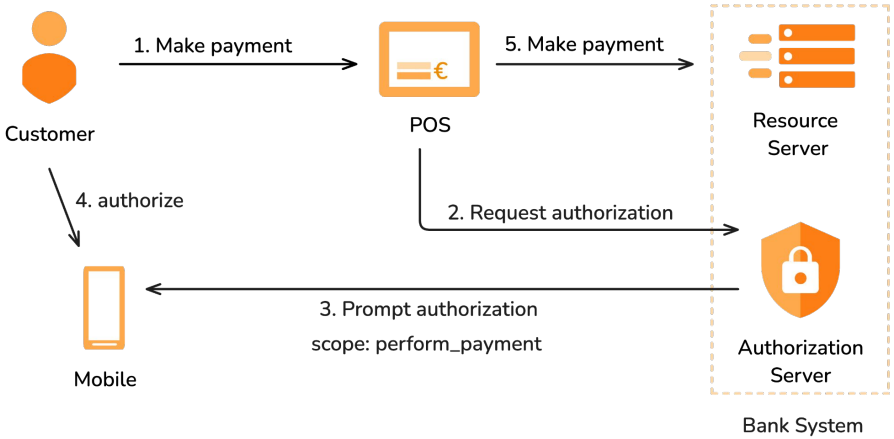
Decoupled Authentication



Solutions from:

- OpenID Connect Client-Initiated Backchannel Authentication Flow

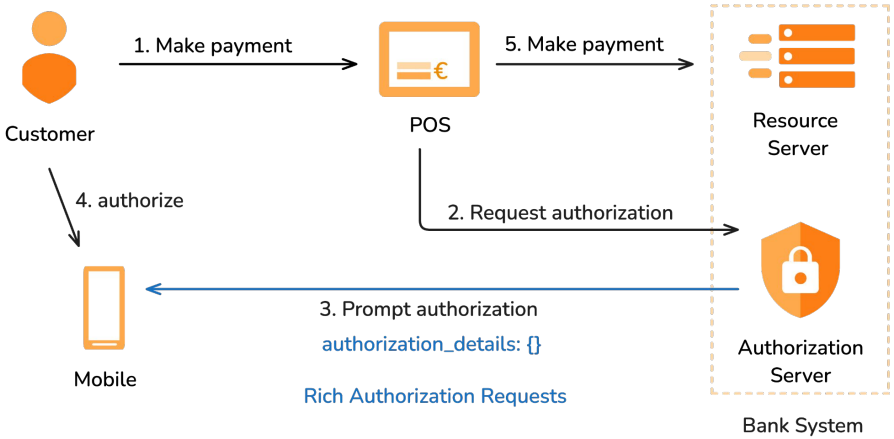
Fine-Grained Authorization Requests



scope: perform_payment

- Coarse-grained authorization with scopes
- Misuse of authorization?

Fine-Grained Authorization Requests



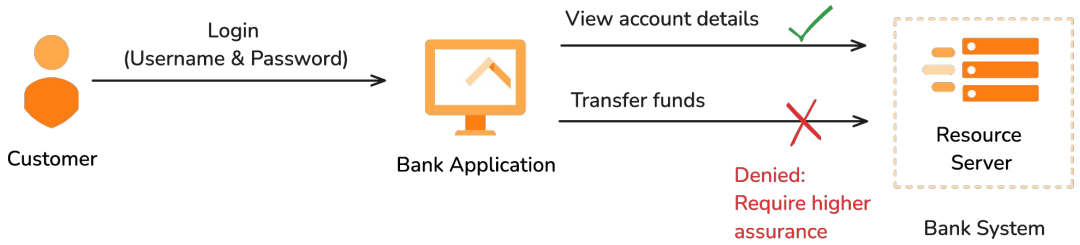
authorization_details

```
{
  "type": "payment_initiation"
  "instructedAmount": {
    "currency": "EUR",
    "amount": "123.50"
  },
  "creditorName": "Merchant A",
  "creditorAccount": {
    "bic":"ABCIDEFFXXX",
    "iban": "DE02100100109307118603"
  },
}
```

Solutions from:

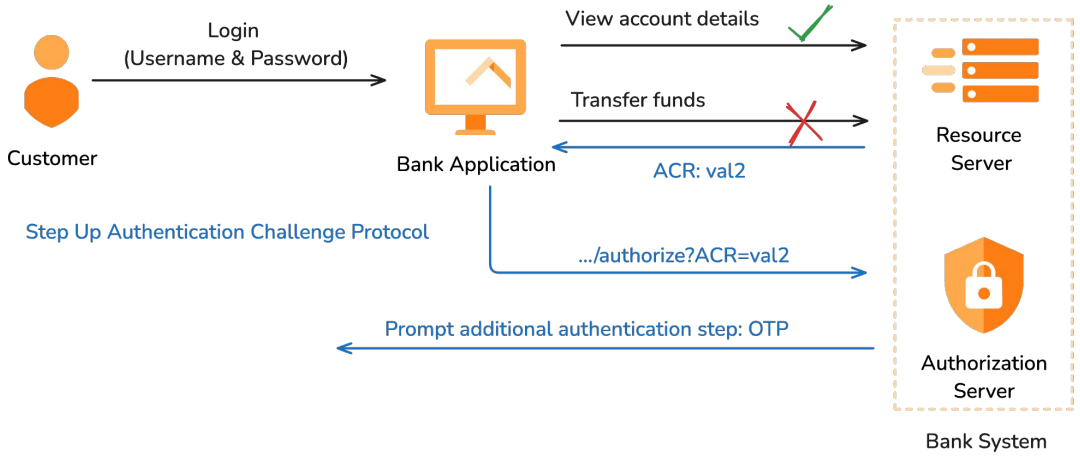
- RFC 9396: OAuth 2.0 Rich Authorization Requests

Performing actions that require a higher assurance level



- **View account details** require authentication with **username & password**
- **Transfer funds** require authentication with **username & password** and **OTP**

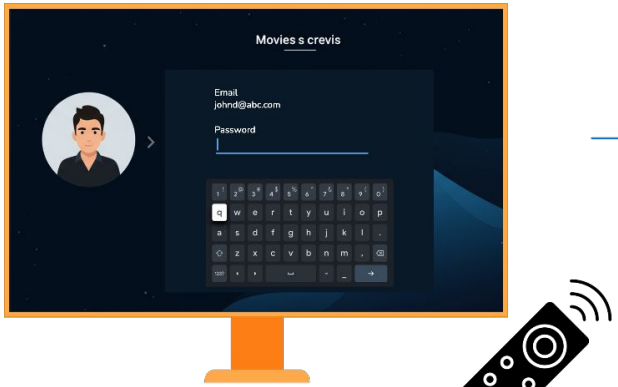
Performing actions that require a higher assurance level



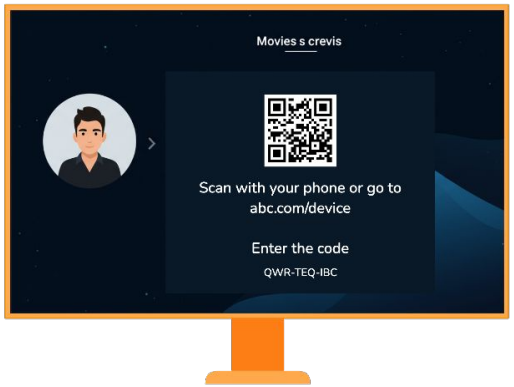
Solutions from:

- RFC 9470: OAuth 2.0 Step Up Authentication Challenge Protocol

Authorization for Input Constrained Devices



Smart TV App Login



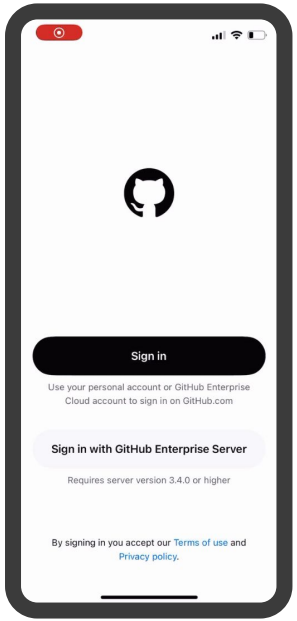
Smart TV App Login
with
Device Authorization Grant

- Hindered authentication experience

Solutions from:

- RFC 8628: OAuth 2.0 Device Authorization Grant

Enhancing UX for First-Party Applications



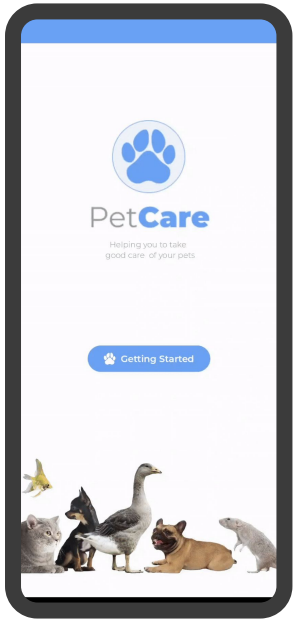
GitHub mobile app for iOS

- Disconnected experience with browser redirection

Why not Password Grant?

- Only password based logins
- No options for MFA and social logins

Enhancing UX for First-Party Applications



UX with OAuth 2.0 for
First-Party Applications

Solutions from:

- DRAFT: OAuth 2.0 for First-Party Applications

Best Current Practice Documents

- RFC 8252: OAuth 2.0 for Native Apps
  - Published in 2017
- RFC 8725: JSON Web Token Best Current Practices
  - Published in 2020
  - Revisions are on the works
- RFC 9700: Best Current Practice for OAuth 2.0 Security
  - Published in 2025
- DRAFT: Cross-Device Flows: Security Best Current Practice
- DRAFT: OAuth 2.0 for Browser-Based Applications

OAuth 2.1: A Modernized OAuth

- OAuth 2.0 was published in 2012 – over 12 years ago!
  - Security needs evolved, and additional standards emerged

- What is OAuth 2.1?
  - A streamlined update to OAuth 2.0
  - **Nothing new**, just consolidates best practices
  - Removes outdated flows for better security

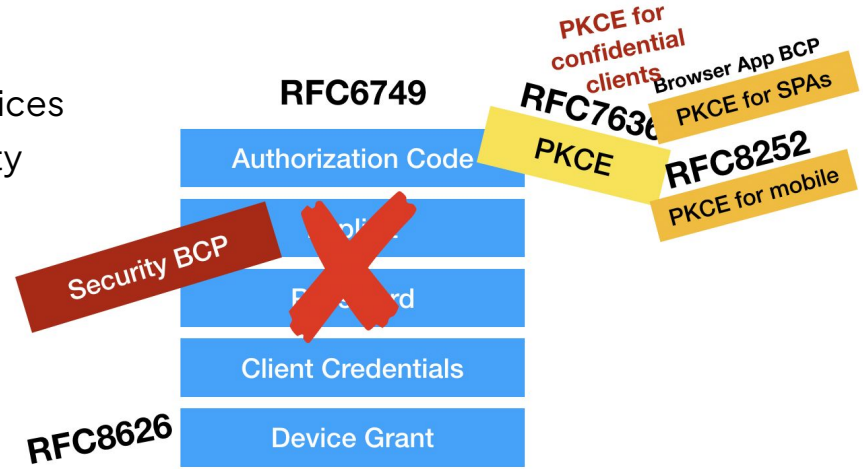
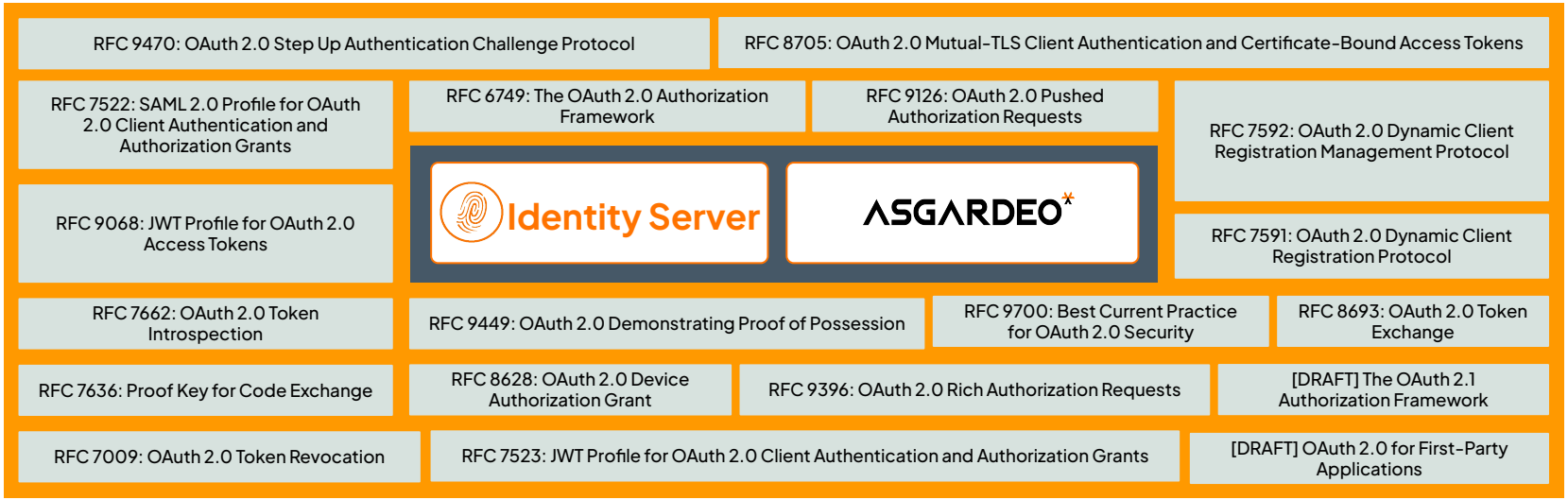


Image src:
https://aaronparecki.com/2019/12/12/21/its-time-for-oauth-2-dot-1

Supported and Upcoming OAuth Standards in WSO2 IAM Platform



** Supported and upcoming OpenId Foundation specifications are not listed here.*


Thank you!
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