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Authentication Using OpenID Connect and OAuth2

@ATLCODECAMP

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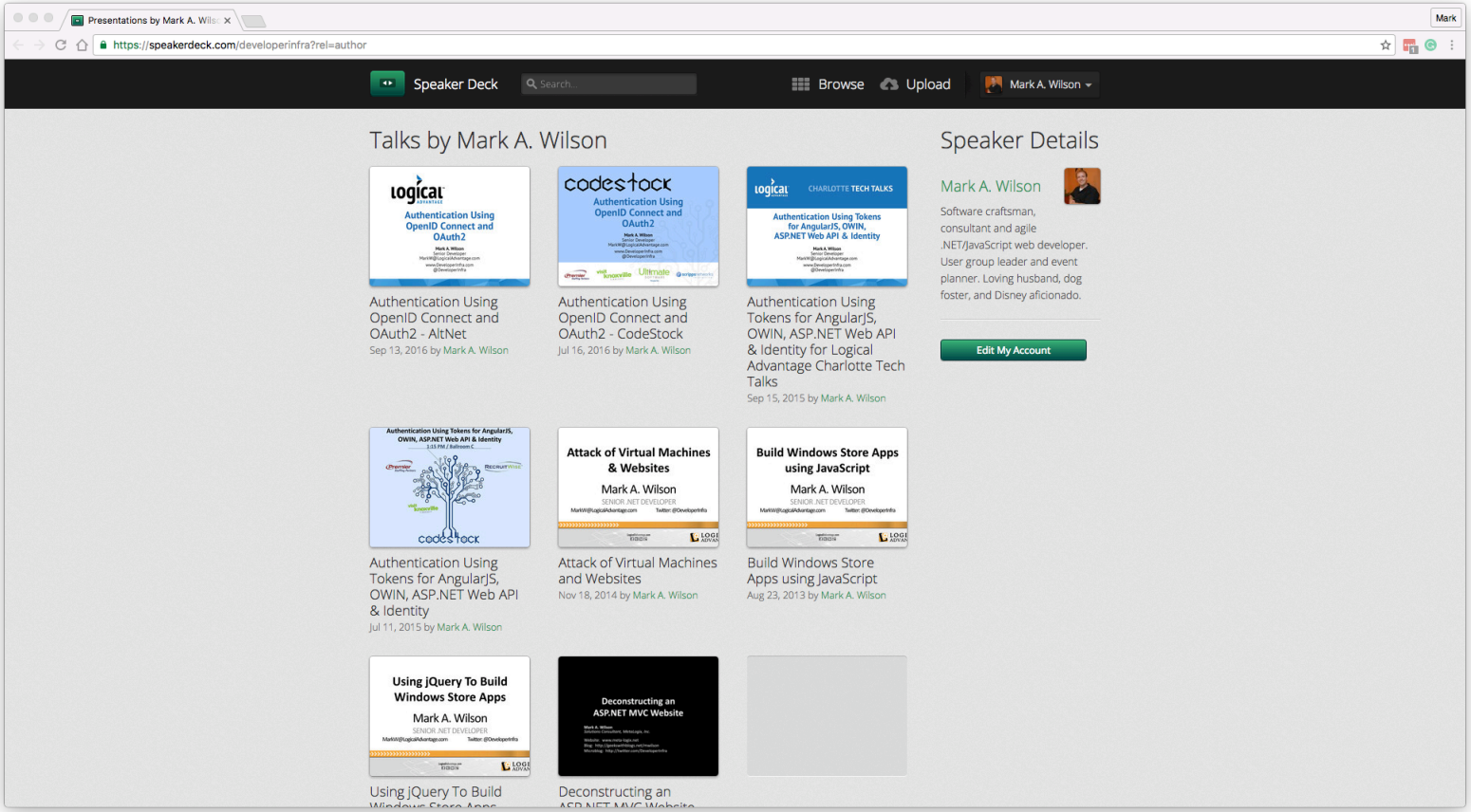
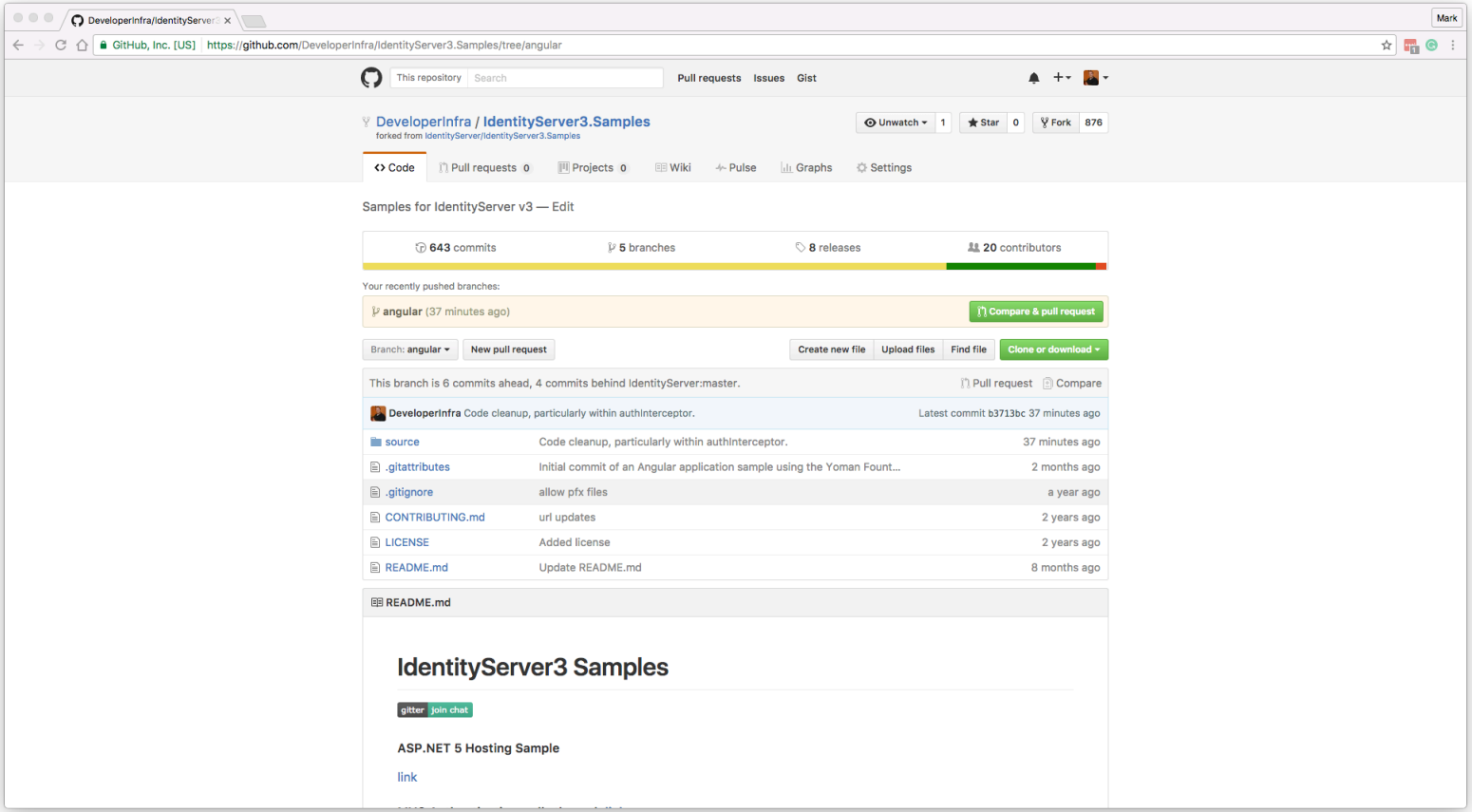
Software craftsman, consultant and agile .NET/JavaScript web developer. User group leader and event planner. Loving husband, dog foster, and Disney aficionado.

Slide Deck



- https://speakerdeck.com/developerinfra

Source Code



- https://github.com/DeveloperInfra/IdentityServer3.Samples/tree/angular

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- ✓ 1 ticket per session survey
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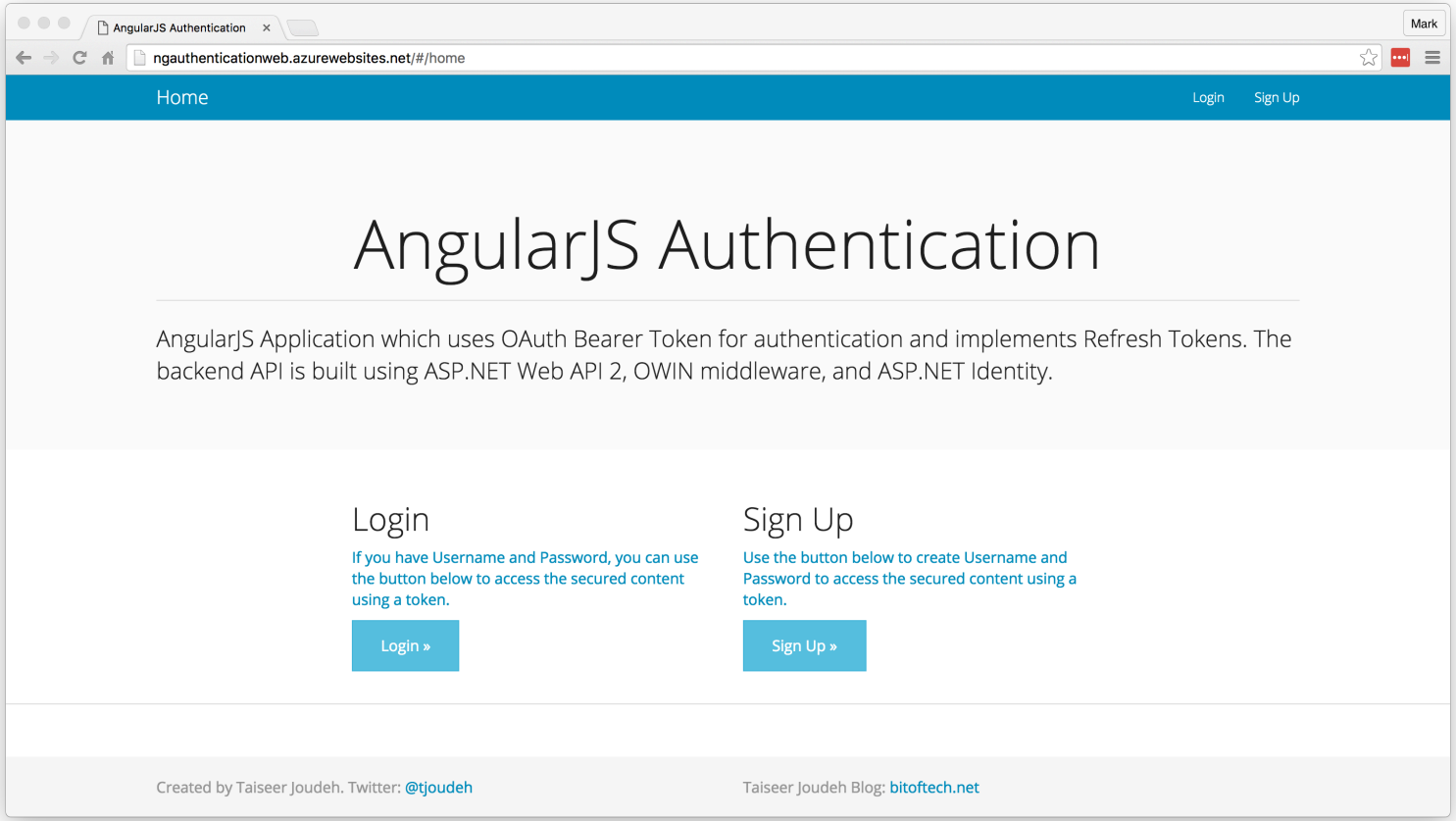
Drawing for prizes begins at 5pm in Q202

Authentication Using Tokens for AngularJS, OWIN, ASP.NET Web API & Identity

AngularJS Authentication Demo



- http://bitoftech.net/2014/06/01/token-based-authentication-asp-net-web-api-2-owin-asp-net-identity/

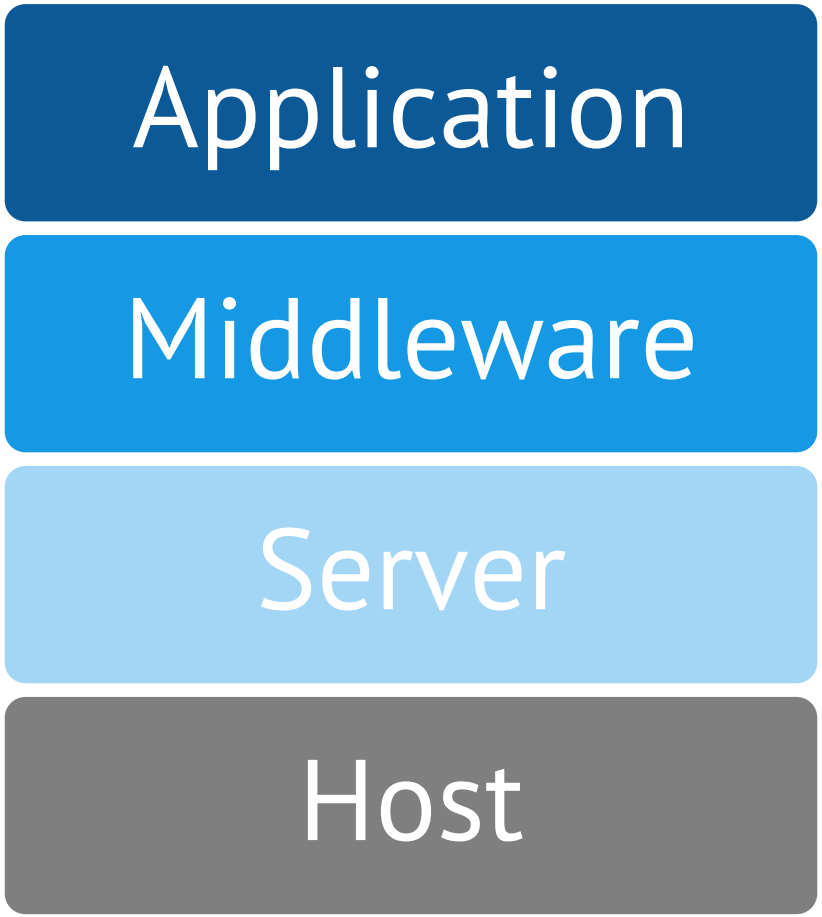
Open Web Interface for .NET

- A *specification*, not a framework
- A standard for an interface between .NET web applications and web servers
- Decouple the application from the [IIS] server
- Encourage development of simple and lightweight modules
- Project Katana is OWIN implementations for Microsoft servers and frameworks

- https://en.wikipedia.org/wiki/Open_Web_Interface_for_.NET

Project Katana

- A set of OWIN components built by Microsoft
- Enables ASP.NET applications to be flexible, portable, lightweight, and provide better performance
- Host – An executable process
- Server – Opens network sockets
- Middleware – Pipeline of OWIN components
- Application – Your code



- http://www.asp.net/aspnet/overview/owin-and-katana/an-overview-of-project-katana

OAuth 2.0

- Authorization framework
- Began in November 2006 when Blaine Cook was developing the Twitter OpenID implementation
- OAuth 1.0 – April 2010
- OAuth 2.0 – October 2012
- Allows *access tokens* be issued to third-party clients/websites
- Not without its critics and controversy

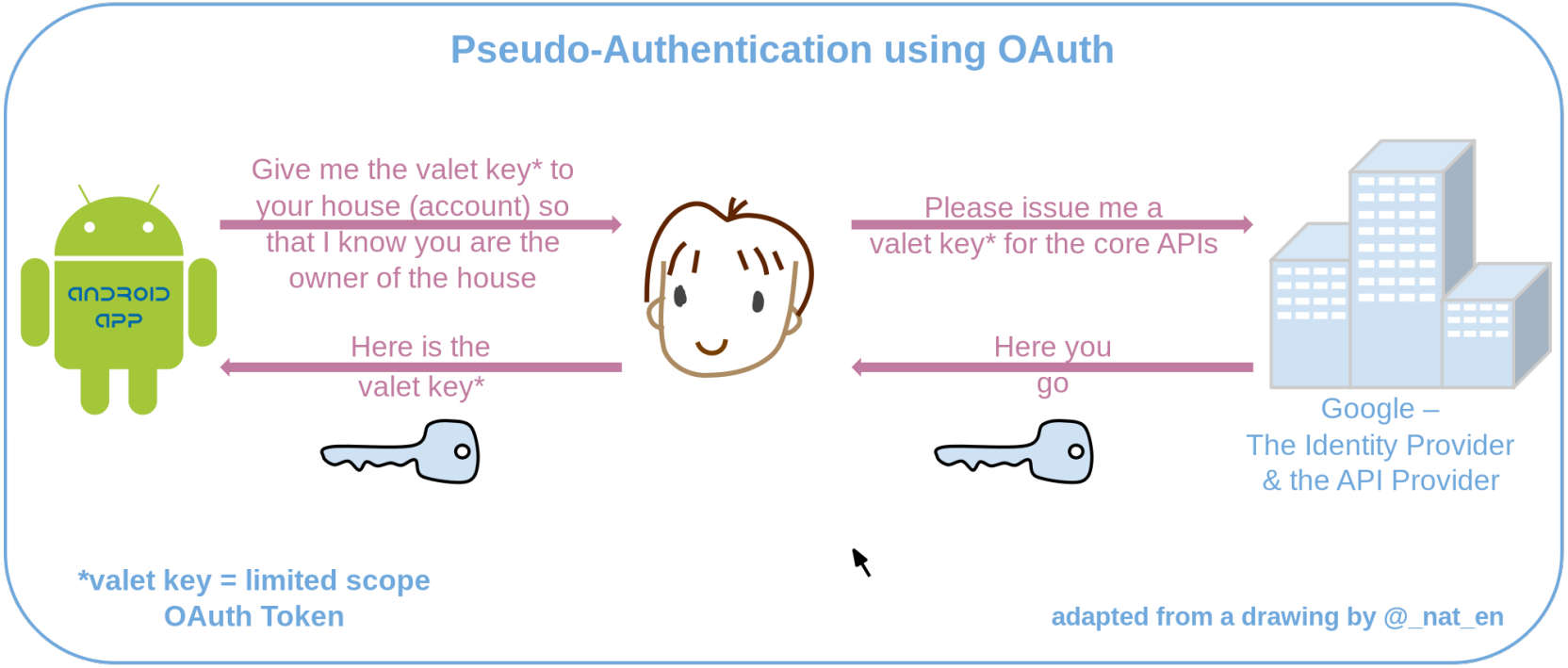
- https://en.wikipedia.org/wiki/OAuth

OAuth 2.0

- Does not support signature, encryption, channel binding, or client verification.
- Relies completely on Transport Layer Security (TLS) / Secure Sockets Layer (SSL).
- “Covert Redirect” involving the redirect_uri.
- Phishing site attacks.
- Eran Hammer resigned as lead author in July 2012.
- “OAuth 2.0 is not an authentication protocol.”

- https://en.wikipedia.org/wiki/OAuth

Pseudo-Authentication using OAuth



- https://en.wikipedia.org/wiki/OAuth

Project Katana

”**vNext is the successor to Katana** (which is why they look so similar). Katana was the beginning of the break away from System.Web and to more modular components for the web stack.”

– David Fowler
ASP.NET Core Architect

- http://forums.asp.net/t/2004299.aspx?Katana%20VS%20vNext

Is it worth it?

Pros

- Authentication & authorization abstracted into a "component" using standard protocol (OAuth2)
- Eliminated the cookie and Cross-Site Request Forgery (CSRF) problems for SPAs
- Encrypted and signed tokens (using shared machine key)
- SSL by default
- Resource owner flow very easy.

Cons

- Exponentially complex
- Adding refresh tokens required implementing persistence
- Implicit flow (native or JS apps) lacked login/consent view engine
- Lacking in validation
- The ASP.NET team decided to discontinue Project Katana to focus on consuming tokens
- "Note: This outline should not be intended to be used for creating a secure production app."

- https://leastprivilege.com/2014/03/24/the-web-api-v2-oauth2-authorization-server-middlewareis-it-worth-it/

Modern Applications

This happened…

No SOAP

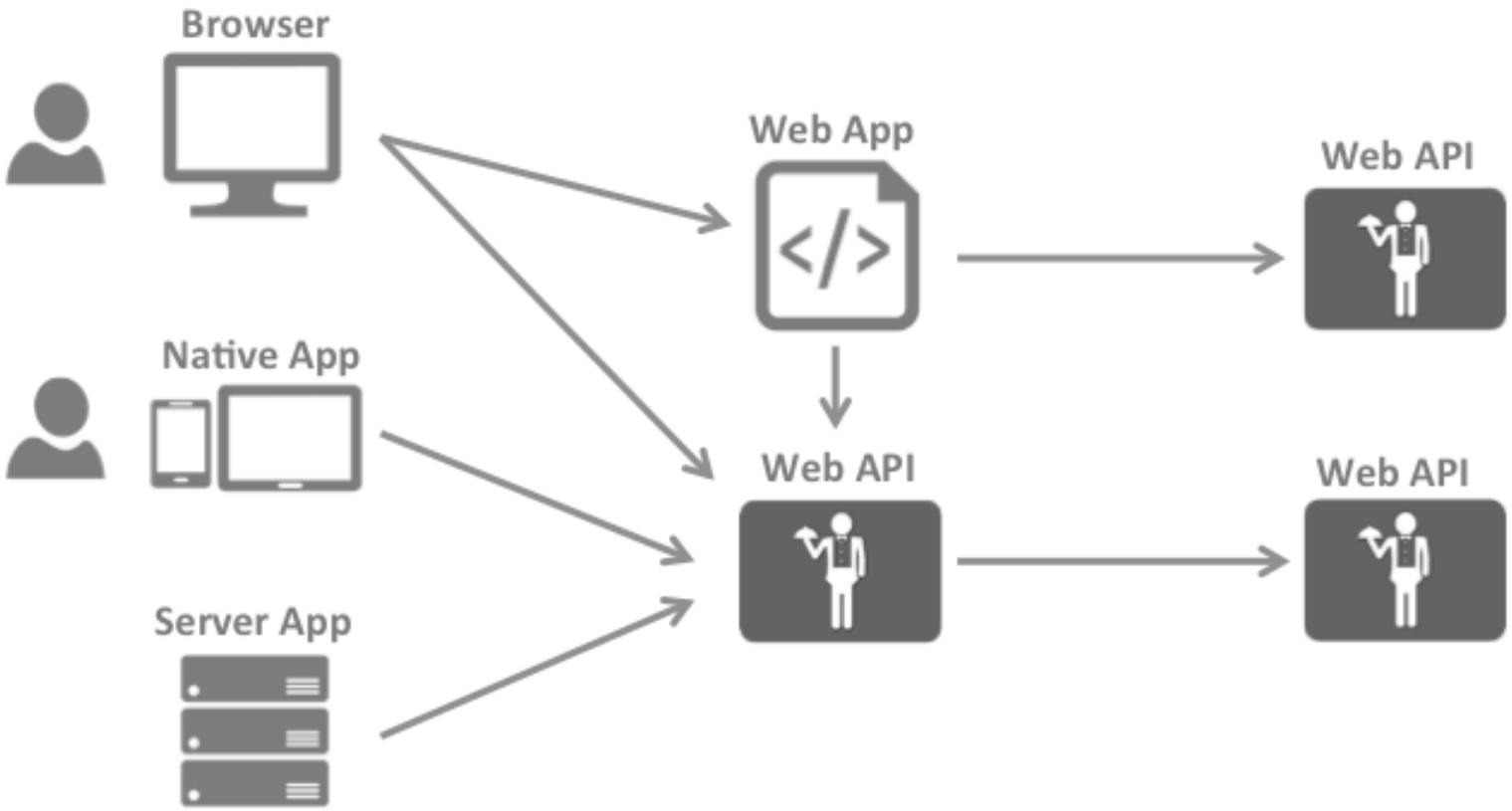
No SAML

No WS*

No Windows

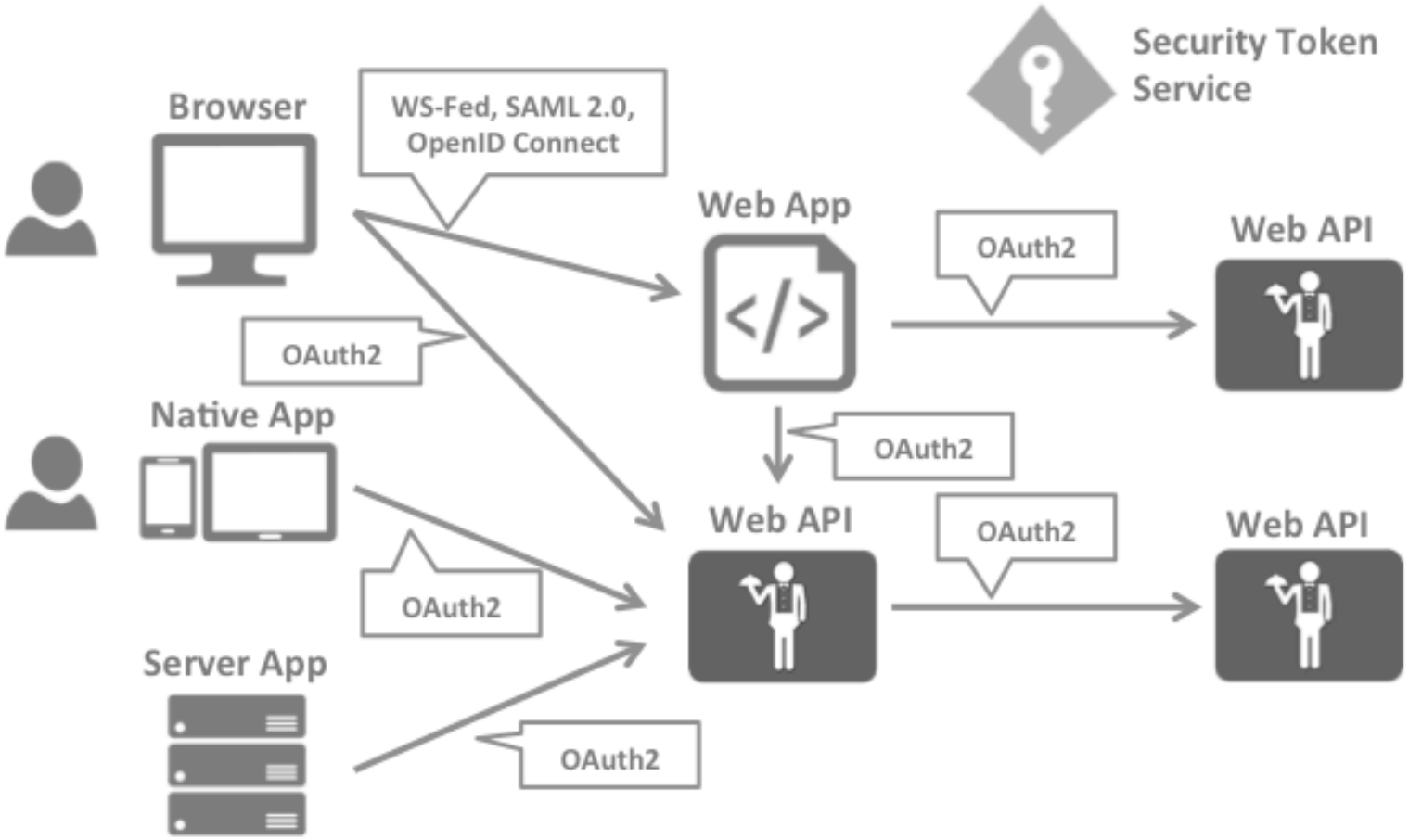
No Enterprise

The Big Picture



- https://identityserver.github.io/Documentation/docsv2/overview/bigPicture.html

Security Protocols



- https://identityserver.github.io/Documentation/docsv2/overview/bigPicture.html

Security Concerns

Authentication

Identity of the current user

API Access

Application identity and/or delegating the user's identity

- https://identityserver.github.io/Documentation/docsv2/overview/bigPicture.html

Security Assertion Markup Language

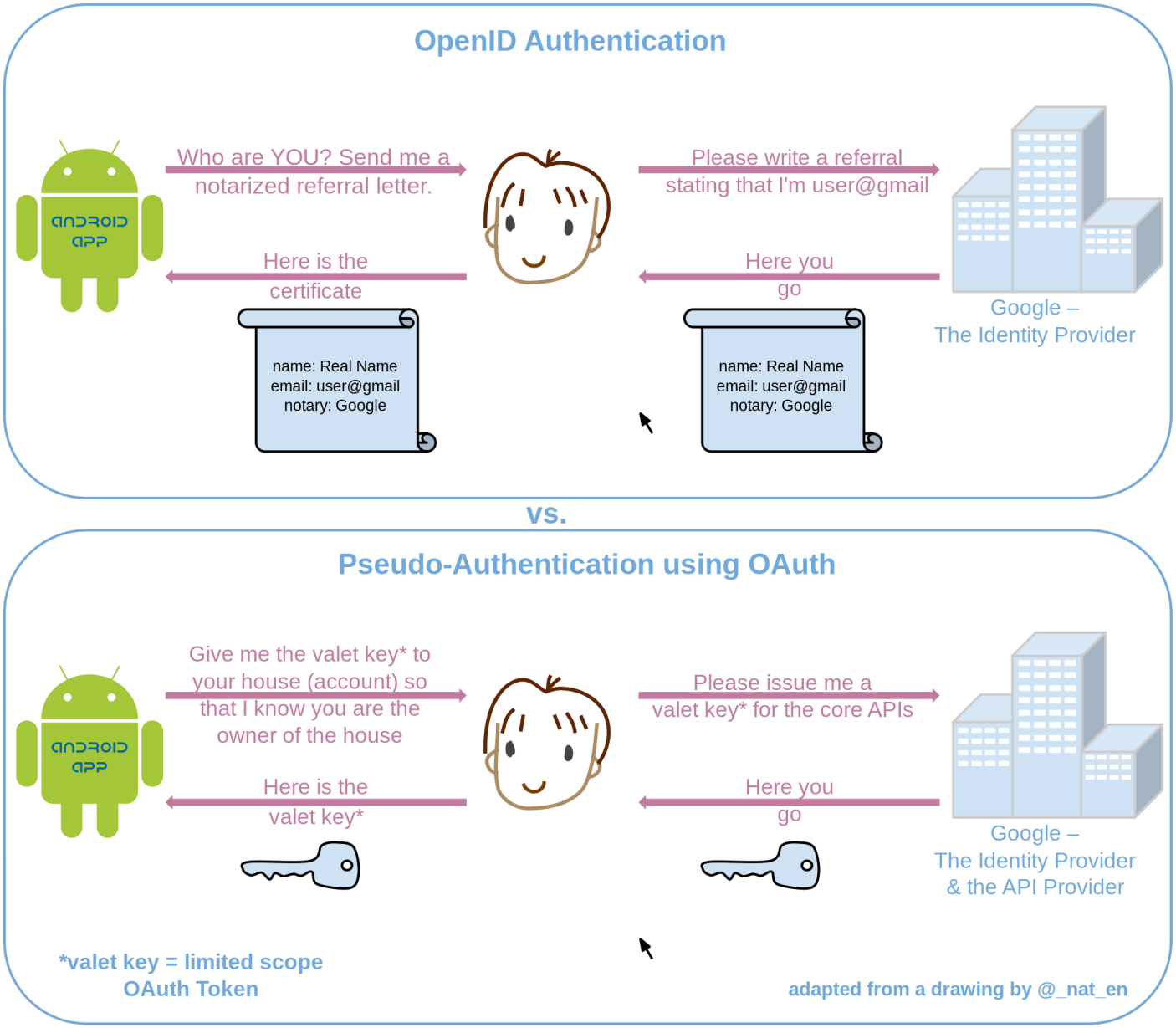
- Most popular & widely deployed
- SAML 1.0 – November 2002
- SAML 1.1 – September 2003
- SAML 2.0 – March 2005
- Browser single sign-on (SSO)
- Problematic beyond intranet
- XML-based
- “Enterprisey” and “not trivial”

- https://en.wikipedia.org/wiki/Security_Assertion_Markup_Language

OpenID Connect

- Newest but generally considered to be the future
- OpenID – May 2005
- OpenID 2.0 – December 2007
- OIDC [3.0] – February 2014
- Designed to be more usable by native and mobile applications
- RESTful HTTP API using JSON
- Authentication layer on top of the OAuth 2.0 authorization framework
- Uses the JSON Web Token (JWT) and JSON Object Signing and Encryption (JOSE) specs

- https://en.wikipedia.org/wiki/OpenID



- https://en.wikipedia.org/wiki/OAuth

Better Together

- https://identityserver.github.io/Documentation/docsv2/overview/bigPicture.html

Authentication Using OpenID Connect and OAuth2

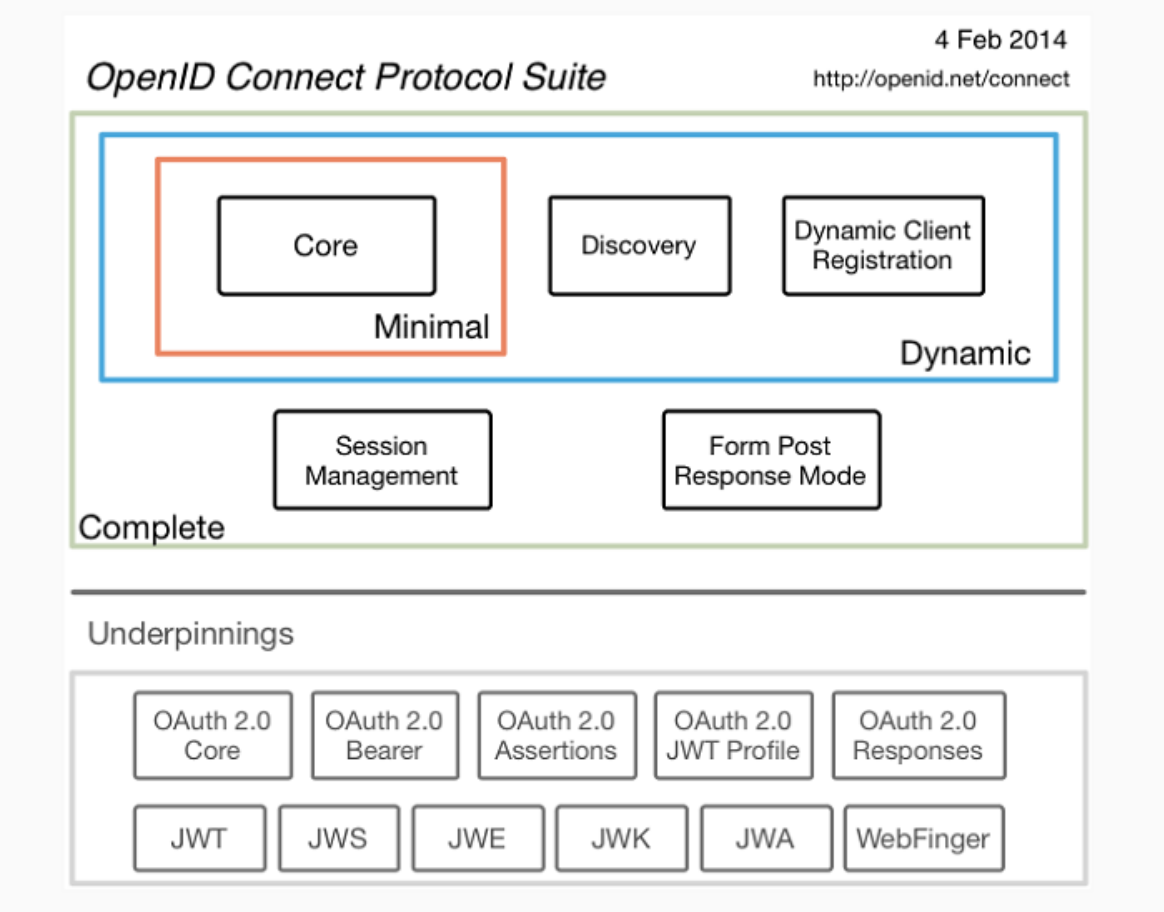
OpenID Connect

"OpenID Connect 1.0 is a simple identity layer on top of the OAuth 2.0 protocol."

- Defines identity tokens
- Defines standard token type
- Defines standard cryptography
- Defines validation procedures
- Defines flows for browser, native, and server-based apps
- Combines authentication with short/long-lived delegated API access

- http://openid.net/connect/

OpenID Connect



- http://openid.net/connect/

OpenID Connect

Authorize Endpoint

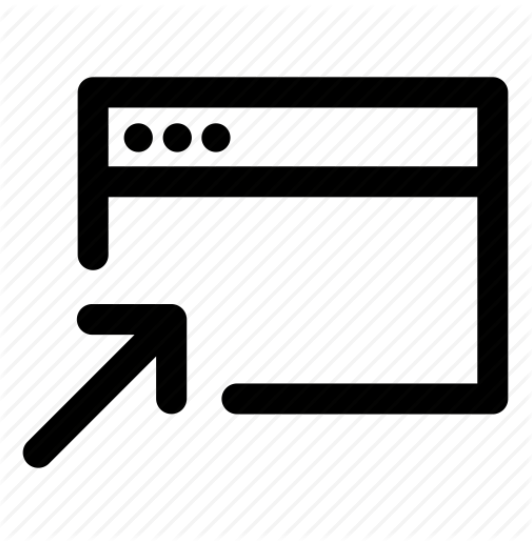
Token Endpoint

UserInfo Endpoint

Flows

Implicit Flow

(Browser-based)



Hybrid Flow

(Native/Mobile)

Client Credentials Flow

(Server-to-Server/IoT)

Implicit Flow

GET /authorize

?**client_id**=app1

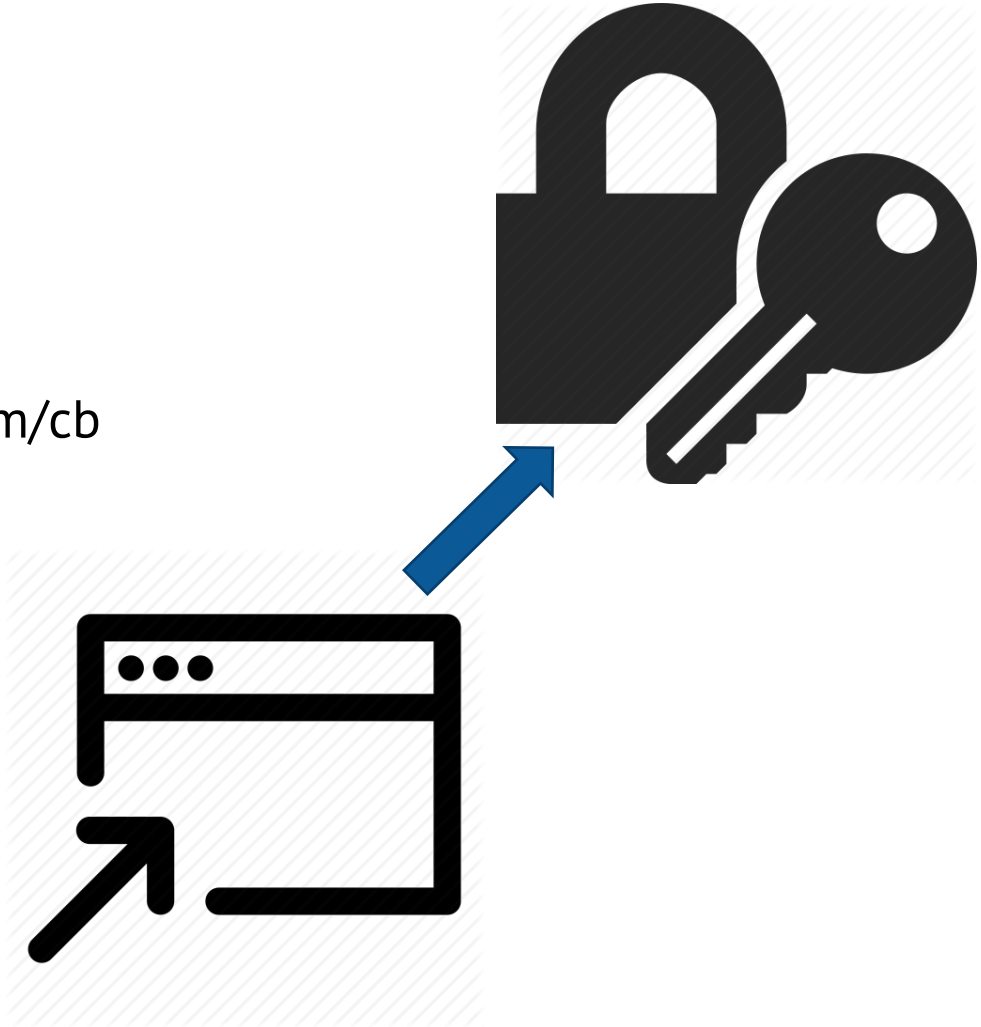
&**redirect_uri**=https://app.com/cb

&**response_type**=id_token

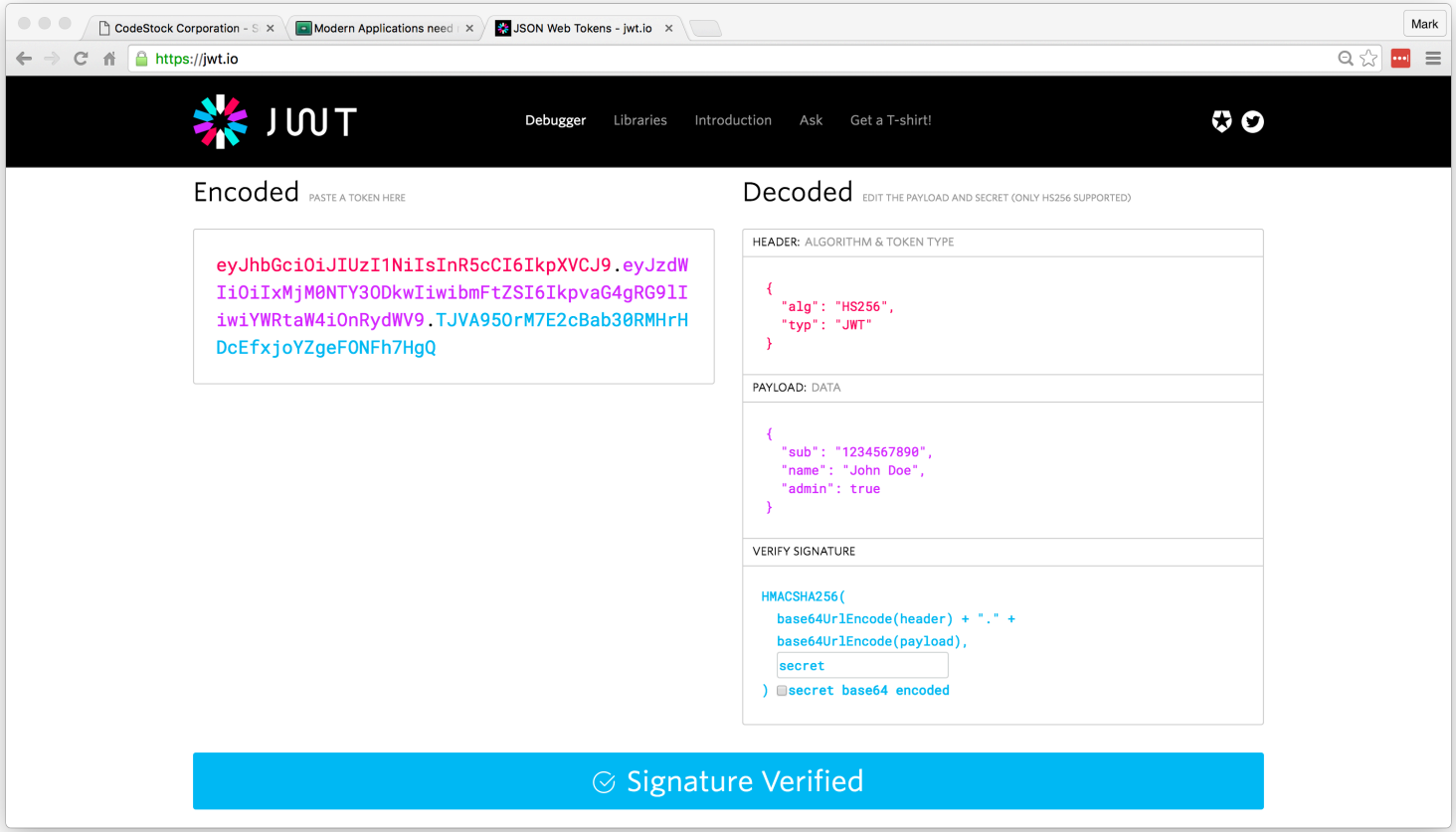
&**response_mode**=form_post

&**nonce**=a1b...x9z

&**scope**=openid email

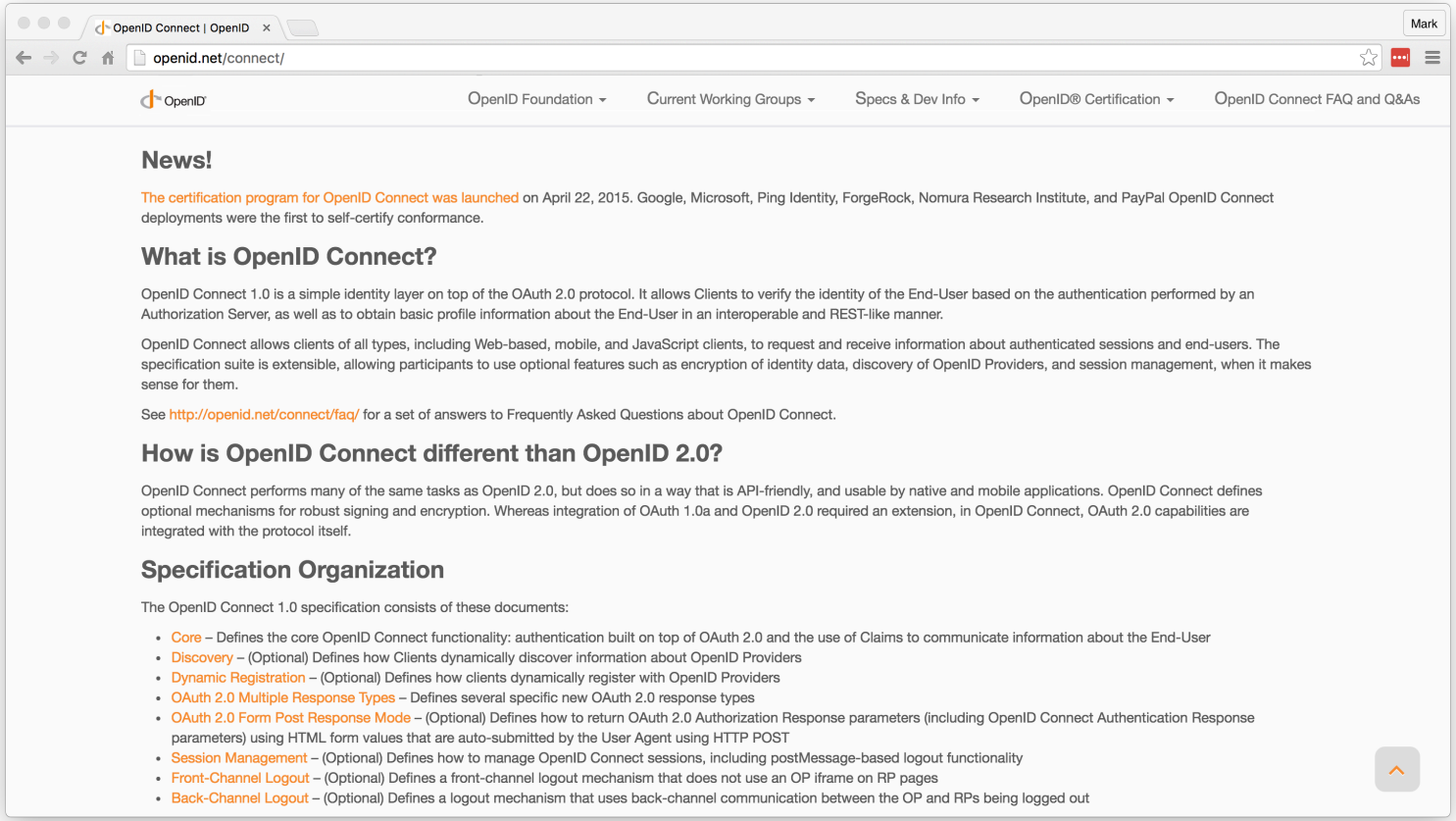


Identity Token



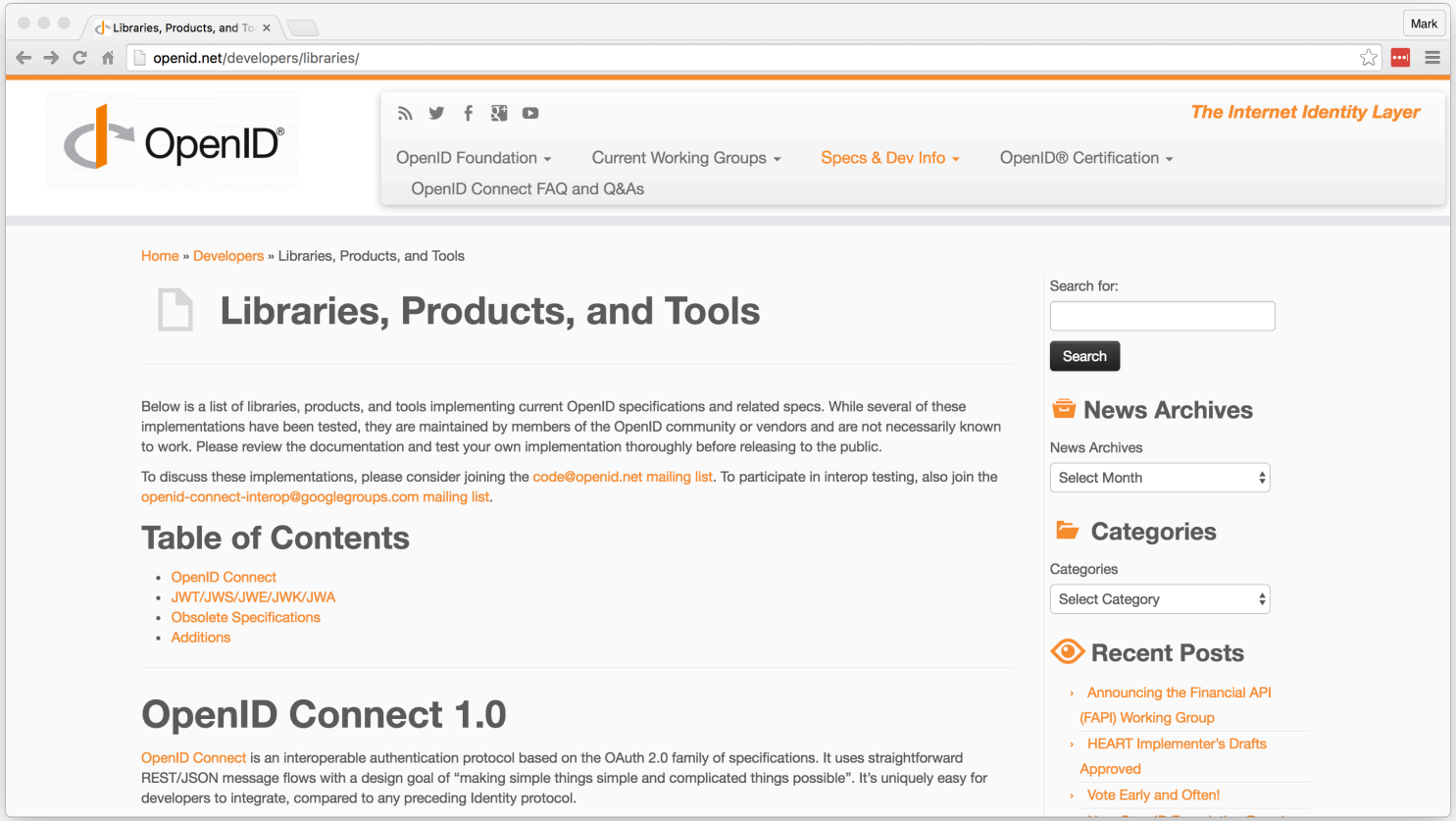
- https://jwt.io/

Getting Started



- http://openid.net/connect/

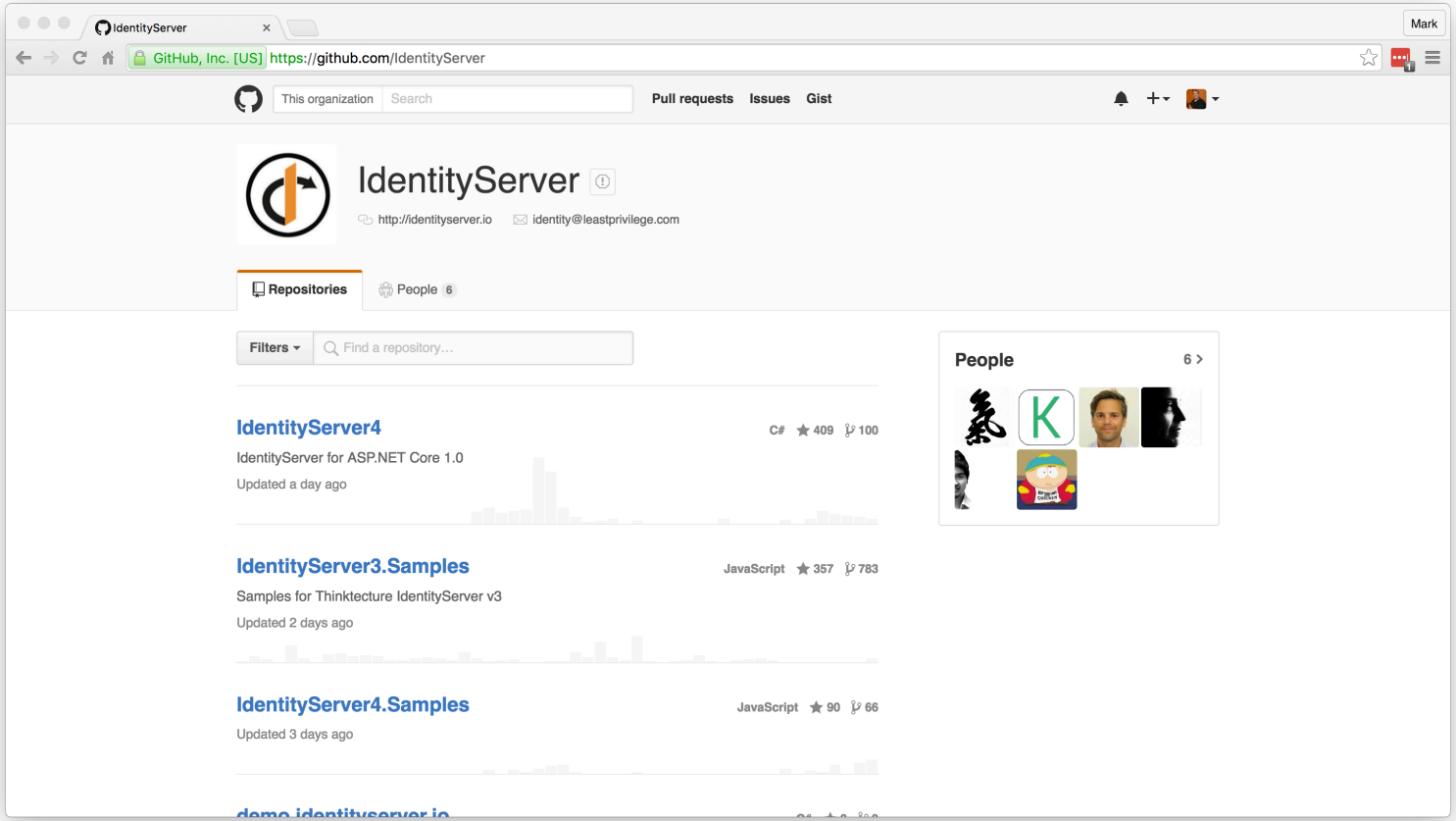
Getting Started



- http://openid.net/developers/libraries/

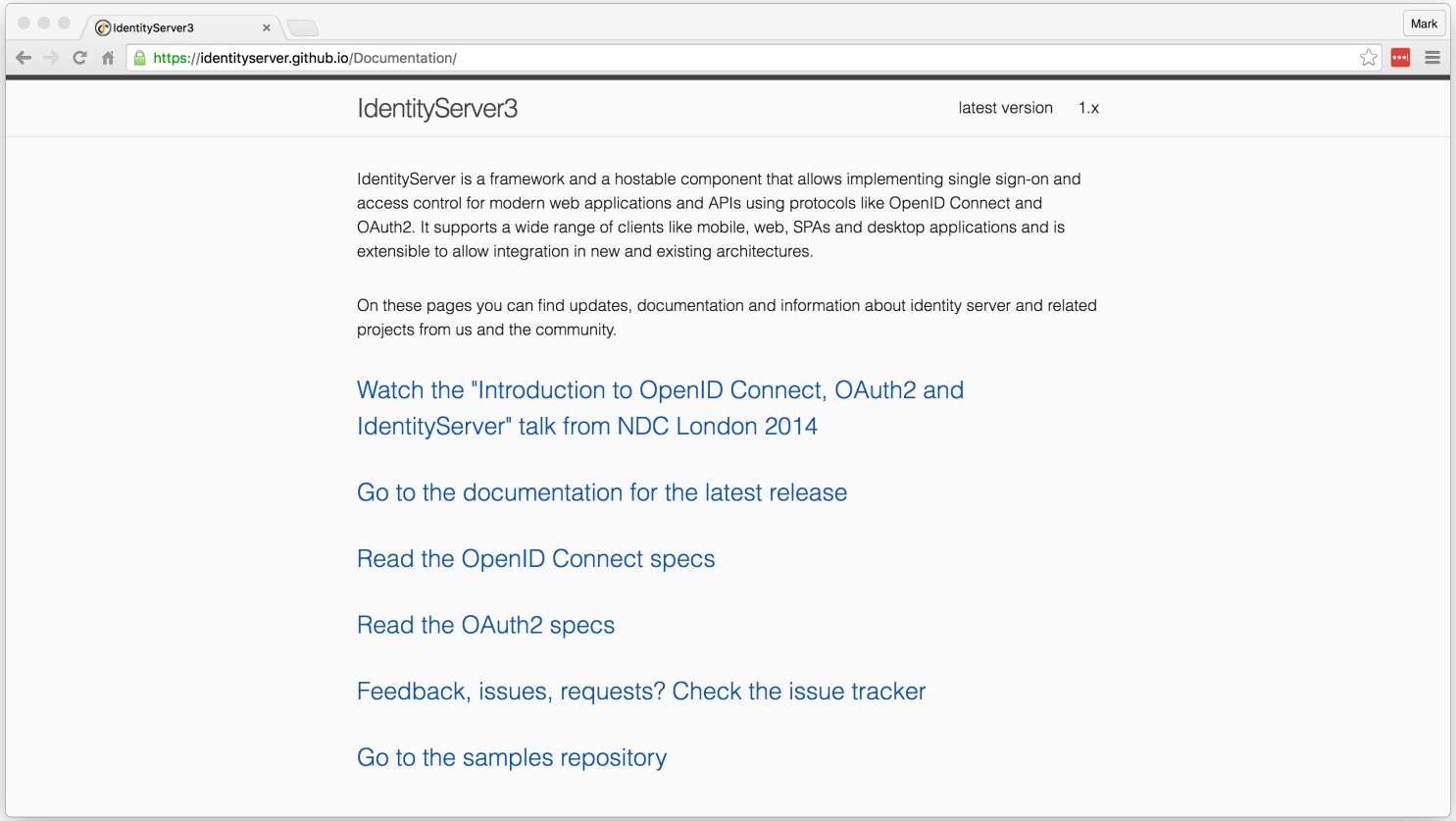
IdentityServer

Getting Started



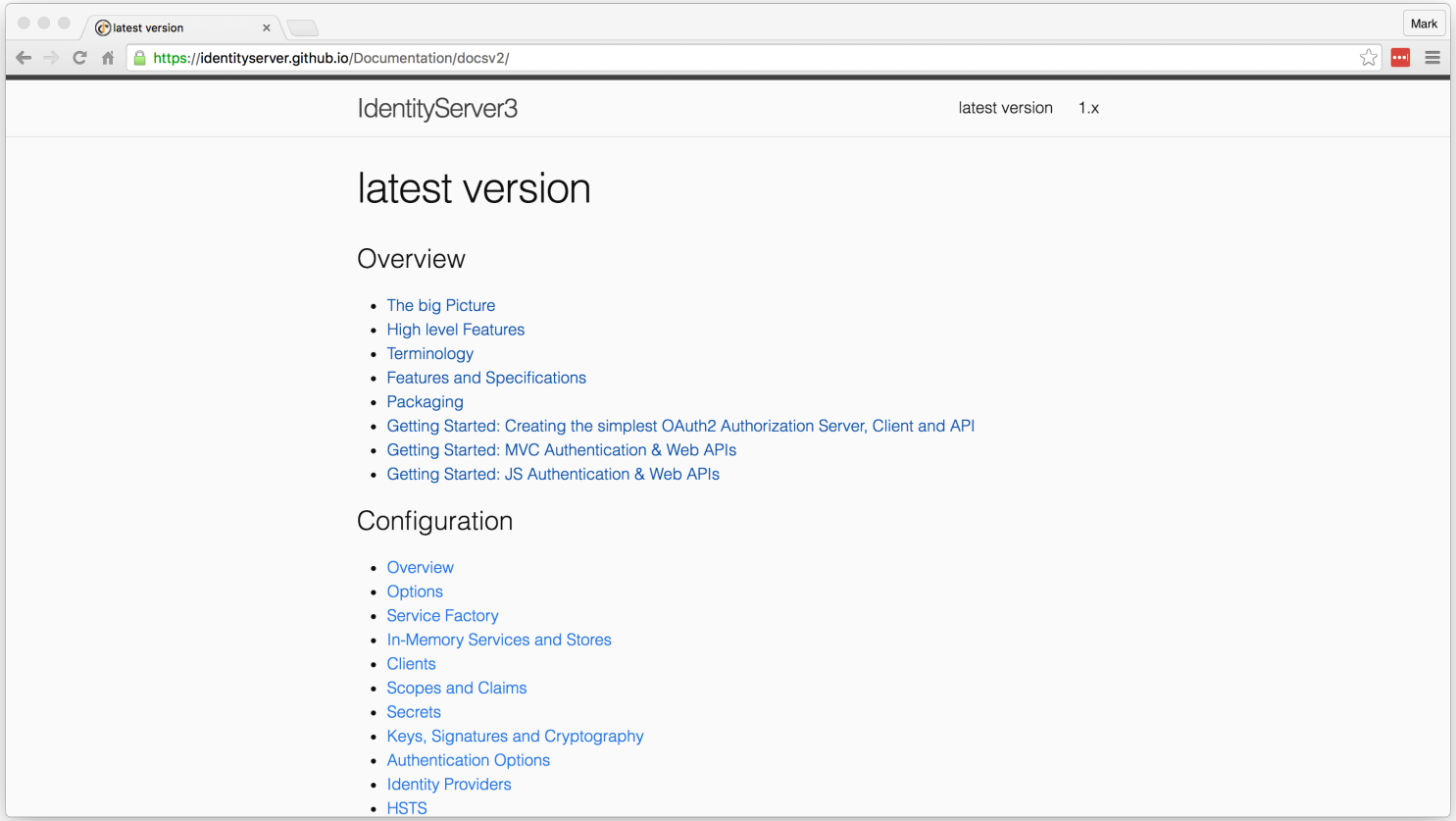
- https://github.com/IdentityServer

Getting Started



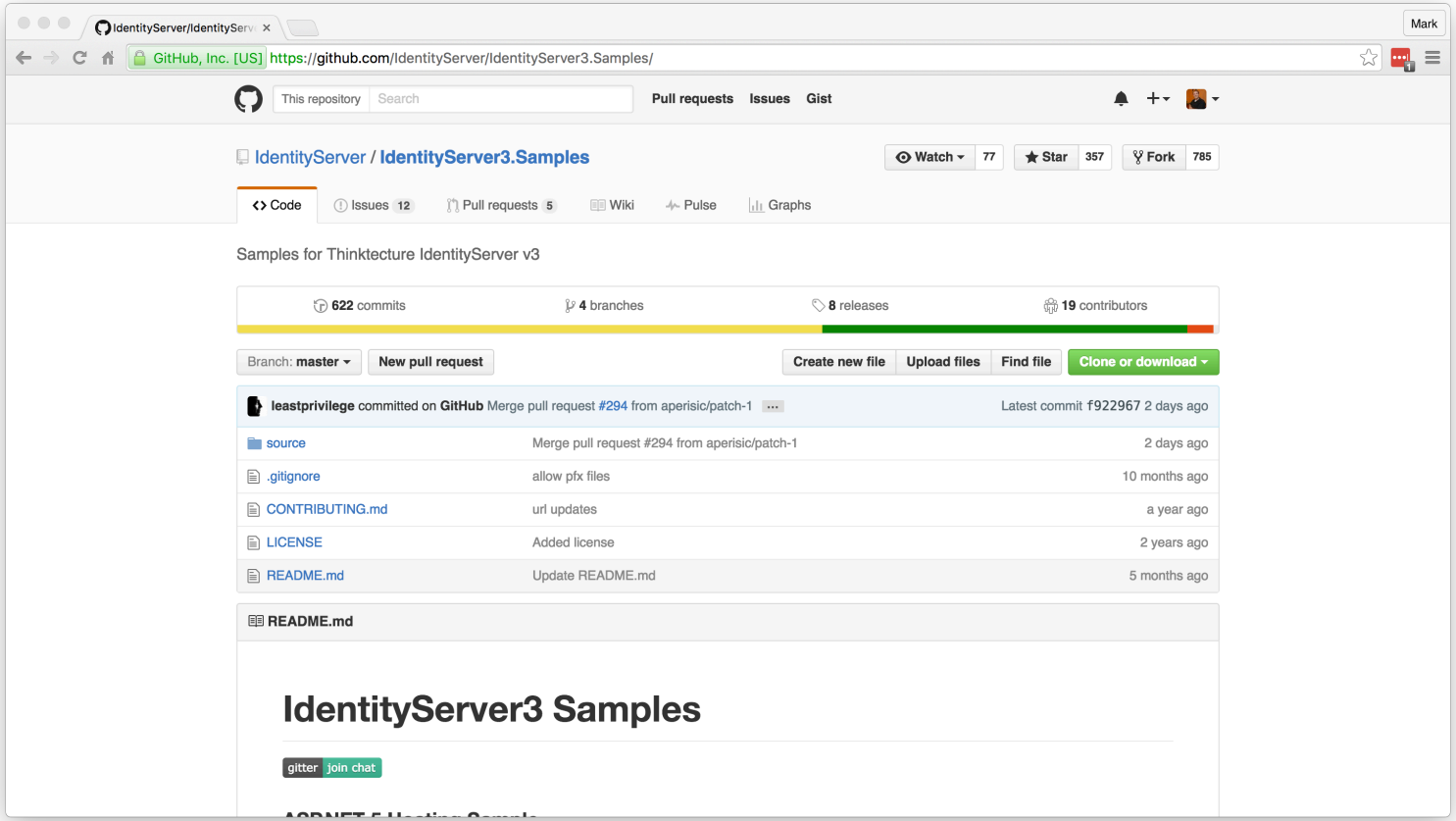
- https://identityserver.github.io/Documentation/

Getting Started



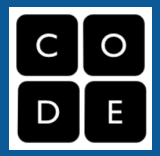
- https://identityserver.github.io/Documentation/docsv2/

Getting Started



- https://github.com/IdentityServer/IdentityServer3.Samples/

IdentityServer



DEMO

Resources

- OpenID Connect: http://openid.net/connect/
- OpenID Connect Libraries: http://openid.net/developers/libraries/

- IdentityServer: https://github.com/IdentityServer
- IdentityServer Samples: https://github.com/IdentityServer/IdentityServer3.Samples/

- OAuth for ASP.NET: http://www.oauthforaspnet.com/
- JSON Web Tokens: https://jwt.io/

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