Introduction to Visual Studio App Center

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Queensland C# Mobile Developers Meetup

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whoami

- Ryan Davis

- Hobby Developer, .NET and mobile

- ~~Xamarin~~ Microsoft MVP

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to cover

- Overview of App Center
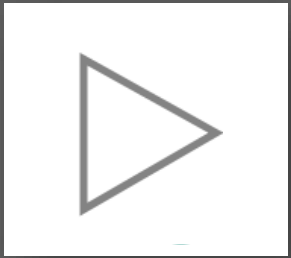- Walkthrough & Demos
- Resources

what is it?
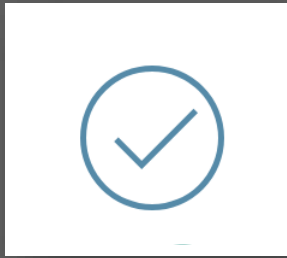
a hub for mobile (and desktop!?) app lifecycle automation

"Ship iOS, Android, Windows, and macOS apps faster and with greater confidence by automating their lifecycles." (app-center home page)

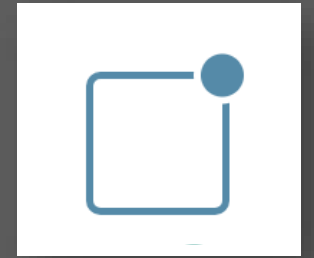| **Build**	**Test**	**Distribute**	**Crash Reports & Analytics**	**Push**
Continuous integration and builds on each push	Automated UI Testing on across more than 400 real device configurations	Manual or automated distribution of builds to test groups and app stores	Automated collection of crash and session data and custom event logging	No-fuss* push campaign functionality with support for user segmentation

Released in preview as "Azure Mobile Center" in 2016, GA as "Visual Studio App Center" late 2017

meticulously merged myriad of mobile muses

○ App Center is the integration of a long history of products in the mobile analytics, test and engagement spaces.
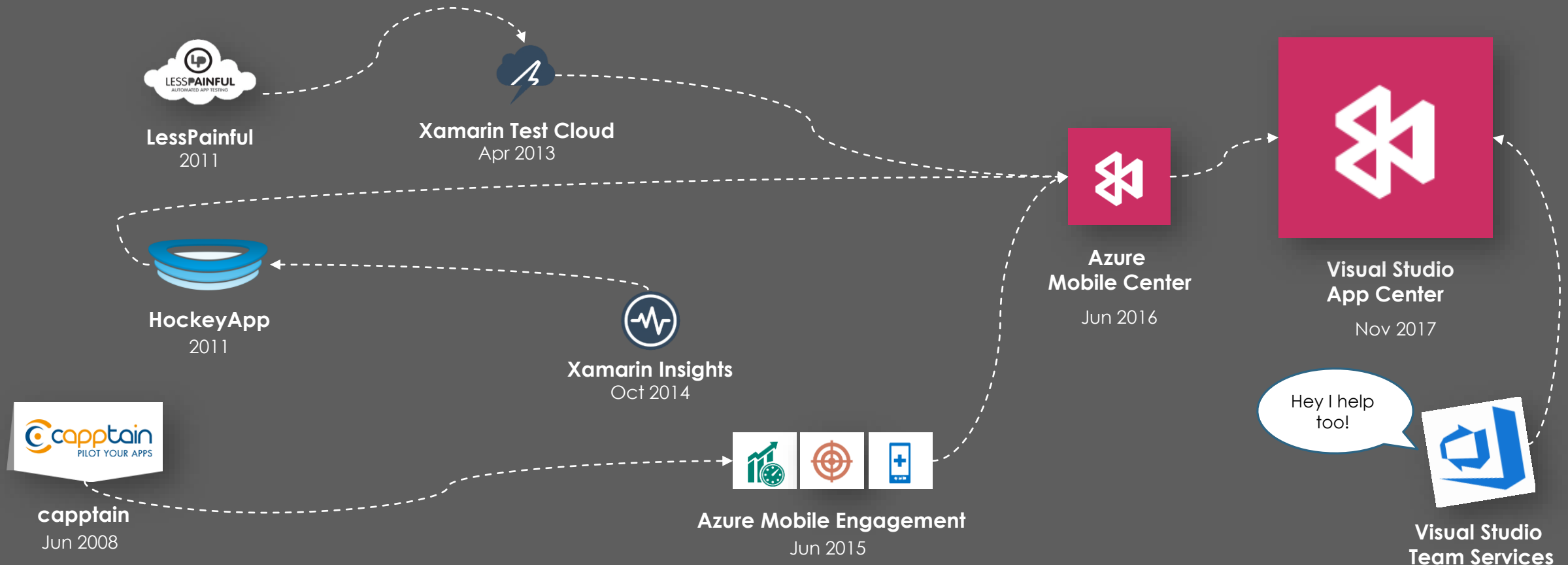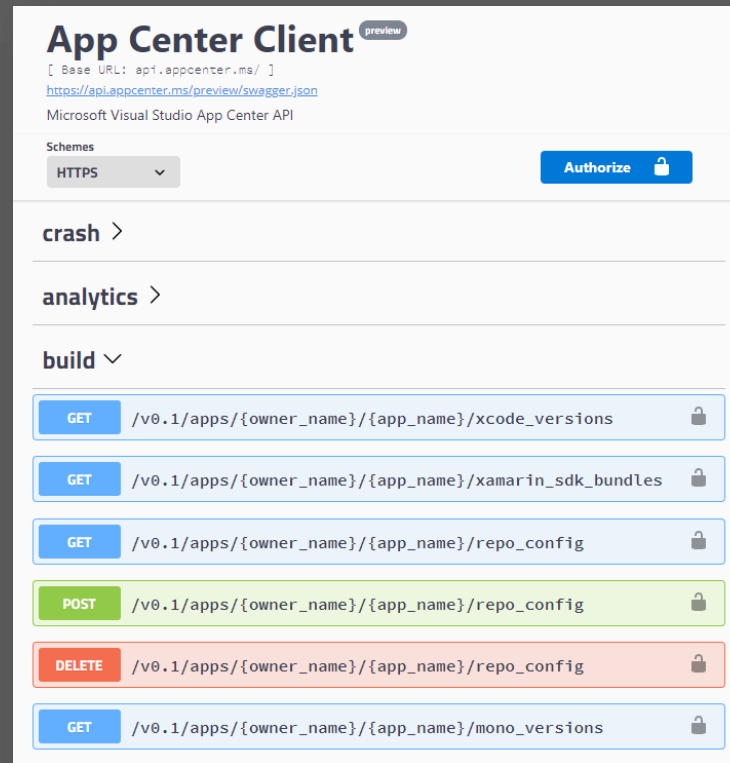
An integrated, centralised, "api-first" offering

○ The portal is very user-friendly and enough for the casual user, but App Center has been designed from the outset to be integrated, automated and scripted, with many interaction points.
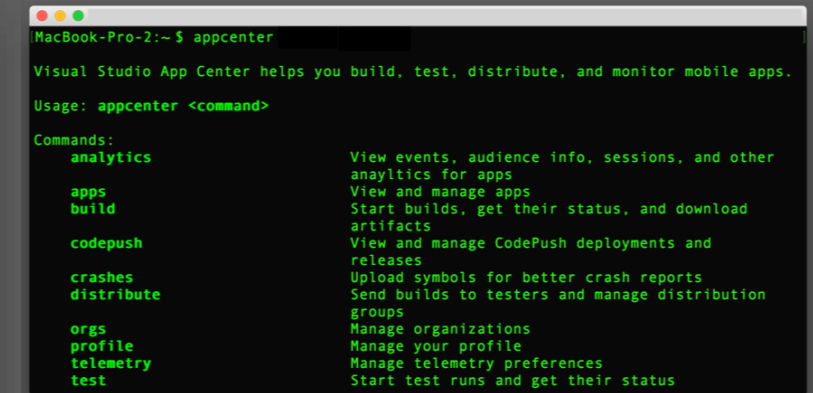
Web Portal
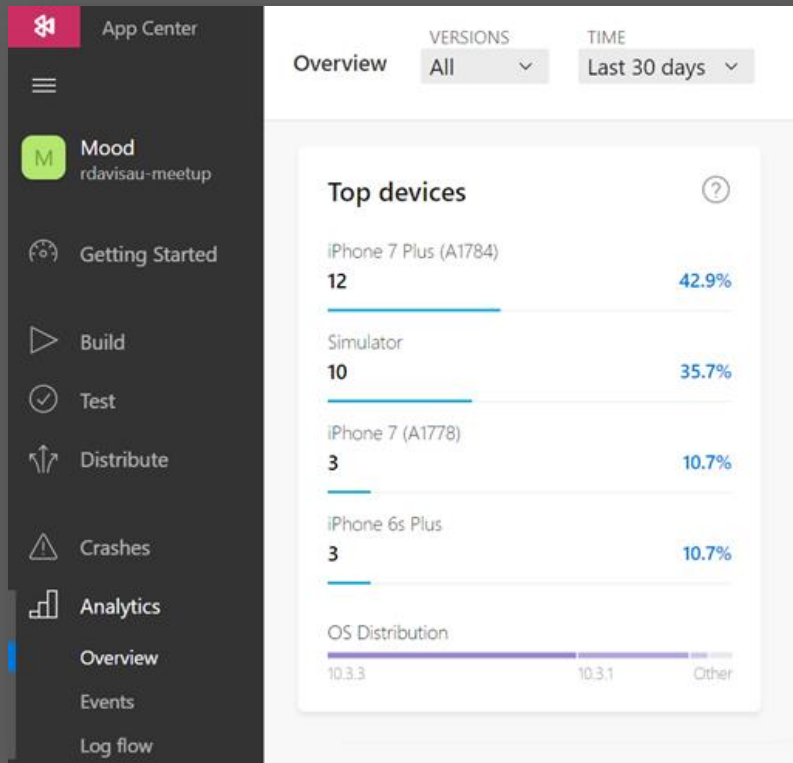
API

CLI

Chat Bots

Slack   Teams

not just a microsoft affair

○ App Center has broad and growing coverage of platforms, source providers and frameworks.

Platforms

Android
Java, Xamarin,
React Native, Cordova

iOS
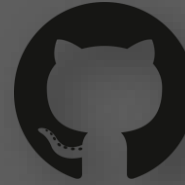ObjC/Swift, Xamarin
React Native, Cordova

macOS
ObjC/Swift

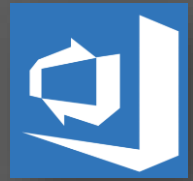**Windows**
UWP

Source Repositories

GitHub

BitBucket

VSTS

UI Test Frameworks

Xamarin UITest

Appium

XCode

Espresso

Calabash

Distribution Targets

Your beta testers

App Store

InTune Portal

a pricing model that's hard to argue with

○ Almost all of the core App Center functionality is available to you for free. You can increase limits and extend functionality using a combination of paid addons.

Free Tier

Build
Build Objective-C, Swift, Java, Xamarin (C#), and React Native in the cloud
✓ 240 build minutes per month
Up to 30-min per build

Test
Automate UI tests on thousands of real devices
✓ Free 30 day trial

Distribute
Send your apps to your beta testers and app stores instantly
✓ Unlimited distributions
Unlimited users

Analytics
Gain insights into your audience and app usage
✓ All features included

Crash reporting
Monitor your app health with real-time crash reports
✓ All features included

Push notifications
Engage your users by sending targeted messages
✓ Up to 5 audience segments

Paid addons

Run unlimited, faster builds
+$40/month
per build concurrency

Test your app in the cloud
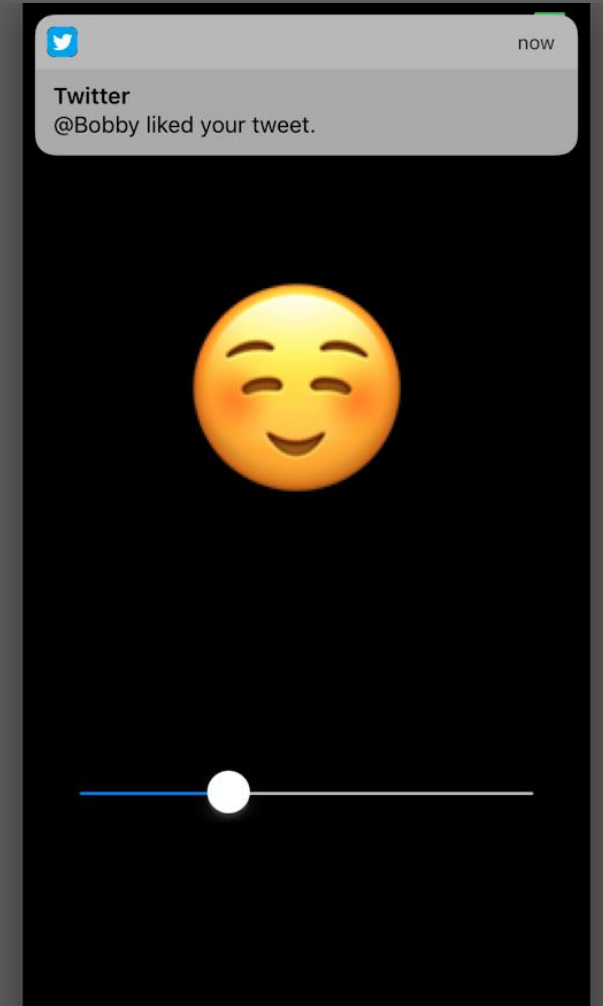+$99/month
per test device concurrency

Target additional segments
+$10/month
per 100k monthly active devices

walkthrough

introduction to mood, our demo app

○ Probably going to make me a trillionaire, nice knowing you all

getting started is ez pz

- Create an **app** in the App Center portal
  - You'll create one app per OS you support (e.g. iOS, Android, UWP), even if you build your app with Xamarin Forms
  - Make sure you choose the "Xamarin" platform

- Install the **App Center SDKs** by following the instructions
  - App Center helpfully gives you platform-specific instructions

- With no additional work, you'll now get **basic analytics** (sessions/technicals) **and crash reports**. Awesome!

build

- App Center connects to your app's repository so that it can build your app when you push changes.

- Once connected, you can create build definitions on a per-branch basis. These can run manually or after each push.

- App Center supports post-clone, pre-build and post-build scripts to assist in automating build activities.
  - e.g. a pre-build script to alter the app icon of a UAT build, or a post-build script to run unit or UI tests.

- Builds can be automatically released to distribution groups.

- Very easy to get going, but trades off against configurability.

Build app

Project:	Mood.csproj
Configuration:	Debug
Mono version:	5.4.1
Xcode version:	9.2
Build scripts:	None

Learn more about custom build scripts

feat(test): improve test suite
Ryan Davis

Commit
e888916a

Build 12
Automatic build

DURATION 12 min 54 sec
LAUNCH TESTED N/A
SIGNED Yes

Distribute   Download

BUILD OUTPUT

https://api.nuget.org/v3/index.json

```
Installed:
    16 package(s) to packages.config projects
##[section]Finishing: Restore Nuget
##[section]Starting: Set Bundle version
========================================
Task        : Command Line
Description : Run a command line with arguments
```

test

- App Center succeeds Xamarin Test Cloud in providing a real device testing capability, with more than 400 configurations.

- You define "device sets" that consist of combinations of device/OS pairs against which you can run your tests, e.g.:

  - "top devices" - the five most popular devices in your userbase

  - "small devices" - smaller screens than you normally develop on

  - "old devices" - configurations on low SDK versions.

- You invoke tests runs using the API or CLI, and can view detailed information on progress and outcomes through the portal.

- Using the post-build script feature, you can automatically run tests after each build.

DISPLAYING 198 DEVICES		OS Version
☑	Apple Apple iPod touch 6th Gen	iOS 11.2.6
☑	Apple Apple iPhone 7 Plus	iOS 11.2.6
☑	Apple Apple iPhone 7	iOS 11.2.6

Feb 25, 2018, 9:48:26...
5 tests

AUTHOR ryandavis.au+meetup@g... VERSION 1.0 (151951... DEVICES 1 RUN TIME 10 min

100% 5/5 Tests passed

100% 1/1 Device passed

TESTS	Peak duration	Peak memory	Status
✓ Tests	18.07 sec	80.16 MB	Passed
✓ App Should Launch	--	--	Passed
✓ Highest Value Of Slider Should Be Really Happy	--	--	Passed
✓ Lowest Value Of Slider Should Be Really Sad	18.07 sec	80.16 MB	Passed
✓ Tapping Lightbulb Should Toggle Night Theme	--	--	Passed
✓ Tapping Screen Should Influence Mood	--	--	Passed

distribute

○ App Center builds on the distribution feature of HockeyApp and adds a clean, user-friendly interface.

○ It handles distribution group management, user invitations, UDID collection, release notifications, adoption and build hosting.

Distribution groups are set up using the portal or API
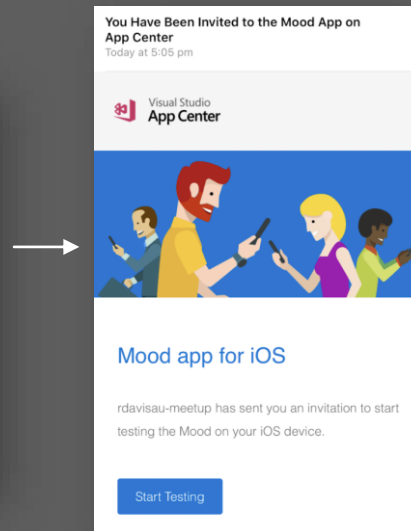
Users receive an email invitation that guides them through setup
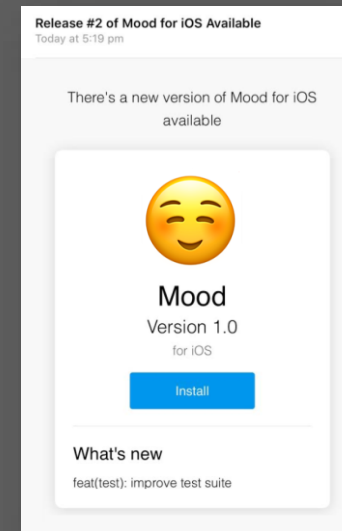
Users receive an email notification when new releases are available

Users download the app directly onto their device

crash (try not to)

- Crash Reporting in App Center is built on the HockeyApp offering and provides comprehensive collection and grouping of application crashes.

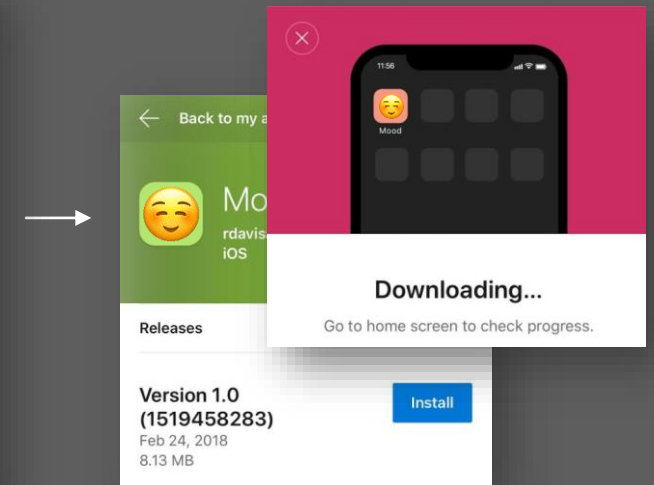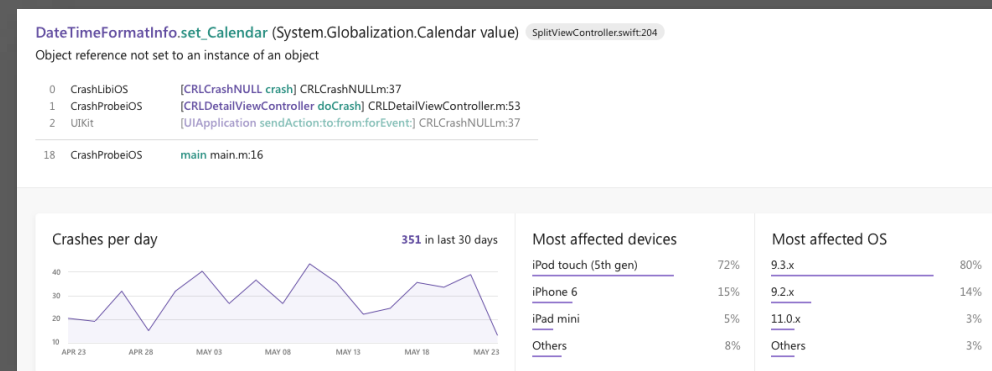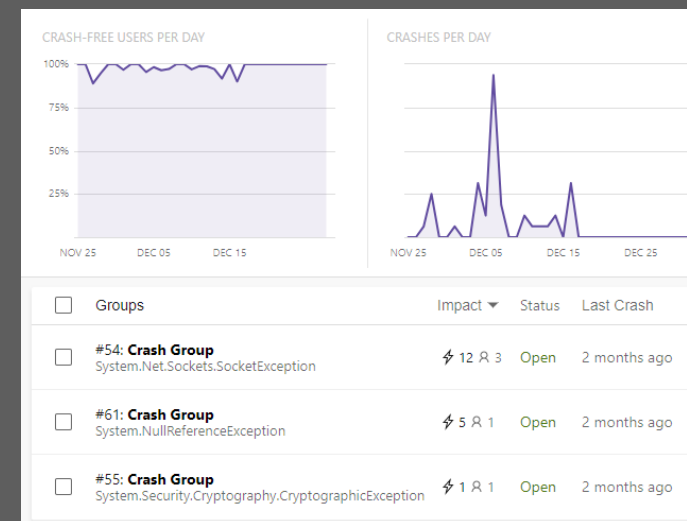- The Crashes SDK allows you to customise of crash reporting behaviour and add crash attachments.

- The App Center portal allows you to drill into the detail of any individual crash and view event breadcrumbs for the session and device logs.

- The report of a crash is submitted on the next launch of the app; it is possible that some crashes may go unreported.

CRASH-FREE USERS PER DAY | CRASHES PER DAY

Groups	Impact ▼	Status	Last Crash
#54: **Crash Group** System.Net.Sockets.SocketException	⚡ 12 👤 3	Open	2 months ago
#61: **Crash Group** System.NullReferenceException	⚡ 5 👤 1	Open	2 months ago
#55: **Crash Group** System.Security.Cryptography.CryptographicException	⚡ 1 👤 1	Open	2 months ago

DateTimeFormatInfo.set_Calendar (System.Globalization.Calendar value) SplitViewController.swift:204

Object reference not set to an instance of an object

0	CrashLibiOS	[CRLCrashNULL crash] CRLCrashNULLm:37
1	CrashProbeiOS	[CRLDetailViewController doCrash] CRLDetailViewController.m:53
2	UIKit	[UIApplication sendAction:to:from:forEvent:] CRLCrashNULLm:37
18	CrashProbeiOS	main main.m:16

Crashes per day   **351** in last 30 days

Most affected devices		Most affected OS	
iPod touch (5th gen)	72%	9.3.x	80%
iPhone 6	15%	9.2.x	14%
iPad mini	5%	11.0.x	3%
Others	8%	Others	3%

analytics

○ With the SDK installed, App Center tracks session, demographic and technicals automatically.

○ Custom events can be logged by using the **Analytics.TrackEvent** method, and an event can include up to five custom properties. These properties will segment data when viewed in the portal.

○ With an active Azure Subscription, all analytics data can be shipped to Application Insights and/or Blob Store for in depth analysis
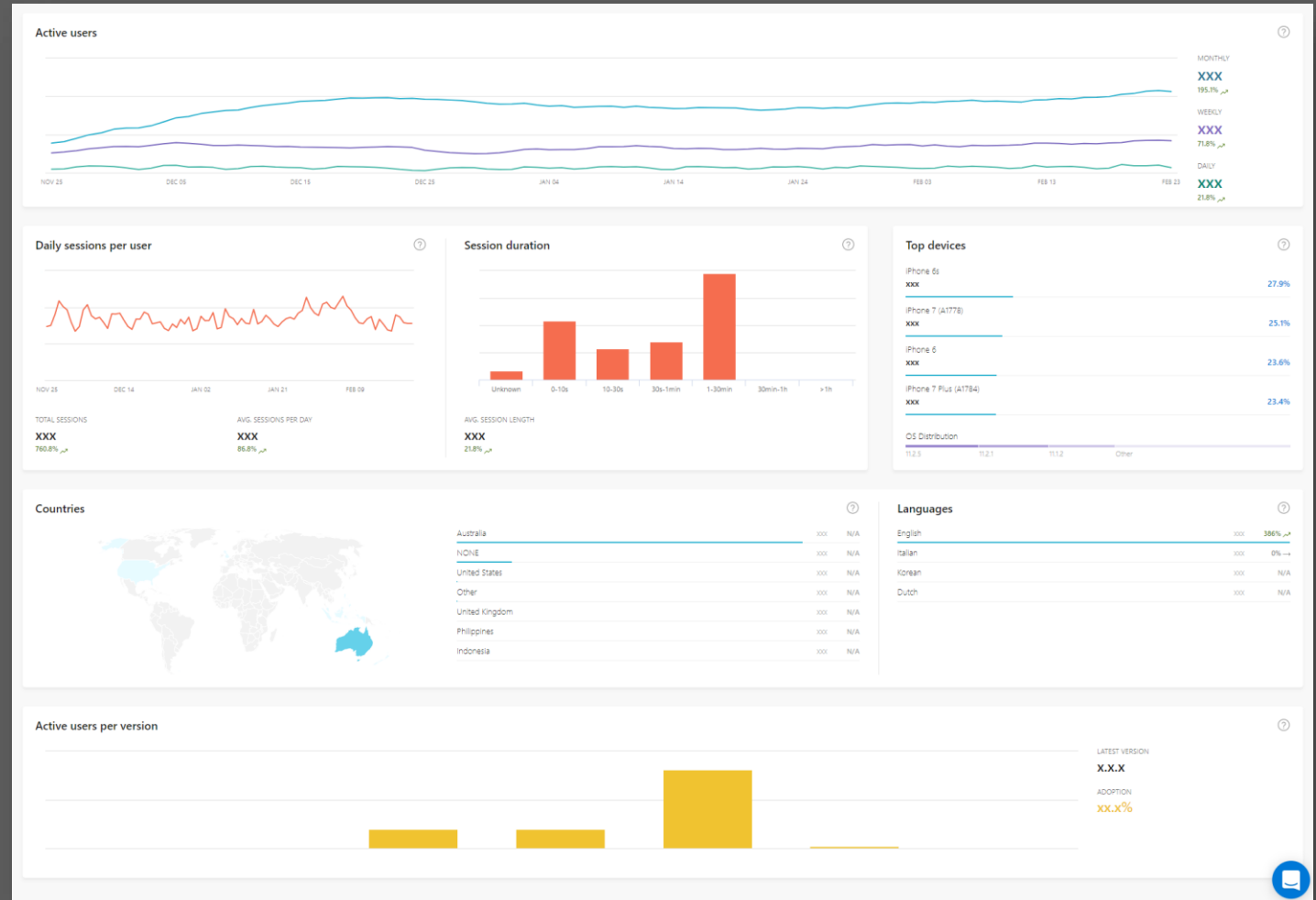
push

- App Center contains a pared down version of the Azure Mobile Engagement push offering, with basic segmentation and push campaign functionality.

- Push is in preview and is likely to include more sophisticated features in the future.

Segment userbase into audiences using demographic or custom event data

Define a campaign and notification content

Target your campaign and send!

resources

useful resources

- **App Center Docs**
  https://docs.microsoft.com/en-us/appcenter/

- **The ultimate roundup**
  https://blog.xamarin.com/c-developers-guide-shipping-better-apps-visual-studio-app-center/

- **How to Run Automated UI Tests from a VS App Center Build**
  https://tomsoderling.github.io/AppCenter-Automated-UI-tests-on-build/

- **Continuous Integration with App Center** [The Xamarin Show 15/02/2018]
  https://channel9.msdn.com/Shows/XamarinShow/Continuous-Integration-with-App-Center-Build--The-Xamarin-Show

- **All About CI & CD on App Center** [Fragmented Podcasts 19/02/2018]
  http://fragmentedpodcast.com/episodes/114/

questions / thanks