Authentication in ArcGIS

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slides: https://esriurl.com/ds2021-authentication

demos: https://esriurl.com/ds2021-authentication-demos

2021 ESRI DEVELOPER SUMMIT

2 Authentication Mechanisms

- API Keys
- ArcGIS Identity

There are others but these are the main ones most apps will use.

API Keys (New Jan 2021)

- Used for location services (basemaps, routing, geocoding, ect...)
- Publically accessible
- Restricted to specific services
- Read private content (Developer accounts only)

API Keys (New Jan 2021)

- Accessible to **BOTH** ArcGIS Organizations **AND** Developer accounts
- Monitor regularly for unexpected usage

ArcGIS Identity

- A.K.A "Named user authentication"
- ArcGIS users authorize your app to access services on their behalf (OAuth 2.0)
- Access private data through sharing settings
- Access services the user had privilages for

Recommendations

- Use ArcGIS Identities when building apps that work with ArcGIS user and organziations.
- Use API keys for public or private facing apps where there is no need for ArcGIS users or private ArcGIS data.
- **DO NOT** conflate what TYPE of account you have to what method you SHOULD use.

Account type ≠ Authentication type

	ArcGIS Online Organization	ArcGIS Developer Account
Services	Unlimited basemaps and search	Generous free tier
# Users	1+	1
Usage	Consumes credits	Bills in USD ($)
API Keys	✓	✓
ArcGIS Identity	✓	✓

Account type ≠ Authentication type

- You can use a developer account to make a app for users in an ArcGIS Organization (e.g. admin tools).
- You can use an ArcGIS Organization to build a public app that uses location services (e.g. public info app)

API Keys

Create an manage an API key

https://developers.arcgis.com/documentation/security-and-authentication/api-keys/

Using an API Key - ArcGIS API for JavaScript

```javascript
require([
    "esri/config",
], function (esriConfig) {
    // set a global API key for all requests
    esriConfig.apiKey= "YOUR-API-KEY";
});
```

`IdentityManager` is ignored and the API is sent on every request.

Using an API Key - ArcGIS Rest JS

```javascript
import { geocode } from "@esri/arcgis-rest-geocoding"
import { APIKey } from "@esri/arcgis-rest-auth"

const apiKey = new APIKey("YOUR-API-KEY")


geocode({
    address: "1600 Pennsylvania Ave NW, DC",
    authentication: apiKey,
}).then(response => {
    response.candidates[1].location // => { x: -77.036533, y: 38.898719, ... }
})
```

The API key is used for this request only. Reuse `apiKey` between requests.

Using an API Key - ArcGIS Runtime API for .NET

```csharp
using Esri.ArcGISRuntime.UI.Controls;
using Esri.ArcGISRuntime.Mapping;
using System.Windows;

public partial class MainWindow : Window
{
        public MainWindow()

        {
                InitializeComponent();

                Esri.ArcGISRuntime.ArcGISRuntimeEnvironment.ApiKey = "YOUR_API_KEY";

                MainMapView.Map = new Map(BasemapStyle.ArcGISNavigation);

                MainMapView.SetViewpoint(new Viewpoint(
```

API key is sent to any service that can accept an API key.

Demo API Keys

https://codepen.io/patrickarlt/pen/poNEBrR?editors=1000

Tips for using API keys.

- Monitor API key on ArcGIS for Developers.
- Rotate keys freqently if the are used in public applications.
- Ensure keys are only allowed to access services you are using in your application.

ArcGIS Identity

What is an ArcGIS Identity?

- Represents a users profile in ArcGIS Online/Enterprise.
- Your apps can be authorized to access a users ArcGIS Identity via OAuth 2.0.
- Represented by an access token + expiration date with optional refresh token.

Get Started

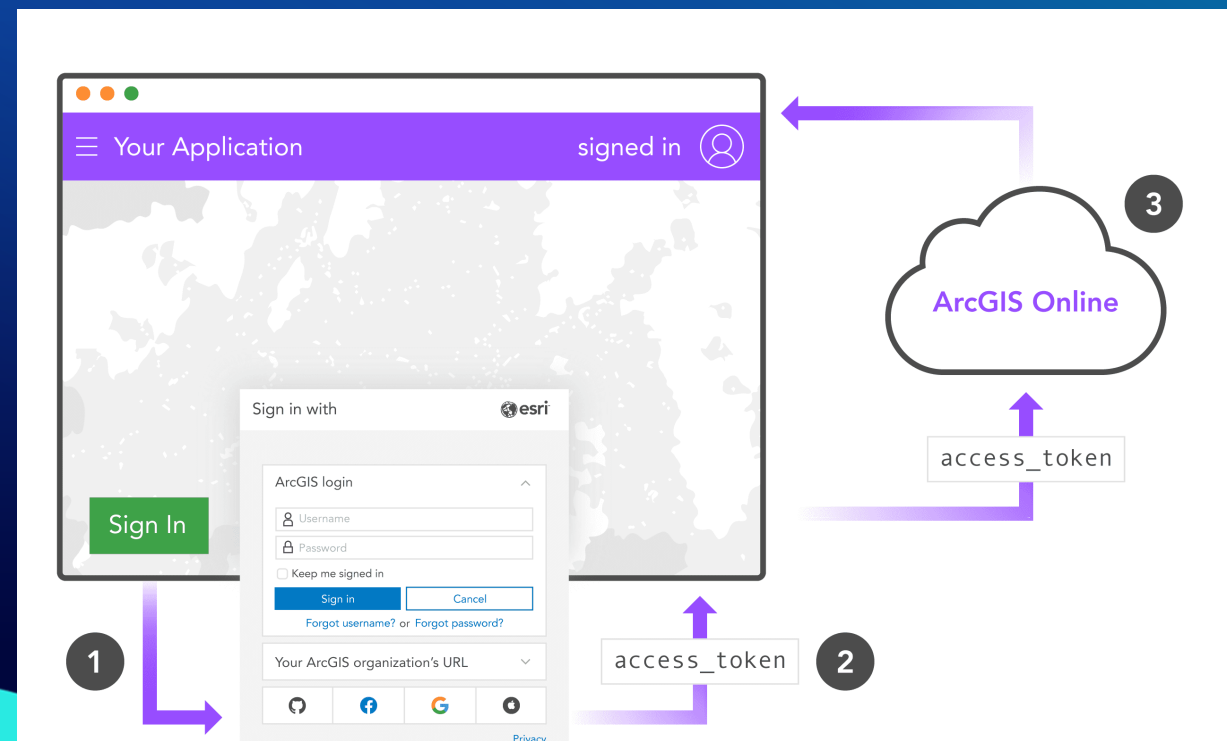Register your application to get a client id and client secret.

https://developers.arcgis.com/documentation/security-and-authentication/oauth-2.0/register-your-application/
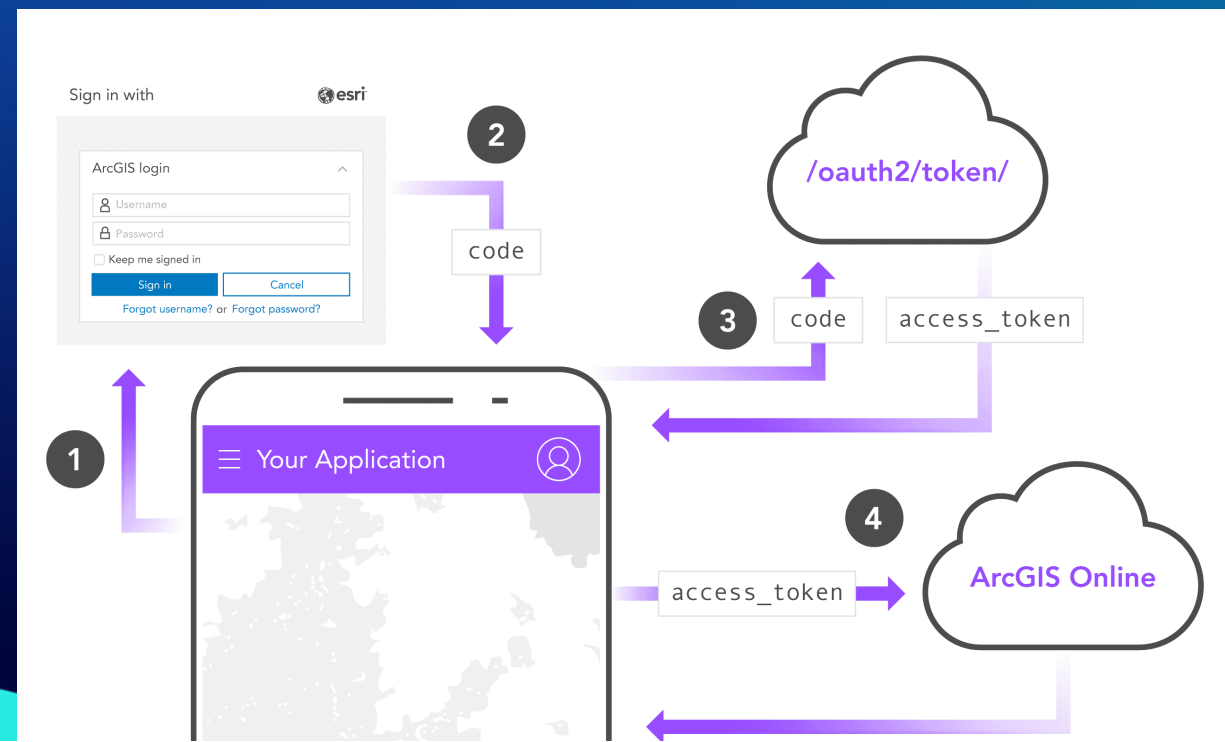
Getting an ArcGIS Identity (OAuth 2.0)

- Use an ArcGIS API (JS API, Runtime, REST JS)
- Impliment OAuth 2.0 without an ArcGIS API
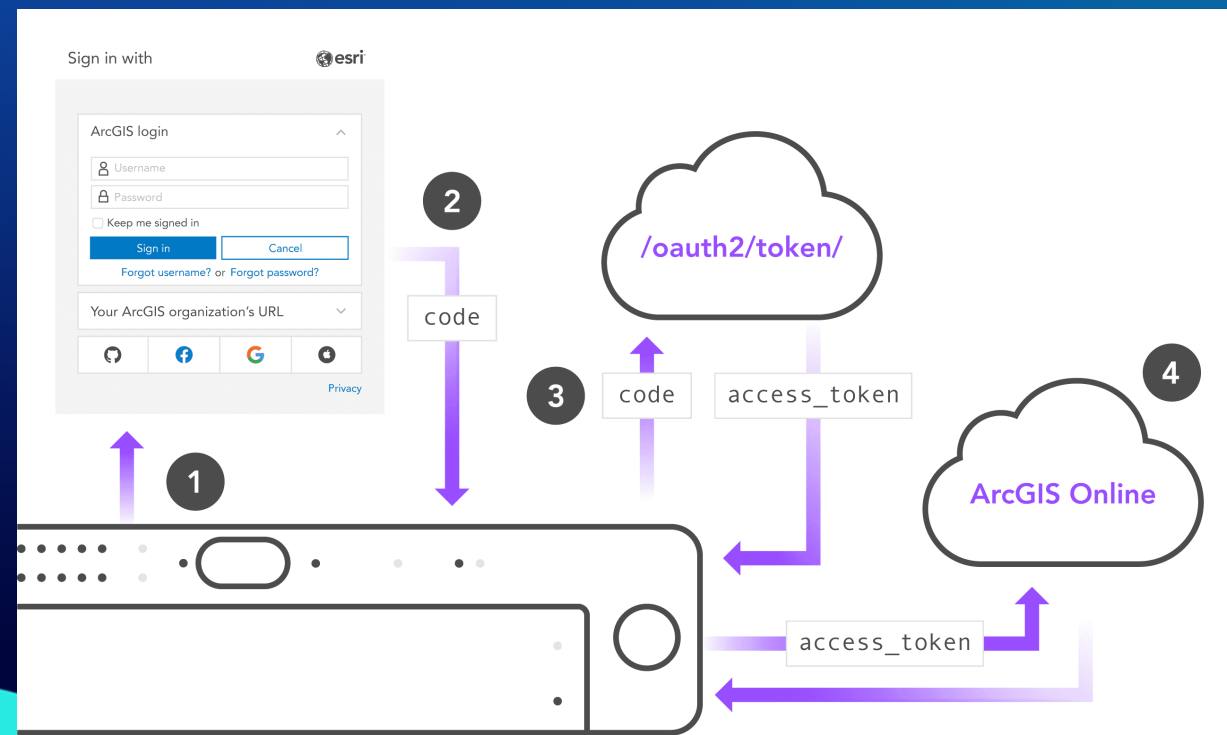
OAuth 2.0 Workflows - Web, No Server

OAuth 2.0 Workflows - Native, No Server

OAuth 2.0 Workflows - With Server

Demo: ArcGIS Identity w/ JS API

https://github.com/patrickarlt/ds2021-authentication/tree/main/demos/arcgis-identity-js-api

Demo: ArcGIS Identity w/ ArcGIS REST JS

(Browser)

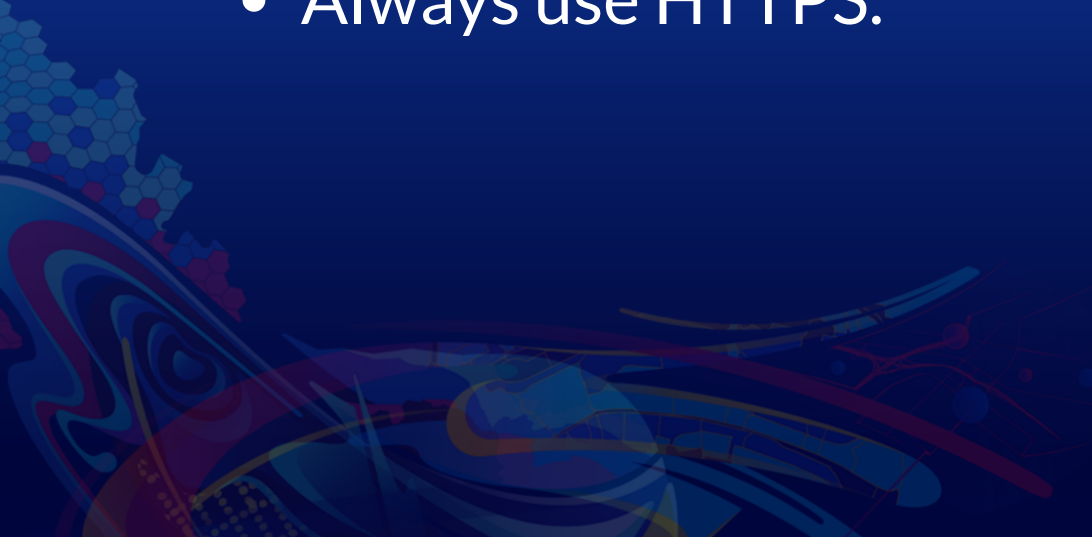https://github.com/patrickarlt/ds2021-authentication/tree/main/demos/arcgis-identity-rest-js-browser

Demo: ArcGIS Identity w/ ArcGIS REST JS (Server)

https://github.com/patrickarlt/ds2021-authentication/tree/main/demos/arcgis-identity-rest-js-server

Why OAuth?

Trust. Users only provide their username and password to ArcGIS Online never to an app. In a world of regular data breaches this is important.

Best practices

- Monitor and rotate API keys often.
- Evaluate the trade offs between server and serverless OAuth workflows.
- Always use HTTPS.