



# ArcGIS Runtime: Authenticating Your Apps with the ArcGIS System

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DEVELOPER SUMMIT

# Purpose

When is Authentication Required?



Goals of Runtime Authentication APIs



Authenticating a User



Authentication Manager



Authentication Challenge



Credential Cache



API key Overview

# When is Authentication Required?

What is Authentication?

When is Authentication Required?

Authentication Methods

Access a user's  
secured/private resource

Add or update a user's data  
to server

Access ArcGIS Platform  
services

OAuth 2.0

ArcGIS Token

Client Certificate or Public  
Key Infrastructure (PKI)

HTTP (Integrated Windows  
Authentication (IWA), Basic,  
Digest)

# Goals of Runtime Authentication APIs

Less Code

Central Logic

Handle all  
Authentication  
Methods

Common  
Patterns in  
Runtime SDKs

Avoid different  
failure points

Do it once in  
one place

Documentation / ArcGIS Runtime API for iOS

Home Sample Code

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Security and authentication

Overview

- Key features
- Get started
- Install and set up
- Release notes
- Maps (2D)
- Scenes (3D)
- Layers
- Styles and data visualization
- Query and edit
- UI components
- Geocode and search
- Route and directions
- Spatial and data analysis
- Utility network
- Offline maps, scenes, and data
- ArcGIS organization
- Programming
- Security and authentication
  - Introduction

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Authentication is used to keep corporate and network data secure and ensure that only valid, authenticated users can access private information. Your application or its users are required to authenticate their credentials through a qualified, compatible [ArcGIS platform](#) such as [ArcGIS Online](#) or [ArcGIS Enterprise](#) whenever attempting to:

- Access private user or corporate-owned information.
- Create, edit, or publish content.
- Access premium (payment-secured) web content or services.

You must implement an authentication method in order to grant your app's users access to secured resources. The authentication method you decide to implement might vary based upon the resources required by your application. Esri's preferred authentication methods are:

- **ArcGIS Identity (OAuth 2.0):** This method obtains user credentials and authentication through an ArcGIS platform sign-on, and the platform responds with an OAuth 2.0 `access_token` to the client app. The app uses this `token` in all subsequent requests to the platform. **This is the recommended method**, and is most commonly used with [ArcGIS Online](#) and [ArcGIS Enterprise](#).

# Runtime Authentication APIs

Class
<b>AuthenticationManager</b>
Properties
credentialCache: <a href="#">CredentialCache</a> <i>read only</i>
OAuthConfigurations: <a href="#">Array&lt;OAuthConfiguration&gt;</a> <i>read only</i>
trustedHosts: <a href="#">Array&lt;String&gt;</a> <i>read only</i>
Methods
authenticationChallengeReceivedAsync(): <a href="#">AuthenticationChallenge</a>
sharedAuthenticationManager(): <a href="#">AuthenticationManager</a>

Enumeration
<b>AuthenticationChallengeType</b>
Enumeration Values
unknown (0)
usernamePassword (1)
OAuth (2)
clientCertificate (3)
untrustedHost (4)

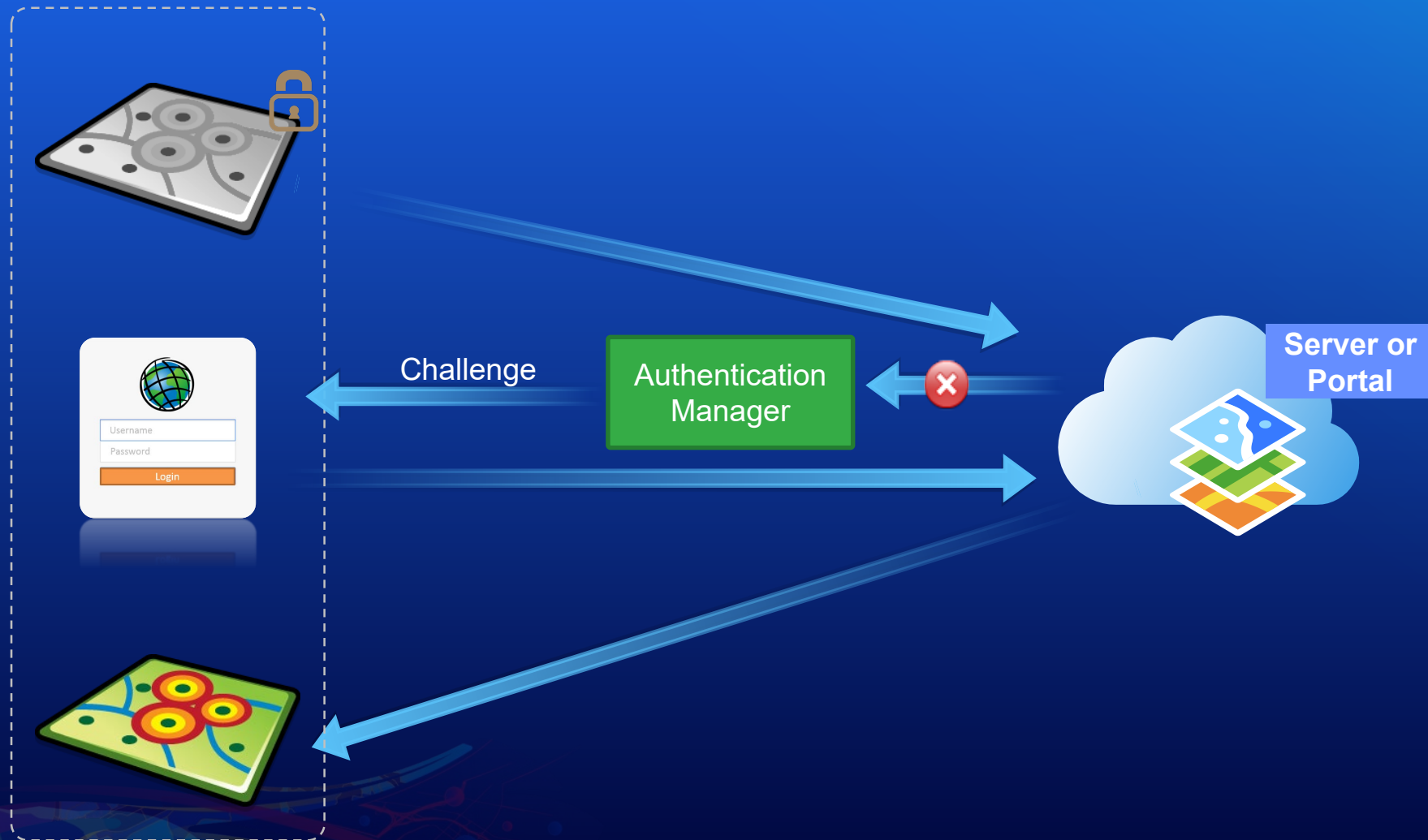
Class
<b>AuthenticationChallenge</b>
Properties
authenticatingHost: <a href="#">String</a> <i>read only</i>
error: <a href="#">Error</a> <i>read only</i>
failureCount: <a href="#">int32</a> <i>read only</i>
portalURL: <a href="#">URL</a> <i>read only</i>
proposedCredential: <a href="#">UserCredential</a> <i>read only</i>
type: <a href="#">AuthenticationChallengeType</a> <i>read only</i>
Methods
cancel(): <a href="#">void</a>
continueWithCredential(): <a href="#">UserCredential</a>
continueWithDefaultHandling(): <a href="#">void</a>
isRemoteResourceFederatedWithPortalURL(portalURL: <a href="#">URL</a> ): <a href="#">bool</a>
trustHostAndContinue(): <a href="#">void</a>

Class
<b>OAuthConfiguration</b>
Constructors
OAuthConfiguration(portalURL: <a href="#">URL</a> , clientId: <a href="#">String</a> , redirectURL: <a href="#">String</a> )
Properties
clientId: <a href="#">String</a> <i>read only</i>
culture: <a href="#">String?</a>
portalURL: <a href="#">URL</a> <i>read only</i>
redirectURL: <a href="#">String</a> <i>read only</i>
refreshTokenExchangeInterval: <a href="#">int32</a>
refreshTokenExpirationInterval: <a href="#">int32</a>
showCancelButton: <a href="#">bool</a>
showSocialLogins: <a href="#">bool</a>
userInterfaceStyle: <a href="#">UserInterfaceStyle</a>

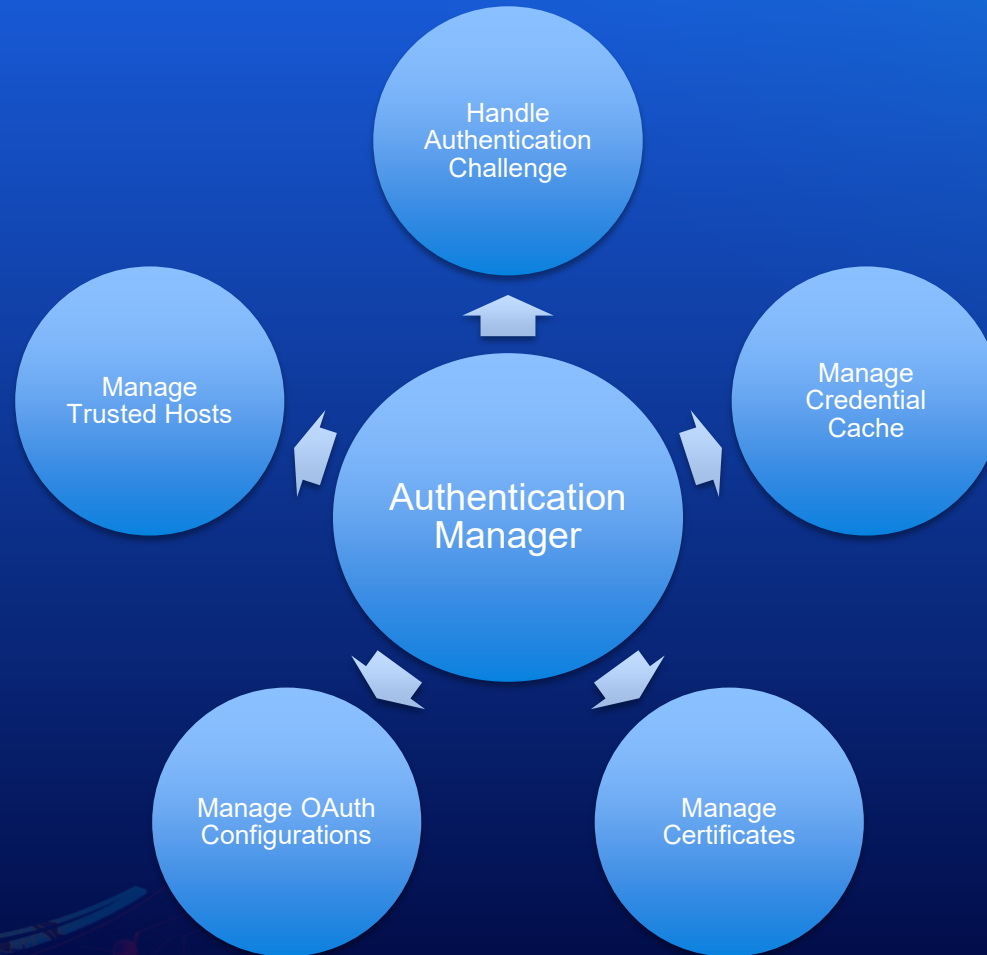
Class
<b>CredentialCache</b>
Properties
autoSyncToIdentityStore: <a href="#">bool</a> <i>read only</i>
persistence: <a href="#">CredentialPersistence?</a>
Methods
disableAutoSyncToIdentityStore(): <a href="#">void</a>
enableAutoSyncToIdentityStore(identifier: <a href="#">String</a> , acrossApps: <a href="#">String</a> , acrossDevices: <a href="#">bool</a> ): <a href="#">void</a>
removeAllCredentials(): <a href="#">void</a>
removeAndRevokeAllCredentialsAsync(): <a href="#">Future&lt;Dictionary&lt;Credential, Error&gt;&gt;</a>
removeAndRevokeCredentialAsync(credential: <a href="#">Credential</a> ): <a href="#">Future&lt;void&gt;</a>
removeItemFromIdentityStoreAsync(identifier: <a href="#">String</a> ): <a href="#">void</a>



# Authenticating a User



# Authentication Manager



# Authentication Challenge

## Authentication Challenge

Created when server responds with one or more demands for credentials

Has type, error, failure count, proposed credential, authenticating host etc.

Can be controlled using RequestConfiguration

## Types

Username Password

OAuth

Client Certificate

Untrusted Host

## Actions

Continue with Credentials

Trust Host and Continue

Cancel

## Handlers

Default

Custom



# Default Authentication Challenge Handler

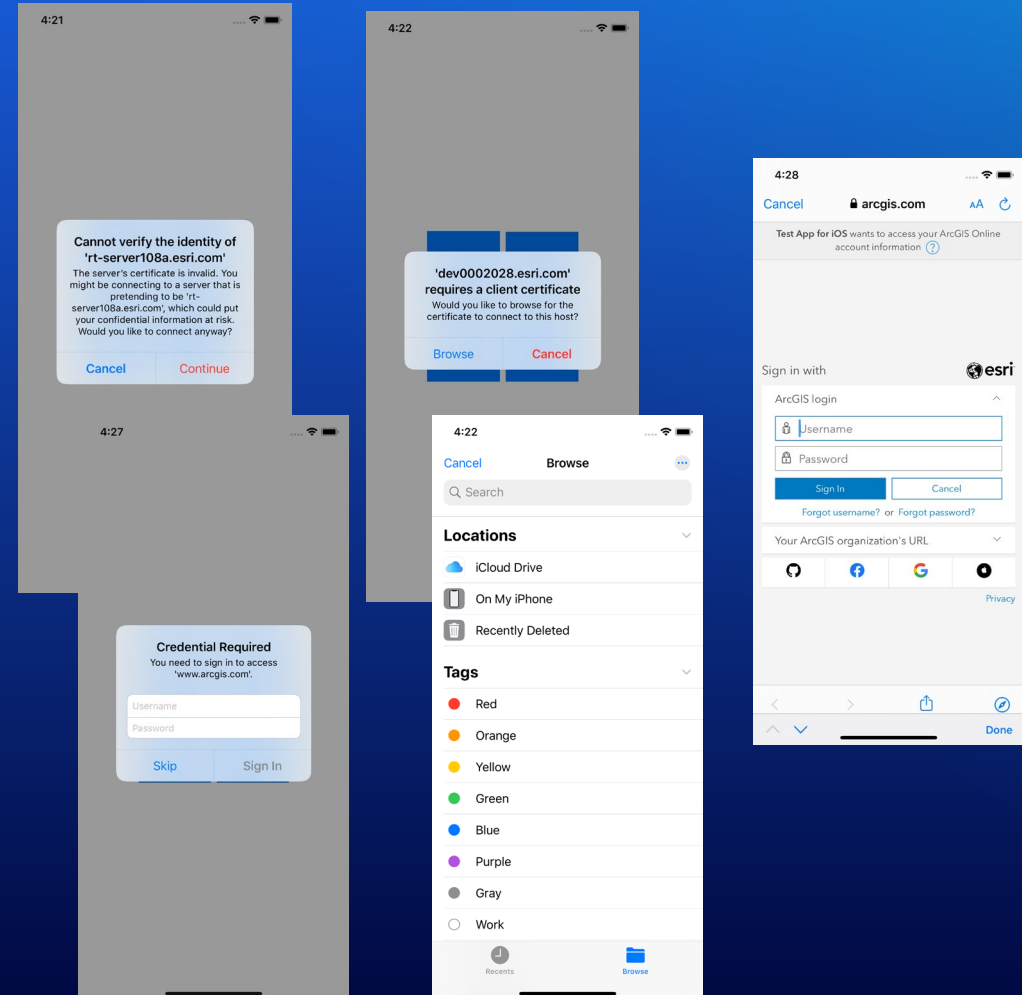
UI presented by SDK to handle different type of authentication challenges

Platform Specific Workflows

iOS: Default

Java and Android: Opt-In

```
val handler = DefaultAuthenticationChallengeHandler(this)
AuthenticationManager.setAuthenticationChallengeHandler(handler)
```





# Default Authentication Challenge Handler

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# Custom Authentication Challenge Handler

## Platform Specific Workflows

- Platform specific APIs to handle authentication challenge

## Custom UI

- Take desired action on authentication challenge
- Present UI matching other Application UI

## Runtime Qt Custom Handler

- Challenge handling done using toolkit
- Toolkit is open sourced

## Authentication required

**sampleserver6.arcgisonline.com**

You need to sign in to access this resource.

Skip

Continue

# Custom Authentication Challenge Handler (Qt)

Koushik Hajra

# Credential Cache

## In-memory Cache

- Enabled by default
- Reuse credentials for requests in the same domain
- Accessed via AuthenticationManager
- Add/Update/Remove credentials
- Revoke OAuth tokens

## Persistence

- Between User Sessions
- Between Different Apps
- Between Different Devices
- Platform specific solutions
  - iOS – Keychain
  - Android – SharedPreferences, or json
  - Java - json
  - Qt - json
  - .Net – Keystore, Keychain, or Data Protection



```
var json = {  
  "portalUrl": portalUrl,  
  "refreshToken": refreshToken,  
  "tokenServiceUrl": tokenServiceUrl,  
  "oAuthClientInfoClientId": clientInfo.clientId,  
  "oAuthClientInfoOAuthMode": clientInfo.oAuthMode  
}  
  
console.log(oAuthRefreshTokenFileName, clientInfo.oAuthMode);  
oAuthRefreshTokenFile.writeJsonFile(oAuthRefreshTokenFileName, json)
```

# Credential Cache

Xueming Wu



# Offline Content Security



Unsecured Mobile Map/Scene Package  
(MMPK/MSPK)



Unsecured extracted geodatabase on disk

# API key Overview

## Access ArcGIS Platform services

Metered Basemaps

Geocoding & POI search

Routing, Service Area, Closest Facility

Demographics

## API key Benefits

Scope to specific services

Monitor usage per key

Restrict access by referrer heading

Permanent access until API key is updated or deleted.

Use with your own sign-in/user identity, outside of ArcGIS.

## ArcGIS Developer Account

Pay as you go access to ArcGIS Platform services

Access to the own read only private hosted data services

# ArcGIS Developer Account

[developers.arcgis.com](#)

[Features](#) [Pricing](#) [Support](#)

Create your ArcGIS developer account

GitHub

Facebook

Google

Apple

We will require you to share your email address with us, [learn why](#).

OR

First name


Last name

Email


Welcome, Nimesh

Dashboard API keys OAuth

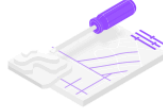
Get Started



Guide  
Mapping APIs and location services



Tutorial  
Create a mapping app



Tutorial  
Access geocoding and routing services


ArcGIS Runtime API for iOS  
v100.10.0 · January 27, 2021


Doc and tutorials

Blog - January 27, 2021  
Welcome to ArcGIS Runtime 100.10

API keys (1) [Manage](#)

Use API keys to access [location services](#) and premium content in your applications. Learn more about using [API keys](#) to access services in the [ArcGIS Developer Guide](#).

Default API Key |  Modified 3 hours ago [View Usage](#) [Edit API Key](#)

AAPKe2f440792e8b4ef0a9f1e746ef4dbad0vbpj11cYJbu74\_o11sD4-WFHxU-A1yg2CeYJ5Egc4mz3xD8oL8hyaExo6bZODp3 

Services

Allowed Referrers

Basemaps Geocoding (not stored) Routing Service area

Any referrer header is allowed.

Create and configure your first API key

Restrict API key access from specific clients

Monitor use of your API keys

# Use API key with Runtime SDKs

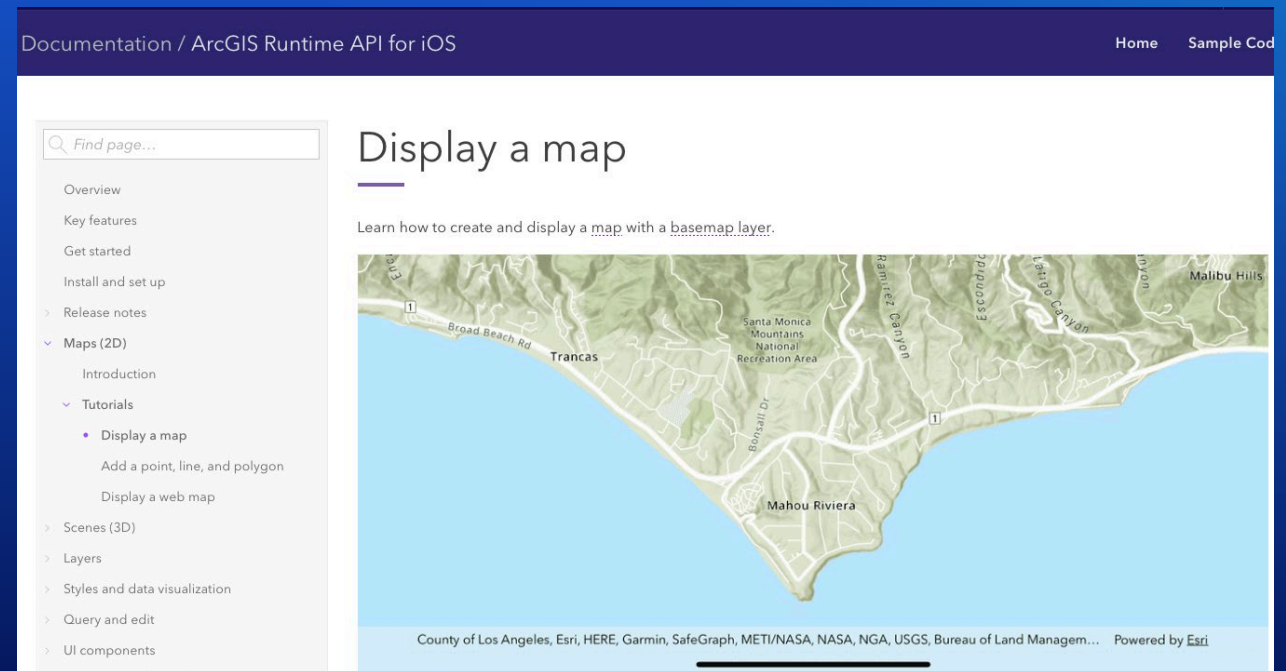
## ArcGIS Runtime Environment

## Layers

- ArcGIS Tiled Layer
- ArcGIS Vector Tiled Layer
- ArcGIS Scene Layer
- Service Feature Table

## Tasks

- Route Task
- Locator Task
- Service Area Task
- Closest Facility Task
- Export Tile Cache Task
- Export Vector Tiles Task
- Geodatabase Sync Task





# Display a Map

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# Summary

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API key Overview



- Android: <https://developers.arcgis.com/android/security-and-authentication/>
- iOS: <https://developers.arcgis.com/ios/security-and-authentication/>
- Java: <https://developers.arcgis.com/java/security-and-authentication/>
- .Net: <https://developers.arcgis.com/net/security-and-authentication/>
- Qt: <https://developers.arcgis.com/qt/security-and-authentication/>

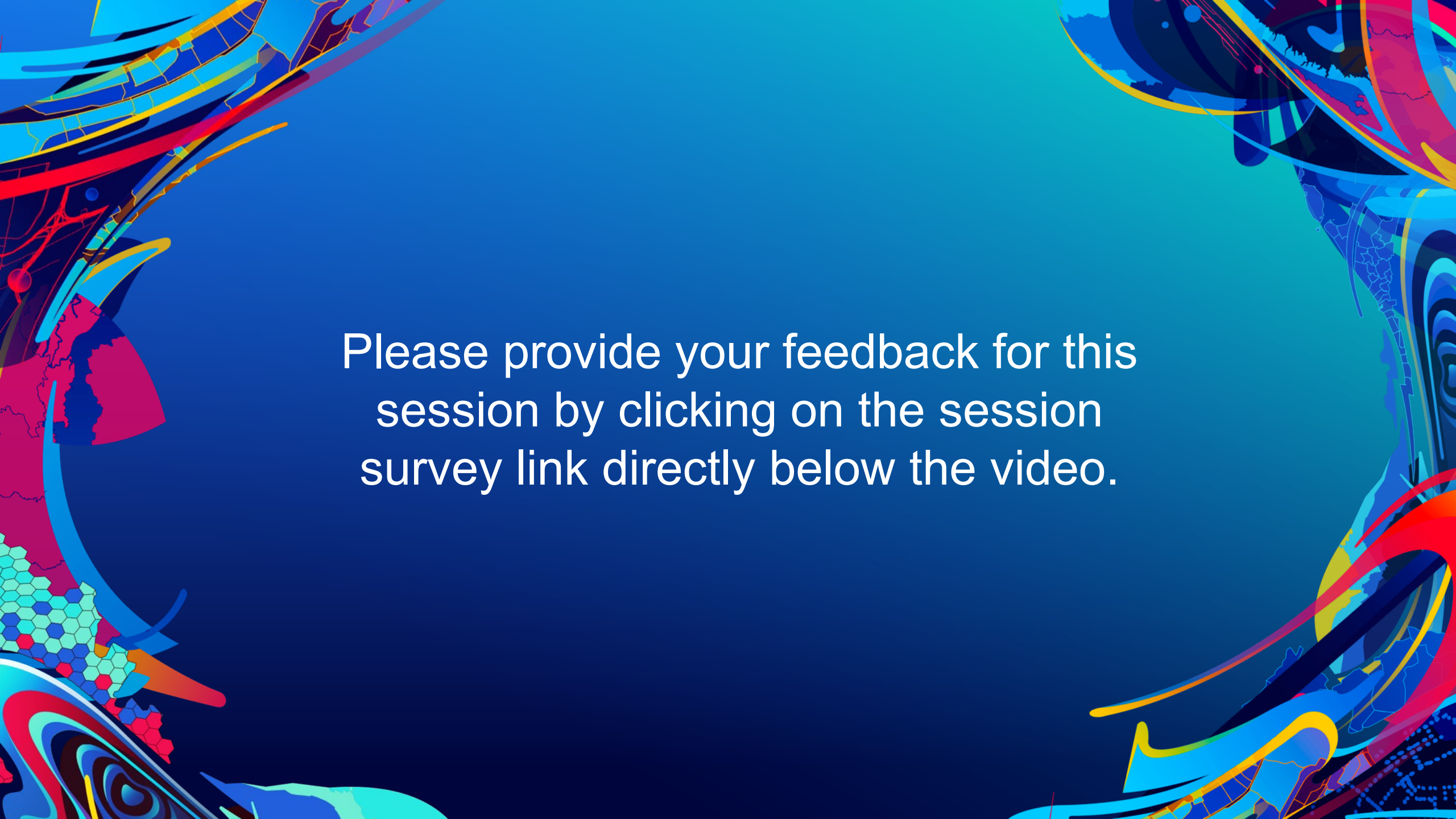
Thank you!



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THE  
SCIENCE  
OF  
WHERE®



The background is a vibrant, abstract composition. It features a central area of solid blue and teal. The left and right sides are framed by complex, colorful patterns. On the left, there are swirling shapes in red, yellow, and blue, along with a section of a hexagonal grid in shades of green and blue. On the right, there are more swirling patterns in blue, red, and yellow, with some areas resembling a stylized face or mask. The overall effect is dynamic and modern.

Please provide your feedback for this session by clicking on the session survey link directly below the video.