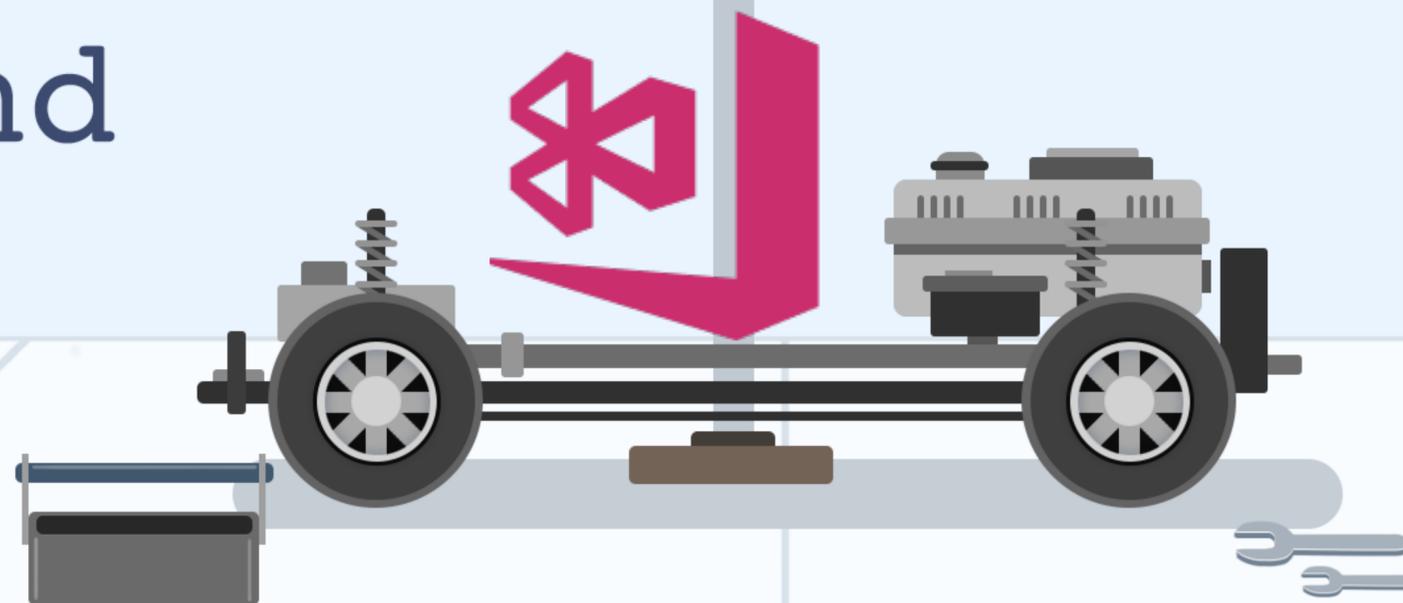


Frontend



Backend



BUILDING A BACKEND FOR YOUR APPS
WITH VISUAL STUDIO APP CENTER

ABOUT ME

Tom Soderling

Sr. Mobile Apps Developer @ Polaris Industries; Ride Command Xamarin.Forms enthusiast & DevOps hobbyist
5-year Xamarin Certified Mobile Developer

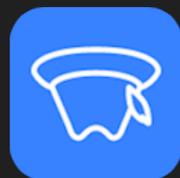
Blog: <https://tomsoderling.github.io>

GitHub: <https://github.com/TomSoderling>

Twitter: [@tomsoderling](https://twitter.com/tomsoderling)



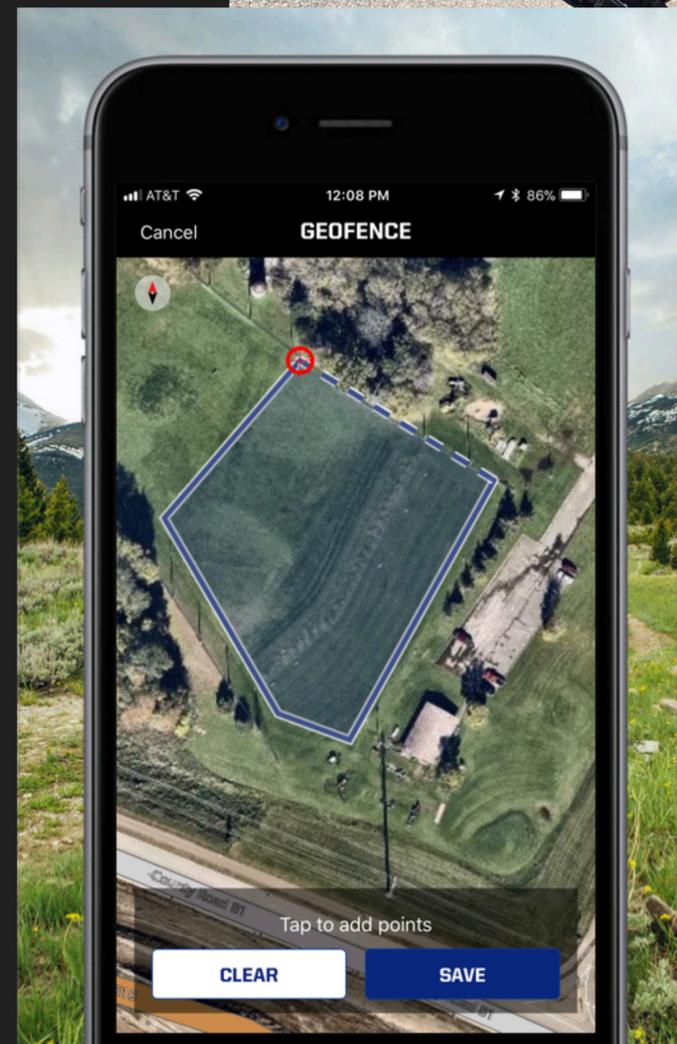
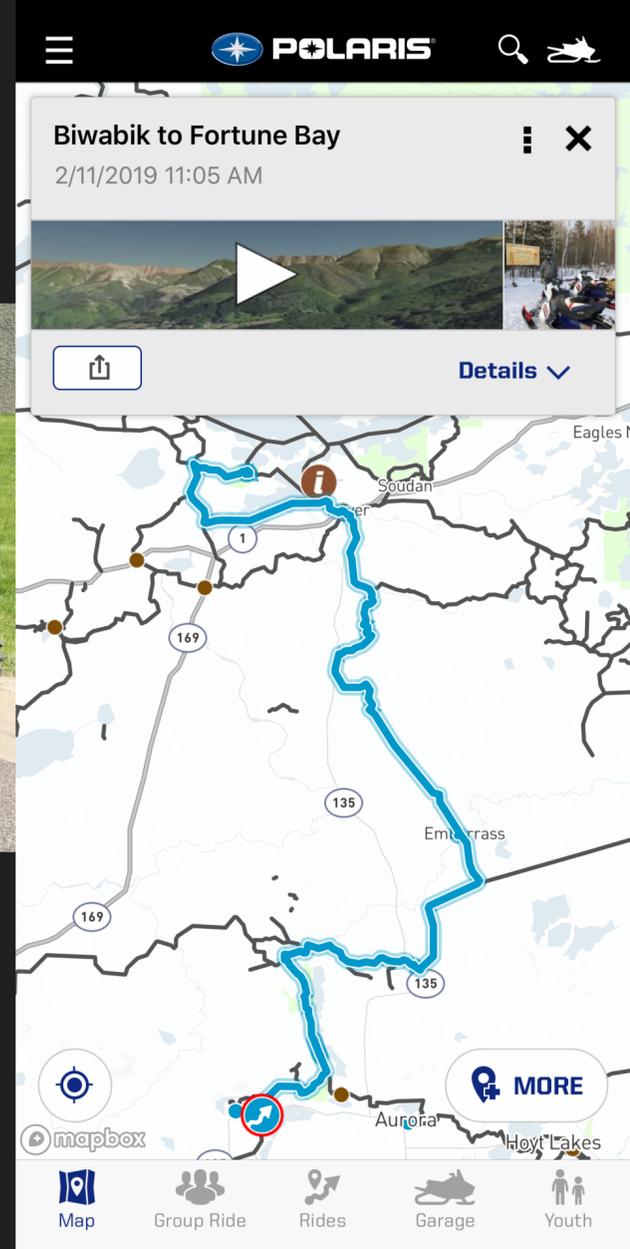
How Deep Is It?



Pickster



Spaniel



THE PLAN

- Introduction: What and Why
- App Center Data
- App Center Auth
- Next Steps & Resources

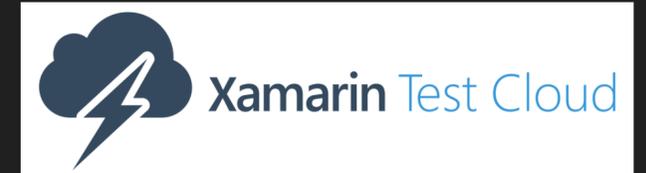
Please ask any questions that come up!

THE PLAN

- **Introduction: What and Why**
- App Center Data
- App Center Auth
- Next Steps & Resources

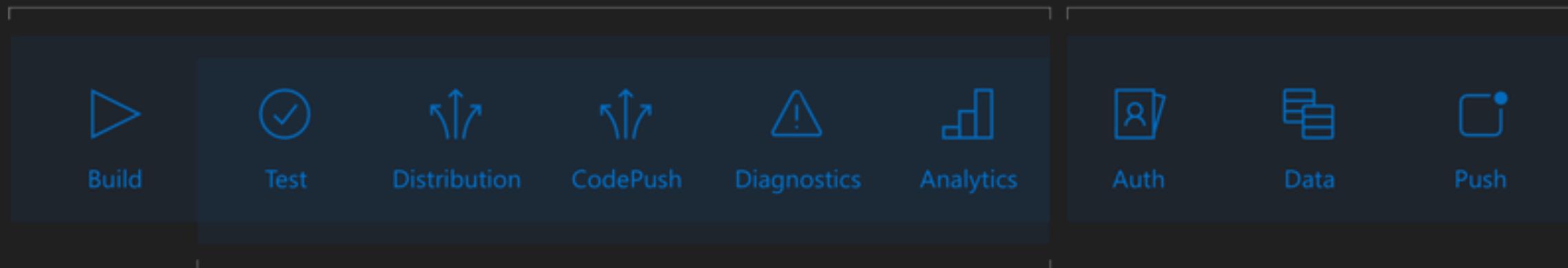
INTRODUCTION: WHAT

- What is Visual Studio App Center?
- App Center helps you build, test, deploy and monitor your iOS, Android, Windows, and macOS apps – All in one place.
- Brings together multiple services commonly used by mobile developers into a DevOps cloud solution
- First went into public preview at Connect(); 2016



DevOps

MBaaS



DevOps

INTRODUCTION: WHY

- Why use Visual Studio App Center?

App Center Mission Statement:

“Make app development 10x easier”

INTRODUCTION: WHY

- Why use Visual Studio App Center?

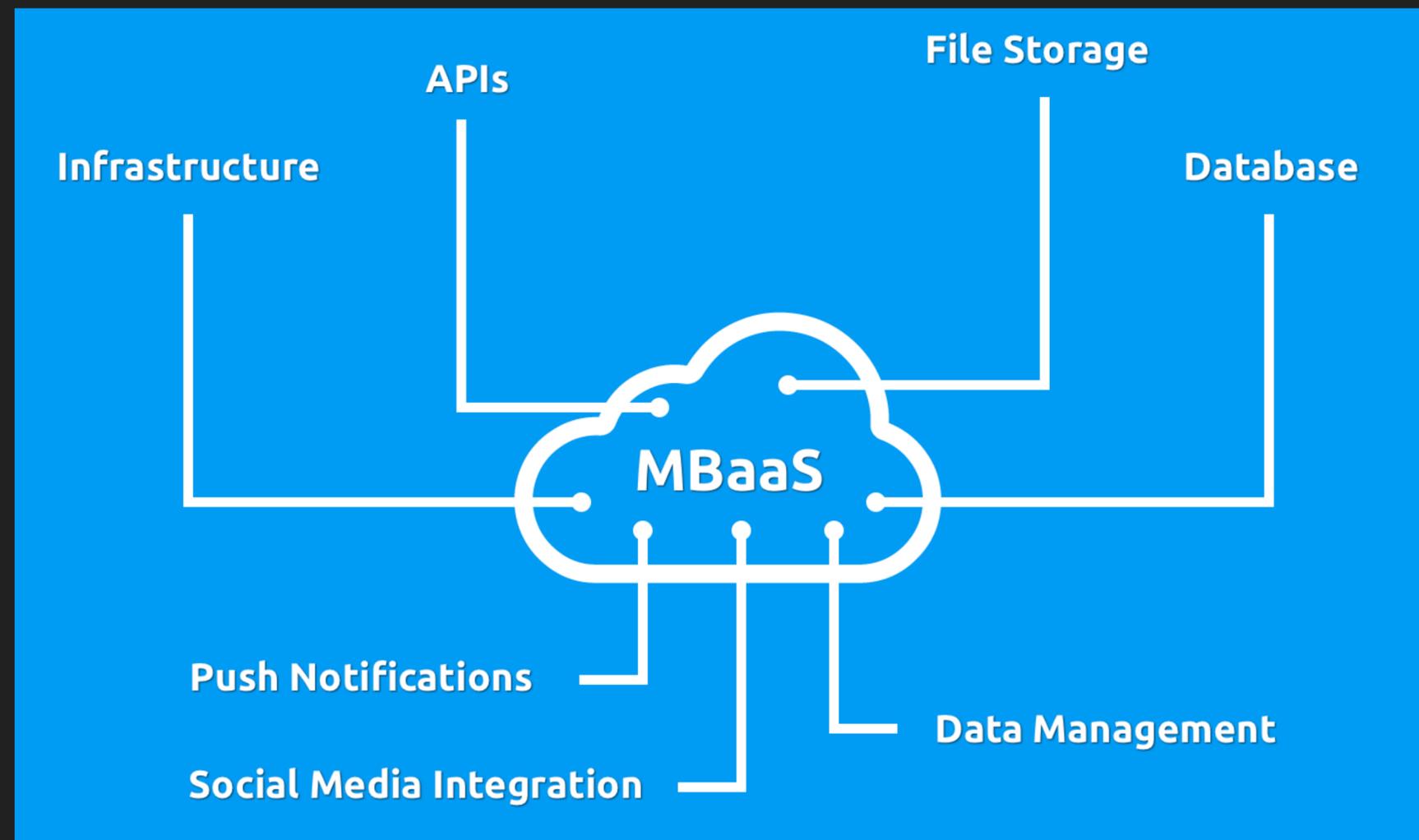
App Center Mission Statement:

“Make app development 10x easier”

Use Visual Studio App Center to release **more frequently**,
with higher quality, and **have more fun** by spending
time on coding features instead of managing overhead

INTRODUCTION: WHY

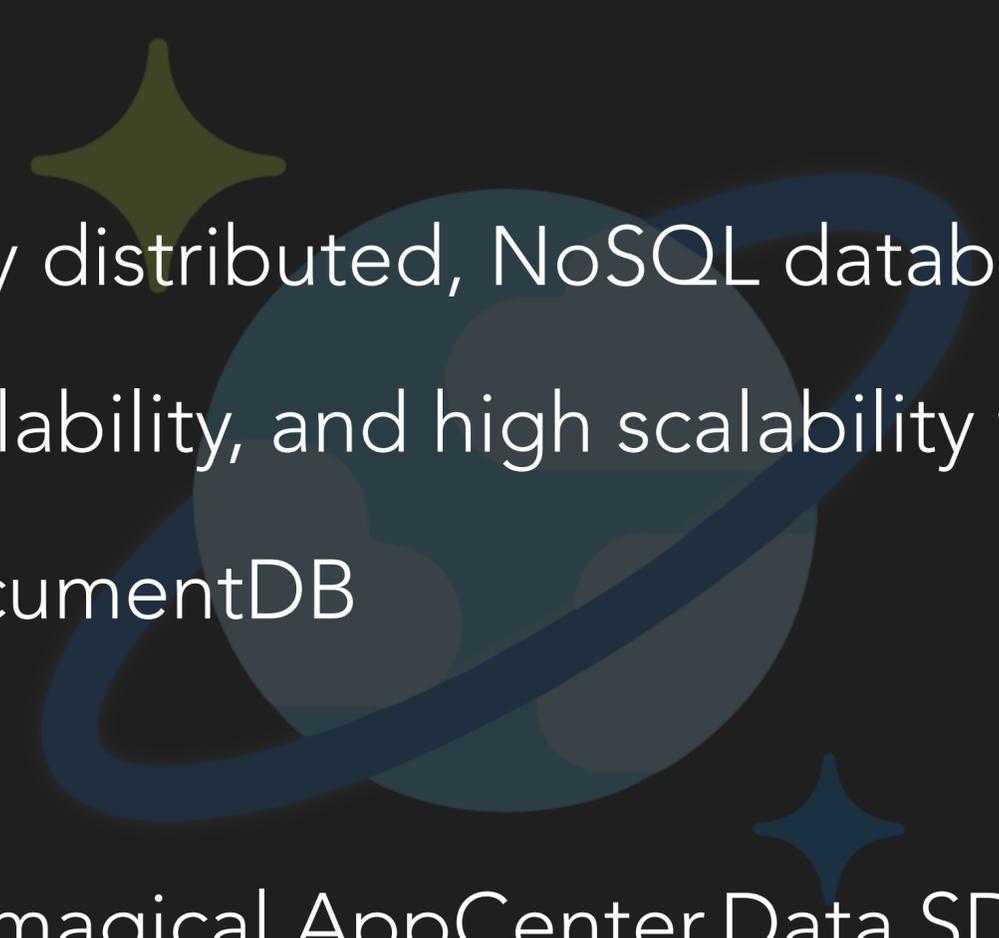
- Why use App Center Mobile Backend as a Service (MBaaS)?
- Skip a bunch of work you'd have to do yourself / don't want to do



THE PLAN

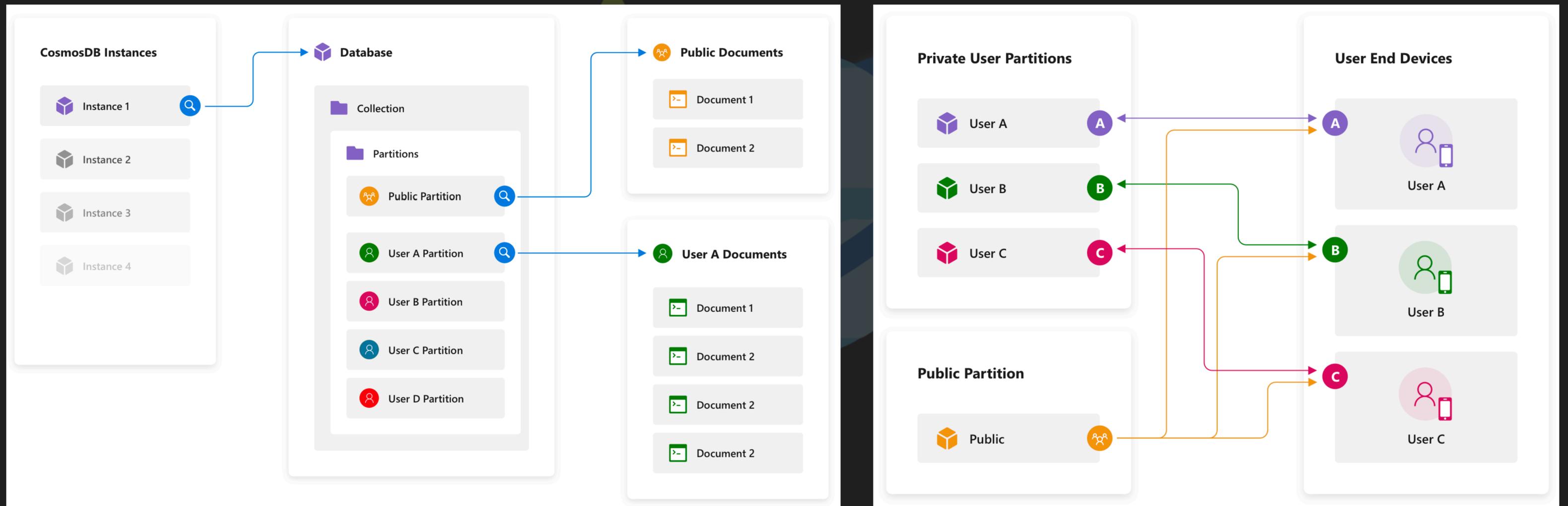
- Introduction: What and Why
- **App Center Data**
- App Center Auth
- Next Steps & Resources

APP CENTER DATA

- In Preview
 - Built on Cosmos DB
 - Azure hosted, globally distributed, NoSQL database
 - Low latency, high availability, and high scalability for all of your data
 - Next evolution of DocumentDB
 - Interactions
 - CRUD operations via magical AppCenter.Data SDK for iOS, Android, Xamarin
 - Support for offline reads and writes! (last write wins)
 - Automatic configuration
- 
- A decorative background featuring a stylized planet with a ring system, a green starburst, and a blue starburst, set against a dark background with scattered dots.

APP CENTER DATA

- Data Architecture



APP CENTER DATA

- App Center Setup

Configure new database

1 Subscription 2 Instance 3 Throughput 4 Review

Your linked Azure subscription

A subscription is already linked to your app, and it will be used to create a new Cosmos DB instance.

 Azure subscription
Pay-As-You-Go

[Configure existing database](#) [Next >](#)

Configure new database

1 Subscription 2 Instance 3 Throughput 4 Review

Configure your Cosmos DB instance

Instance name:
 .documents.azure.com ✓

Database location:
 ▾



[Back](#) [Next >](#)

Configure new database

1 Subscription 2 Instance 3 Throughput 4 Review

Provision throughput for your database

Select an option based on your app's needs.

I'm just getting started

Get me started with the minimum throughput and I will scale up later as my app usage grows.

I have an existing app

I know my expected usage and will provision throughput as per my requirements.

Provisioning minimum throughput to get you started

If you need more, increase it later at any time.

 Throughput ?
400 RU/s

[Learn more](#) about Azure Cosmos DB pricing.

[Back](#) [Next >](#)

APP CENTER DATA

- Pricing
 - You pay for the throughput reserved and the storage that you consume
 - Lowest throughput tier is 400 RU/s (Request Unit per second)
 - \$0.77/day, \$24/mo
 - Request Unit is the currency for throughput
 - 1 RU = the cost to read a 1 KB item
 - All other database operations are assigned an RU cost
 - SSD Storage: \$0.25 GB/mo
 - There will be a **free** Data tier (announced at Xamarin Developer Summit)

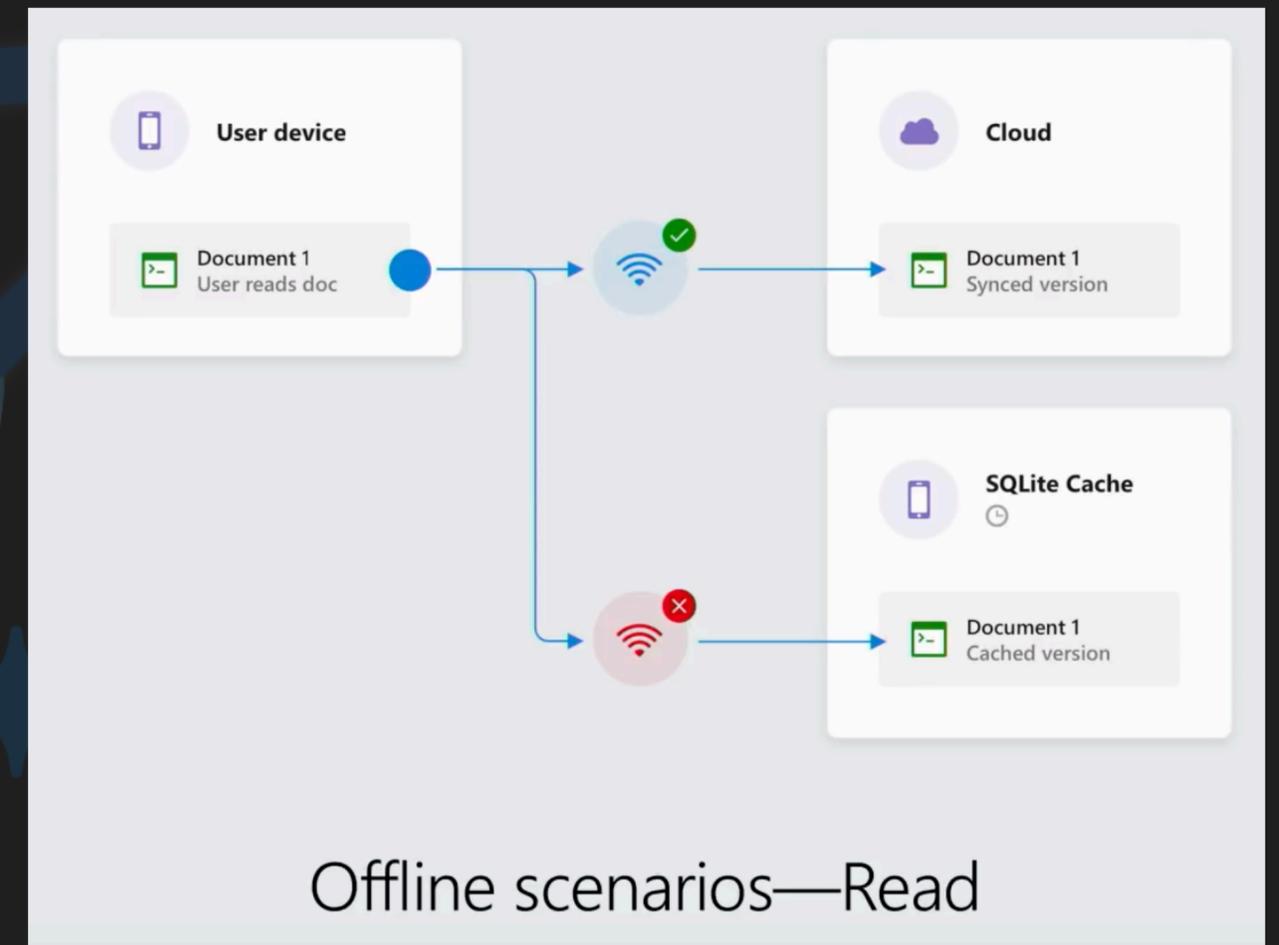
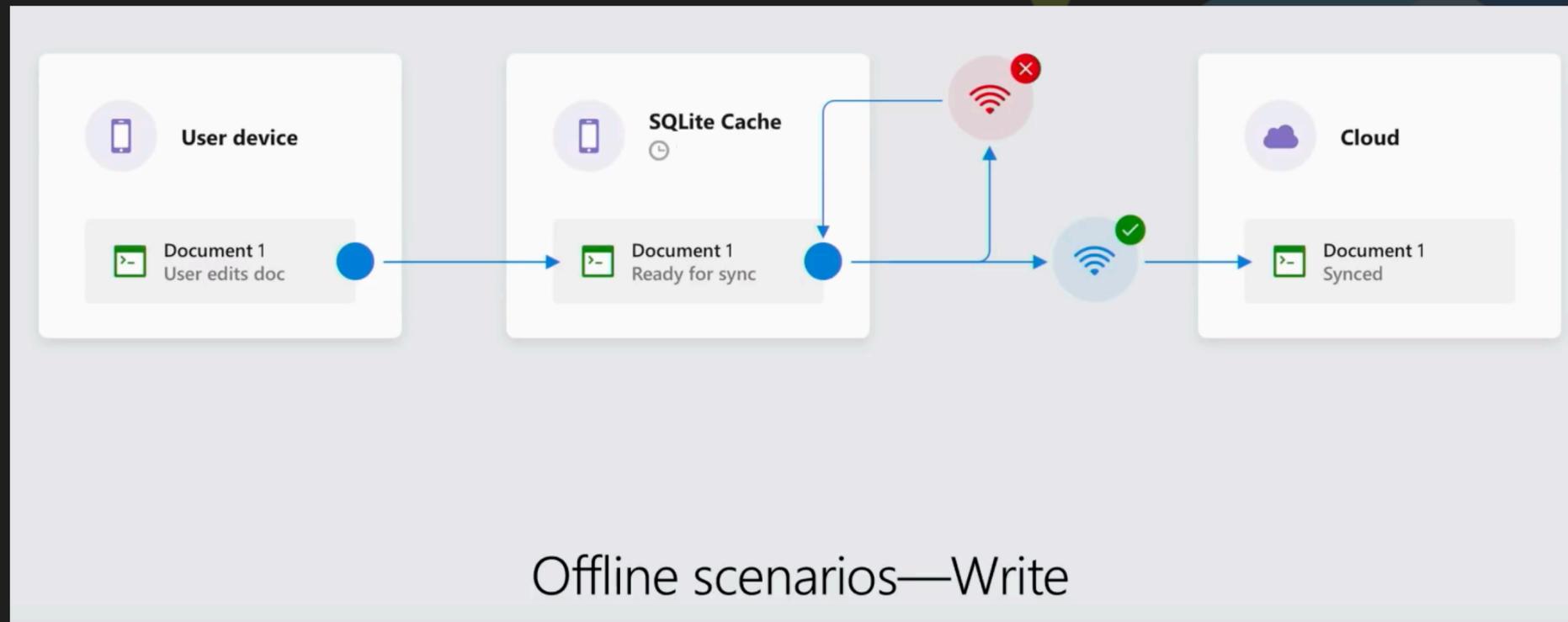
APP CENTER DATA

- **Demo**
- App Center Portal
 - Metrics
 - Data explorer
- Code
 - App setup
 - List AppDocuments
 - Read AppDocument by ID
 - Creating a new doc in the AppDocuments partition



APP CENTER DATA

- Offline write & read



THE PLAN

- Introduction: What and Why
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- **App Center Auth**
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APP CENTER AUTH

- In Preview
- Azure Active Directory (AD) B2C (Business to Consumer)
 - Enterprise-grade, highly available, and secure global service
- App Center Auth SDK wraps the Microsoft Authentication Library (MSAL)
 - Allows your application to access identities in Azure AD B2C
- Azure AD B2C implements a form of the OpenID Connect and OAuth 2.0 protocols
 - 3rd party identity providers: Facebook, Google, Twitter, LinkedIn, +more



APP CENTER AUTH

- Anatomy of App Center Auth
- A directory can have many subscriptions associated with it, but only **one** tenant
- B2C tenant can live in **any** directory. Link the tenant to an Azure subscription



Azure AD B2C Tenant



Application



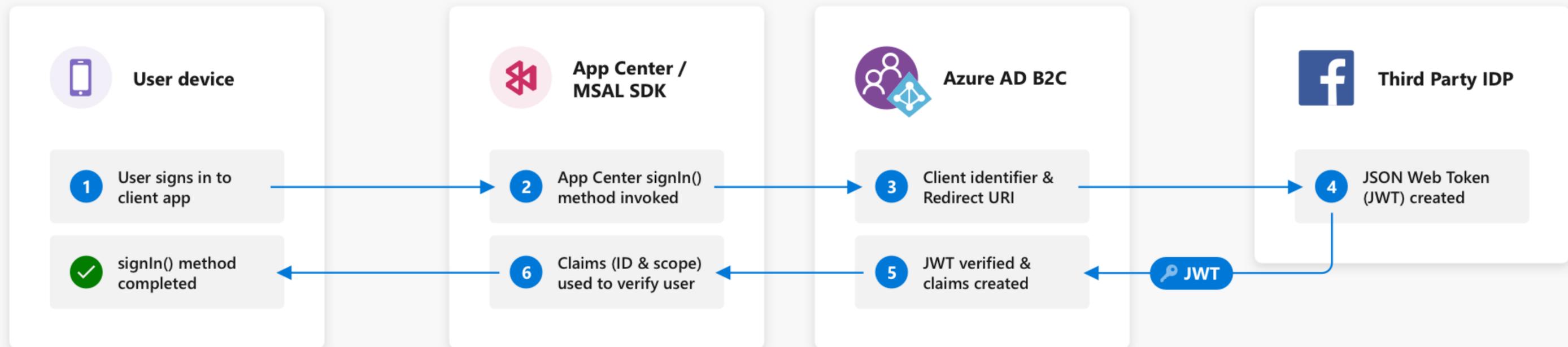
Scope



User Flow or Custom Policy

APP CENTER AUTH

- How it works
- Token exchange service



APP CENTER AUTH

- App Center Setup

Configure Auth with Azure AD B2C

1 Subscription 2 Tenant 3 Application 4 Scope 5 Policy

Your linked Azure subscription

A subscription is already linked to your app, and it will be used when working with Azure AAD B2C.

Azure subscription
Pay-As-You-Go

Configure Auth with Azure AD B2C

1 Subscription 2 Tenant 3 Application 4 Scope 5 Policy

No tenants found

There are no Azure AD B2C tenants found for this subscription. You need an existing Azure AD B2C tenant to get started with using App Center's Auth service.

[Create a new Azure AD B2C tenant](#)

Configure Auth with Azure AD B2C

1 Subscription 2 Tenant 3 Application 4 Scope 5 Policy

No applications found

You do not have any applications under this Azure Active Directory tenant.

[Create new application in Azure Active Directory](#)

Configure Auth with Azure AD B2C

1 Subscription 2 Tenant 3 Application 4 Scope 5 Policy

Which scope would you like to use with your app?

Select one of the existing scopes for your app. [Learn more.](#)

user_impersonation
MBaaS Demo App

+ Add scope

When adding a new scope, you need to navigate to your application MBaaS in Azure portal and [select Published scopes.](#)

Configure Auth with Azure AD B2C

1 Subscription 2 Tenant 3 Application 4 Scope 5 Policy

Which sign in policy would you like to use with the tenant?

No custom policies were found for this tenant.

+ Add custom policy

Manually add your user flow

If your custom policy is not listed above, you can alternatively paste the name of your user flow below to use with your app. [Learn more.](#)

Enter name of user flow

Do not have any user flow? Go to Azure portal to [create new user flow.](#)

APP CENTER AUTH

- Pricing
- App Center Auth is a free service, but you pay for B2C authentications
 - The first 50,000 authentications/mo are free
 - An authentication = a token issued for sign-in request or token refresh
- Storage of authenticated users in the Azure AD B2C tenant is free
- Multi-Factor Authentication: flat fee of \$0.03 per auth

APP CENTER AUTH

- **Demo**

- Setup in Azure portal
- Code
 - App setup
 - Sign up
 - Sign in/out
 - Identify
 - Crashes & Errors
- New Data Abilities
 - CRUD
 - Offline write/read

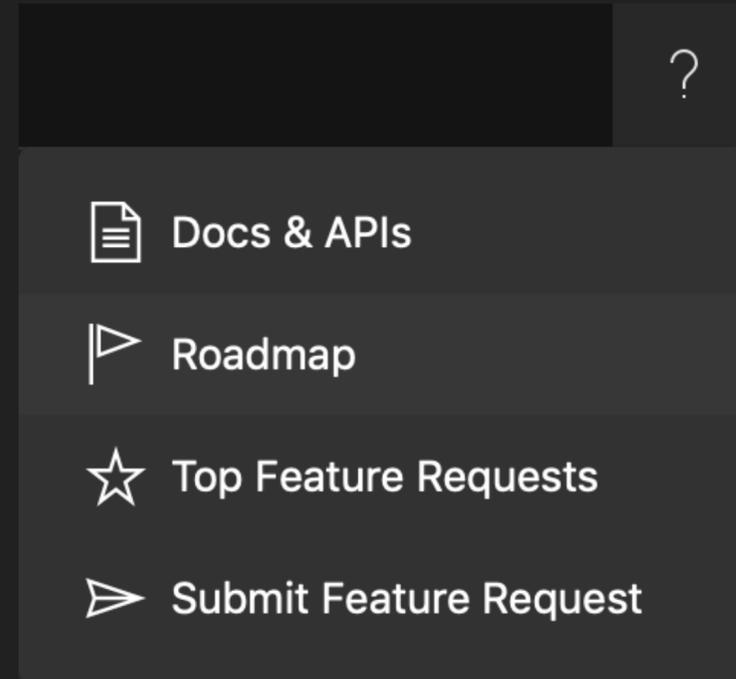


THE PLAN

- Introduction: What and Why
- App Center Data
- App Center Auth
- **Next Steps & Resources**

NEXT STEPS

- Open Roadmap
- Monthly iteration plan



NEXT STEPS

- Open Roadmap
 - Data

The Data section features five cards arranged in two rows. The top row contains three cards: 'Utilization metrics' with a line graph icon, 'Full offline support' with a Wi-Fi signal icon, and 'User collaboration' with an icon of three people. The bottom row contains two cards: 'Realtime updates/syncing' with a circular refresh icon and 'Data explorer' with a magnifying glass icon. Each card includes a title, a brief description, and a small icon.

- Utilization metrics**
Monitor your data's analytics directly in the App Center portal
- Full offline support**
Offline support of all SDK functionality with conflict resolution & listeners
- User collaboration**
Share documents between authenticated users
- Realtime updates/syncing**
Get data changes in real time with low latency
- Data explorer**
Easily manage app and user data in the App Center portal

- Auth

The Auth section features four cards arranged in a 2x2 grid. The top row contains 'Bring your own identity' with a fingerprint icon and 'Create new tenant in App Center' with an icon of two people and a plus sign. The bottom row contains 'Enterprise support' with a building icon and 'View user profile details' with an icon of a person. Each card includes a title, a brief description, and a small icon.

- Bring your own identity**
Bring your own identity management providers
- Create new tenant in App Center**
Manage users, identity providers and user experiences
- Enterprise support**
Support for Azure AD/AD B2B scenarios
- View user profile details**
View detailed user profile across an app or organization

NEXT STEPS

- Shortcomings
 - Auth setup not nearly as smooth as it could be - like Data is
 - iOS 13 support for AppCenter.Auth SDK is **only** in preview. Must use 2.4.0-preview NuGet packages for AppCenter & Auth
 - Android: can't sign in when using them
 - Android: offline create/upsert throws exception but seems to work
 - iOS doesn't seem to handle refreshing the token - expires after interval

NEXT STEPS

- Open Roadmap
- Monthly iteration plan
- Shortcomings
- Documentation
- Support? Use this button 
- Zumo (Azure Mobile Apps) team is part of App Center team now
 - Continued support, but no future feature development
- Sign in with Apple
- App Center Push Notifications

RESOURCES

- App code and slides <https://github.com/TomSoderling/AppCenterMBaaS Demo>
- App Center Docs <https://docs.microsoft.com/en-us/appcenter/data> & [/auth](https://docs.microsoft.com/en-us/appcenter/auth)
- MS Build session on App Center MBaaS <https://www.youtube.com/watch?v=k3G0XoY8XII>
- App Center and the Future of Azure Mobile Apps, by Patrick N <https://www.youtube.com/watch?v=USQmInspKf0>
- App Center public roadmap <https://github.com/Microsoft/appcenter/wiki/Roadmap>
- Roadmap detail <https://devblogs.microsoft.com/appcenter/introducing-visual-studio-app-center-data-looking-ahead>
- App Center feature requests/issues <https://github.com/microsoft/appcenter/issues>
- Sign in with Google Account directions <https://docs.microsoft.com/en-us/azure/active-directory-b2c/active-directory-b2c-setup-goog-app>
- Sign in with Apple, B2C directions <https://github.com/azure-ad-b2c/samples/tree/master/policies/sign-in-with-apple>
- JSON to C# classes <https://www.jsonutils.com>