XTC103

Deploying to Test Cloud

Download class materials from
university.xamarin.com

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Objectives

1. Testing on physical devices
2. How to deploy to Test Cloud

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Testing on physical devices

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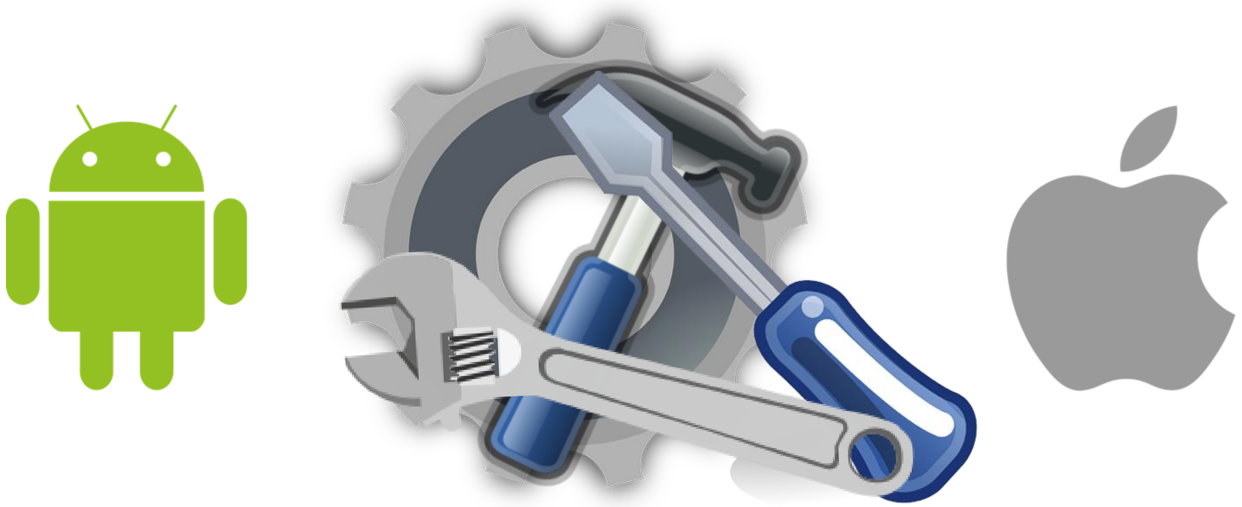
Tasks

1. Android Requirements
2. iOS Requirements

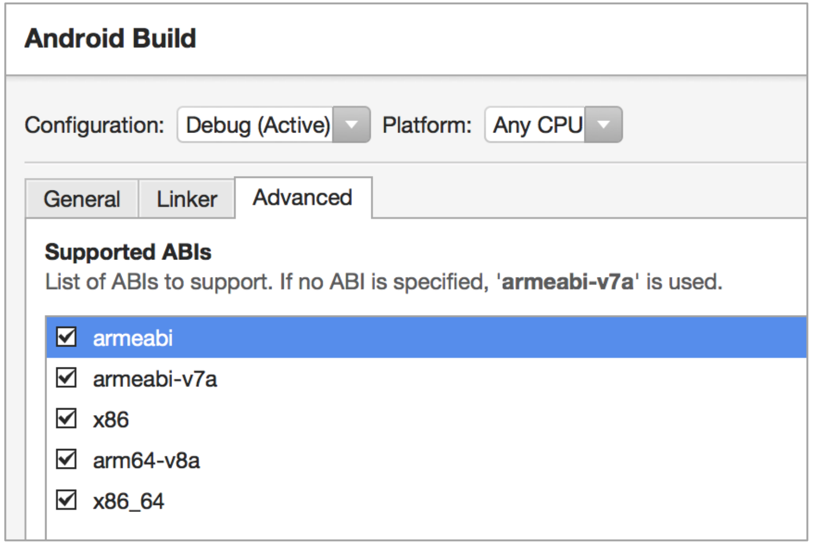
Testing on physical devices

- To deploy your applications and tests onto real devices there are a few platform-specific requirements you will need to perform



Android build settings

- Select the Application Binary Interfaces required for your target Android hardware



Android Build

Configuration: Debug (Active) Platform: Any CPU

General | Linker | Advanced

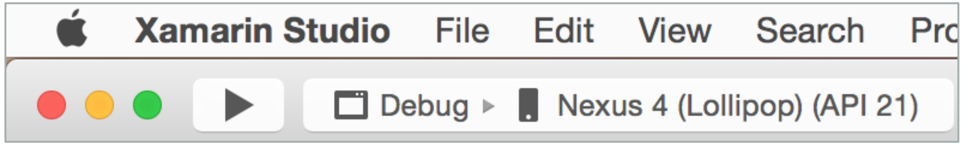
Supported ABIs
List of ABIs to support. If no ABI is specified, '**armeabi-v7a**' is used.

- [x] armeabi
- [x] armeabi-v7a
- [x] x86
- [x] arm64-v8a
- [x] x86_64

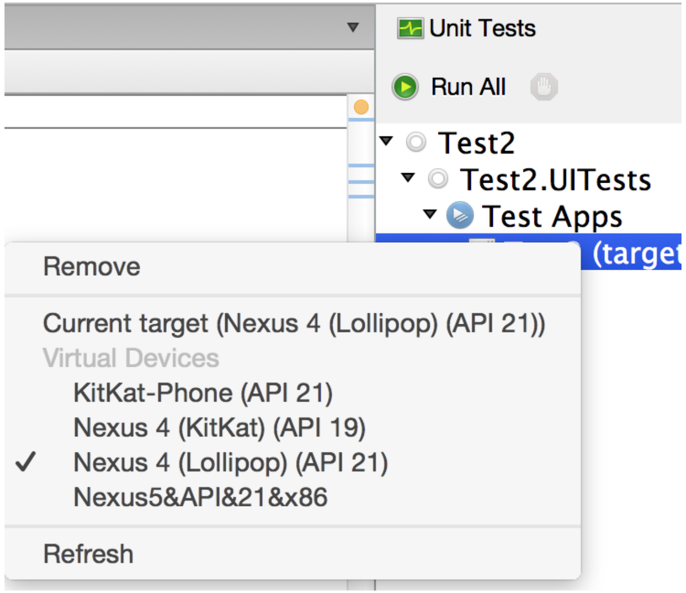
must support all processor variations you want to run on

Identifying the device to run on

- Visual Studio for Mac **Unit Tests pad** will let you select the device/sim to run on



Defaults to the active device or simulator selected in the toolbar



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Identifying the Android device

❖ Can also specify the device identifier as part of the test configuration, useful when more than one device or emulator is connected

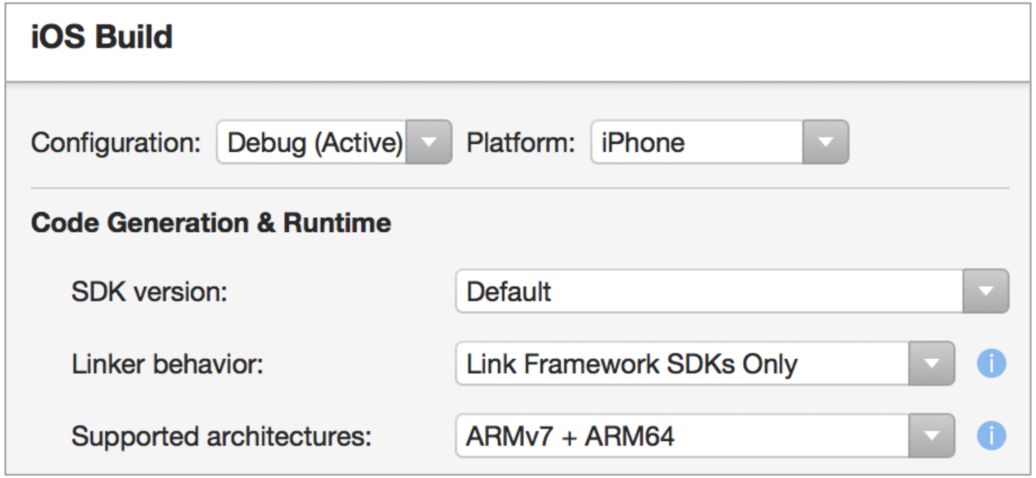
```
$ adb devices
List of devices attached
05845172        device
```

can use the **ADB** command line tool to identify all the connected devices

```
IApp app = ConfigureApp.Android.ApkFile("/path/to/app.apk")
                       .DeviceSerial("05845172").StartApp();
```

iOS Requirements

- Must use debug **build** and include all processor variations you plan to run against



iOS Build

Configuration: Debug (Active) Platform: iPhone

Code Generation & Runtime

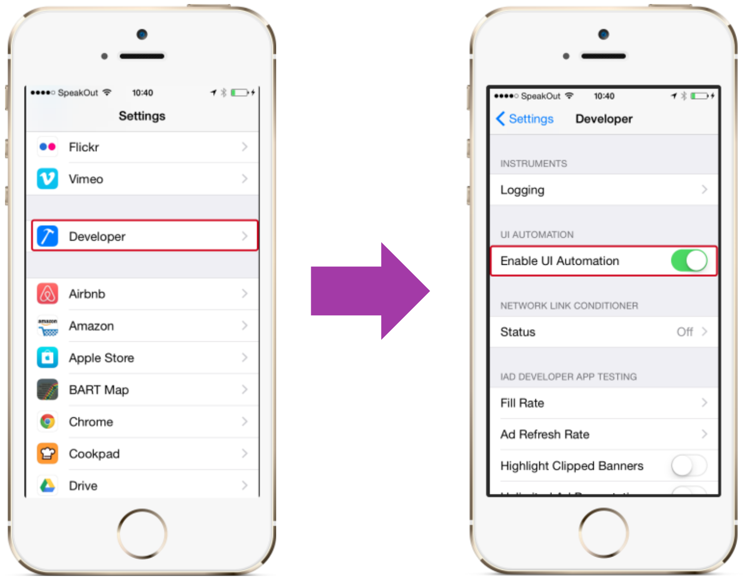
SDK version:	Default
Linker behavior:	Link Framework SDKs Only
Supported architectures:	ARMv7 + ARM64

Remember: You currently must use a Mac to build, run and submit iOS application + UI Tests to Xamarin Test Cloud

Enabling UI Automation on iOS8+

- To run UI tests on iOS physical devices, you must *enable UI Automation*

NUnit Test failed (click to run)
SetUp: System.Exception : Unable to run UIAutomation script on device. For iOS 9 and above please make sure that "Enable UI Automation" setting is enabled. The setting can be found here: Settings -> Developer -> Enable UI automation.



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Identifying the iOS device

- Test code should identify the application by **bundle** and **device id** so it connects to the proper running app + device

```
IApp app = ConfigureApp.iOS
                .EnableLocalScreenshots()
                .DeviceIdentifier(
                   "5665472bcab727247ba037c18a4a405b46d8611e")
                .InstalledApp("com.xamarin.taskypro")
                .StartApp();
```

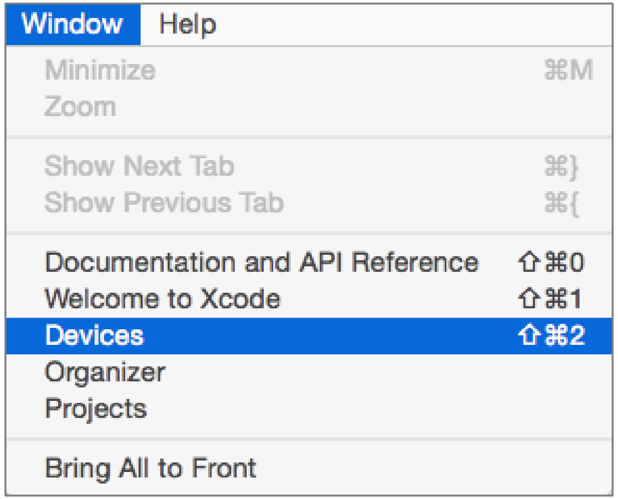
Getting device identifiers

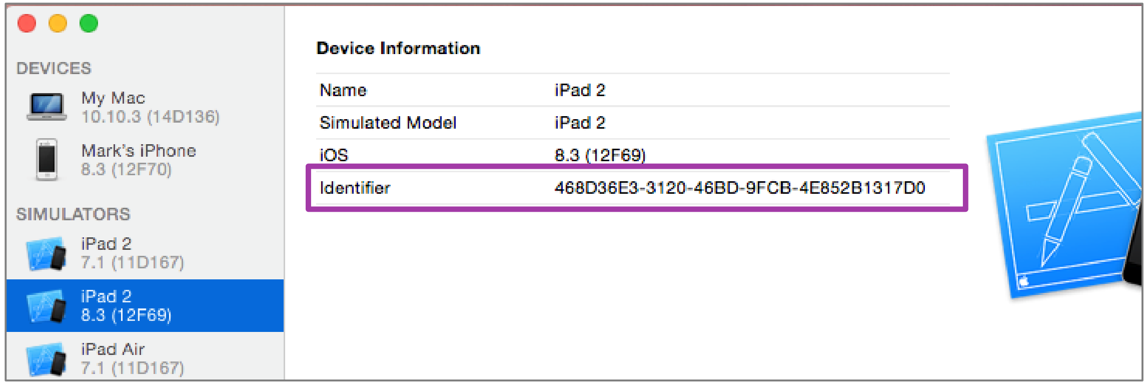
- Can identify devices on the command line using Instruments

```
$  xcrun instruments -s devices
Known Devices:
Mark’s MBPr [85E853D8-E91A-5DE8-A465-7CAAD4CC7ECC]
Mark’s iPhone (8.3) [5665472bcab727247ba037c18a4a405b46d8611e]
iPad 2 (7.1 Simulator) [EC6C3A52-C6E8-4A70-BB21-A4E7DE1CE8A5]
iPad 2 (8.3 Simulator) [468D36E3-3120-46BD-9FCB-4E852B1317D0]
iPad Air (7.1 Simulator) [CE1837EB-E7C5-4057-B374-C5C28398DC84]
iPad Air (8.3 Simulator) [733F7AA8-948C-4089-A74E-2D6558F6FE4B]
iPhone 4s (7.1 Simulator) [053B64CF-A564-4F82-B665-C967F1DFFBD7]
iPhone 4s (8.3 Simulator) [0BE9E503-2A5E-4F1C-AFFA-6D2BAECBE7B5]
...
```

Getting device identifiers

- ... or using the Xcode Devices window





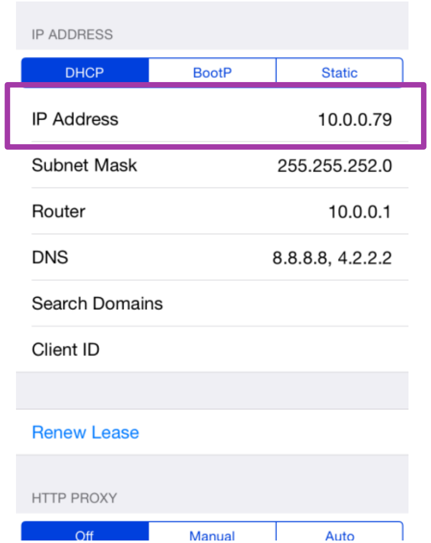
Device Information

Name	iPad 2
Simulated Model	iPad 2
iOS	8.3 (12F69)
Identifier	468D36E3-3120-46BD-9FCB-4E852B1317D0

Identifying the iOS device

- Can also identify by bundle and IP address for a WiFi connected device

```
IApp app = ConfigureApp.iOS
              .EnableLocalScreenshots()
              .DeviceIp("10.0.0.79")
              .InstalledApp("com.xamarin.taskypro")
              .StartApp();
```



IP ADDRESS

[✓ DHCP] BootP Static

IP Address	10.0.0.79
Subnet Mask	255.255.252.0
Router	10.0.0.1
DNS	8.8.8.8, 4.2.2.2
Search Domains	
Client ID	

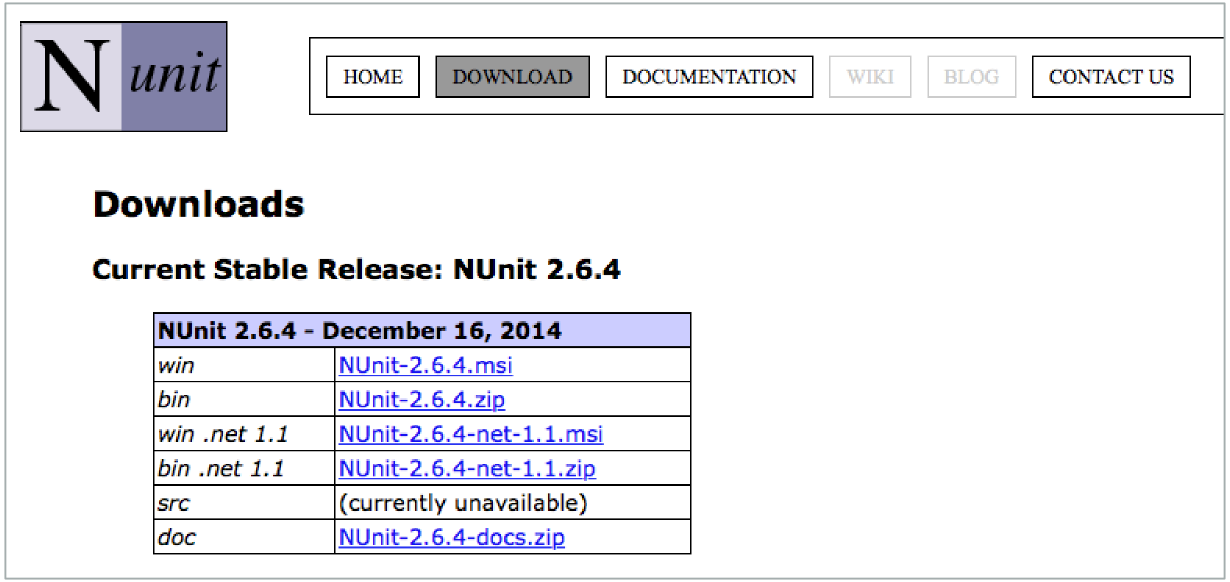
Renew Lease

HTTP PROXY

[✓ Off] Manual Auto

Running your UI Tests

- Can run tests on devices from Visual Studio for Mac – just like running on the simulators, or from the command line using **nunit-console**



Downloads

Current Stable Release: NUnit 2.6.4

NUnit 2.6.4 - December 16, 2014	
win	NUnit-2.6.4.msi
bin	NUnit-2.6.4.zip
win .net 1.1	NUnit-2.6.4-net-1.1.msi
bin .net 1.1	NUnit-2.6.4-net-1.1.zip
src	(currently unavailable)
doc	NUnit-2.6.4-docs.zip

Mixing command-line and IDE settings

❖ Can add the **`PreferIdeSettings`** flag to the configuration chain to ensure that IDE settings *override* the direct settings applied

```
return ConfigureApp
    .iOS
    .PreferIdeSettings()
    .DeviceIdentifier("96d5b77bc5b727247b8037018ada405b46d8611e")
    .InstalledApp("com.xamarin.samples.taskyprotouch")
    .StartApp();
```

Flash Quiz

Flash Quiz

① To deploy UI Tests to a physical device, I will need a ________

a) Test Cloud Account + Password

b) Test Cloud certificate

c) Release KeyStore

d) None of the above

Flash Quiz

① To deploy UI Tests to a physical device, I will need a ________

a) Test Cloud Account + Password

b) Test Cloud certificate

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d) None of the above

Flash Quiz

② What platforms and IDEs can I use to run iOS UI Tests? (Select all that apply)

a) Visual Studio + Windows

b) Visual Studio Code + Mac

c) Notepad + Windows

d) Visual Studio + Mac

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Flash Quiz

② What platforms and IDEs can I use to run iOS UI Tests? (Select all that apply)

a) Visual Studio + Windows

b) Visual Studio Code + Mac

c) Notepad + Windows

d) [✓ Visual Studio + Mac]

Flash Quiz

③ If Steve runs a UI Test from the Visual Studio for Mac and does not select a specific device to run it on, then the test will run on ________.

a) The first simulator or emulator

b) The active build configuration target

c) None, you will get an error

Flash Quiz

③ If Steve runs a UI Test from the Visual Studio for Mac and does not select a specific device to run it on, then the test will run on ________.

a) The first simulator or emulator

b) [✓ The active build configuration target]

c) None, you will get an error

Individual Exercise

Deploying Xamarin.UITests to a local device

Summary

1. Android Requirements
2. iOS Requirements

How to deploy to Test Cloud

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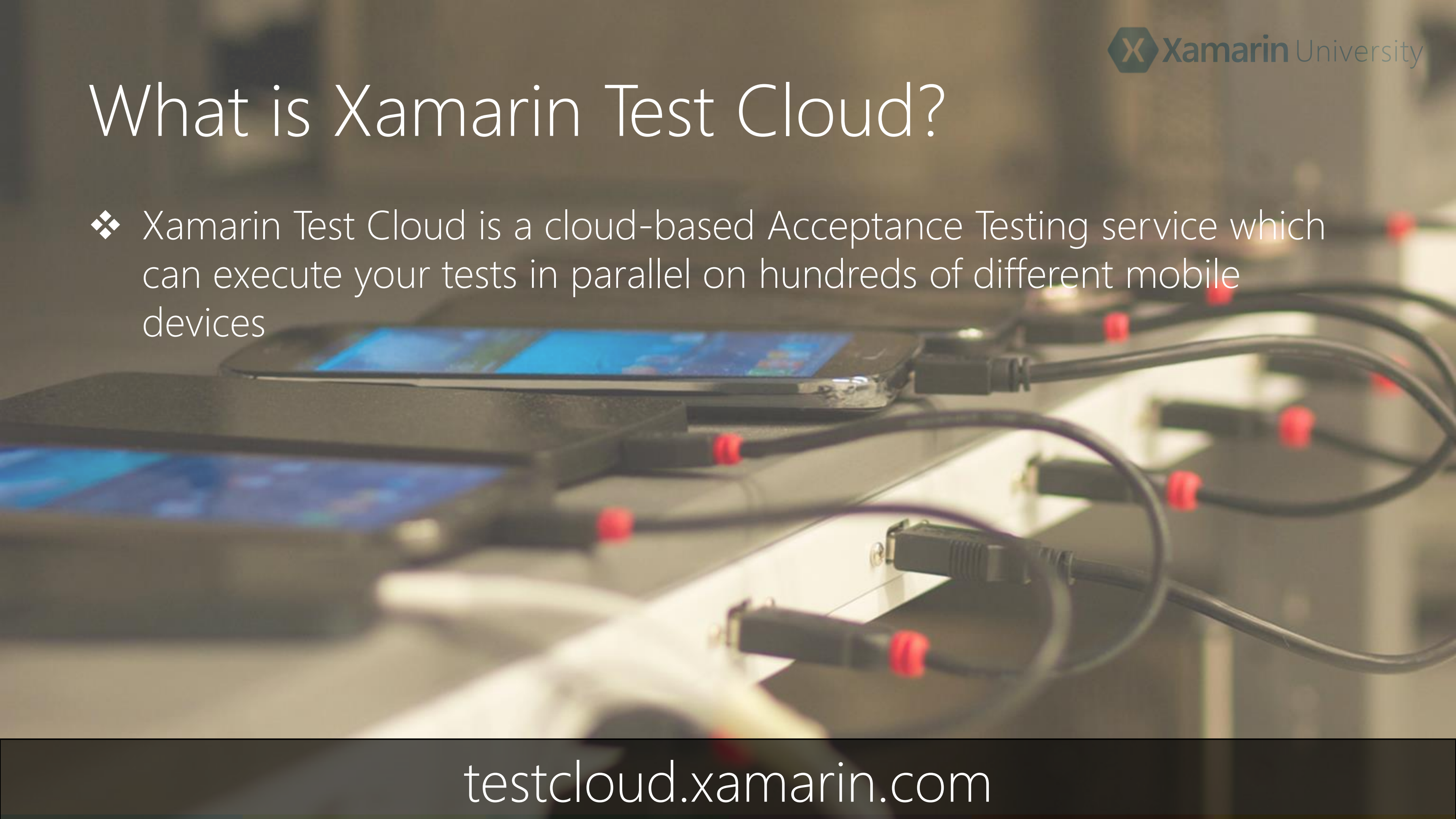
Tasks

1. Getting ready for Test Cloud
2. Selecting Devices
3. Uploading Tests
4. Examining the Results

Xamarin test cloud

What is Xamarin Test Cloud?

- Xamarin Test Cloud is a cloud-based Acceptance Testing service which can execute your tests in parallel on hundreds of different mobile devices

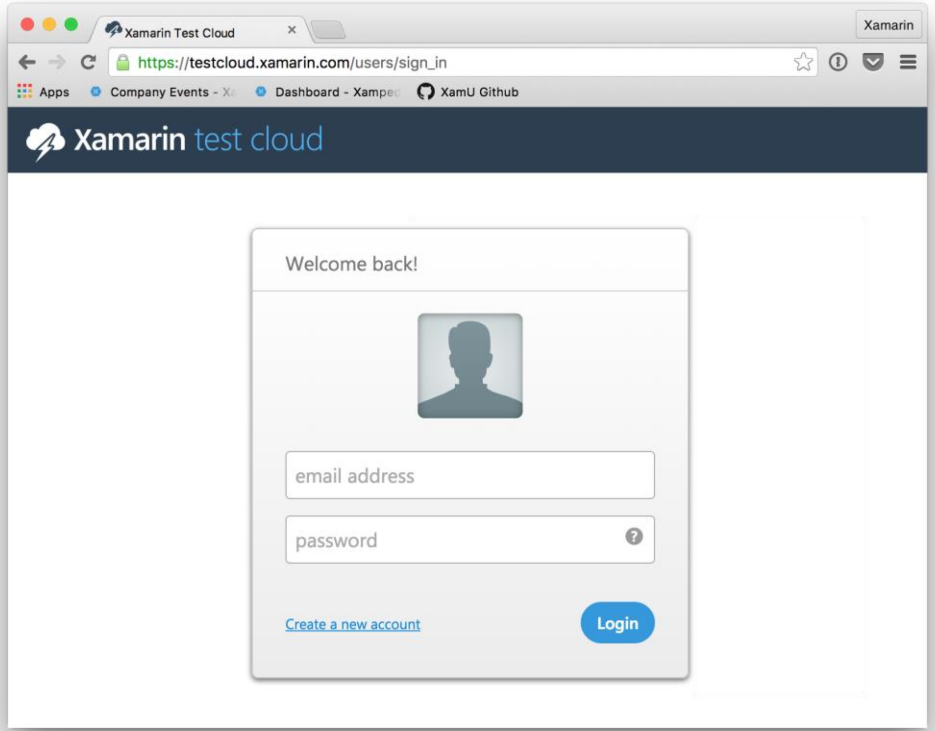


testcloud.xamarin.com

Logging into Xamarin Test Cloud

- Your account is the same account you use to login to Xamarin University, or to the Xamarin website

- Can also register a new account if you don't currently have a Xamarin SSO login



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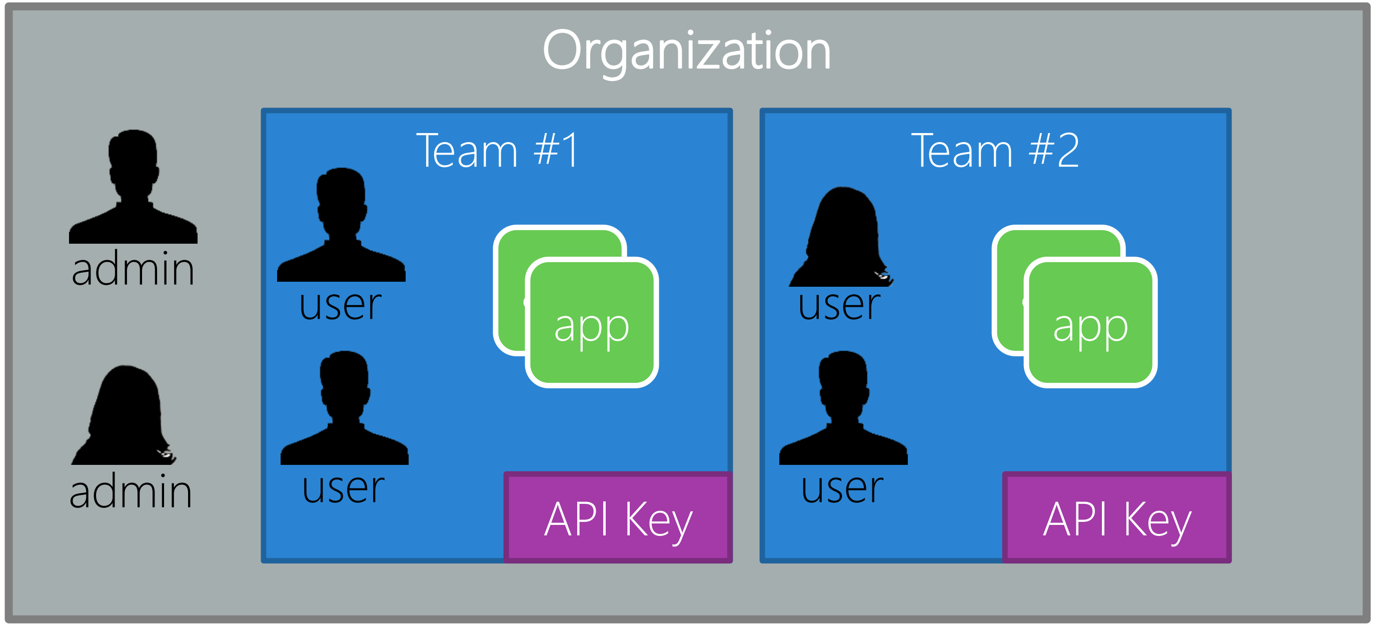
Test Cloud organization

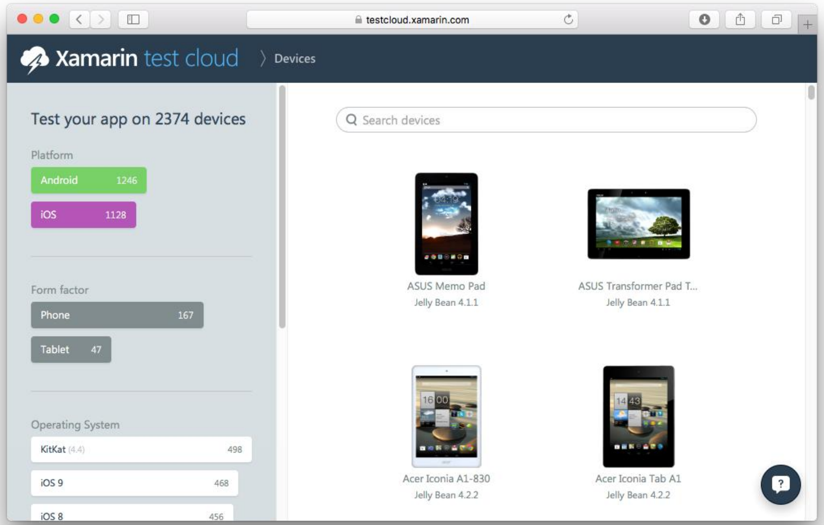


❖ Test Cloud is organized into organizations, teams, apps and users, portal lets admins create and administer teams

Test Cloud devices

- Xamarin Test Cloud supports thousands of of OS and device combinations for iOS and Android

- Generates detailed test reports:
  - Test results
  - Screenshots
  - Performance metrics
  - Video of the test run



Test Cloud integration

❖ Several popular IDEs and CI systems support Test Cloud

Visual Studio Online

Visual Studio
Team Foundation Server

Getting apps ready for Test Cloud

- To run an app on Xamarin Test Cloud, use the same application setup you would use to test on a local device - use Debug builds for iOS, releases build for Android

Can then publish to Test Cloud directly from the IDE - or use the command line to test a local .ipa or .apk

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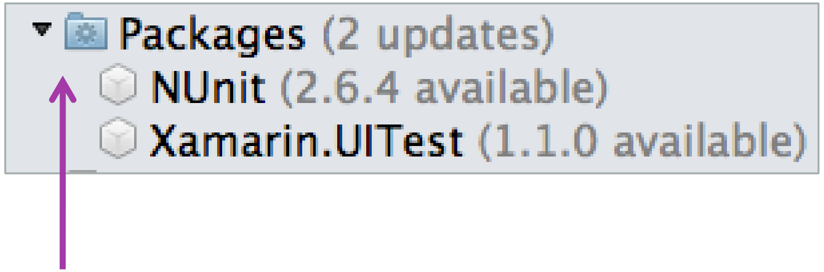
Getting apps ready for Test Cloud

- Make sure to update to the latest Nuget packages for **Xamarin.UITest** and the **Xamarin Test Agent** (iOS)



Packages (2 updates)
NUnit (2.6.4 available)
Xamarin.UITest (1.1.0 available)

Right-click **Packages** in Visual Studio for Mac , or **References** in Visual Studio and select **Update**

Warning: Leave the **NUnit** nuget package at v2.6.4 – v3.x is not currently supported

Testing minutes

- Each test that runs on Xamarin Test Cloud runs on one or more devices and consumes time on those devices
- Different pricing levels available based on how many devices you want to test on concurrently and how many testing hours per day you want to utilize
- 30-day trial available and discounts for MSDN subscribers

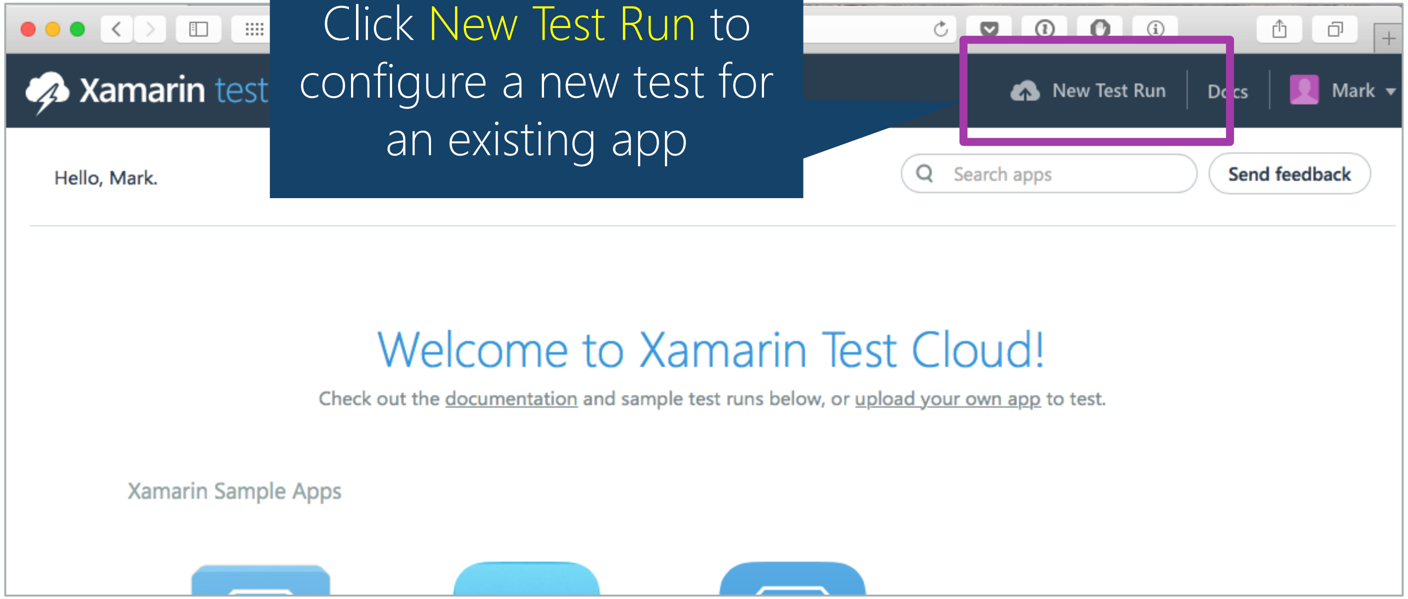
Running your tests on Test Cloud

- Xamarin.UITest Nuget package includes command line tools to upload and execute your tests, portal will give you command line text

```
packages\Xamarin.UITest.[version]\tools\test-cloud.exe
submit yourAppFile.apk|ipa YOUR_API_KEY
--devices xxxxxx
--series "master"
--locale "en_US"
--user EMAIL_ADDRESS
--assembly-dir pathToTestDllFolder
```

Creating a Test Run command line

- Can create new tests runs through the Test Cloud portal



Click New Test Run to configure a new test for an existing app

Hello, Mark.

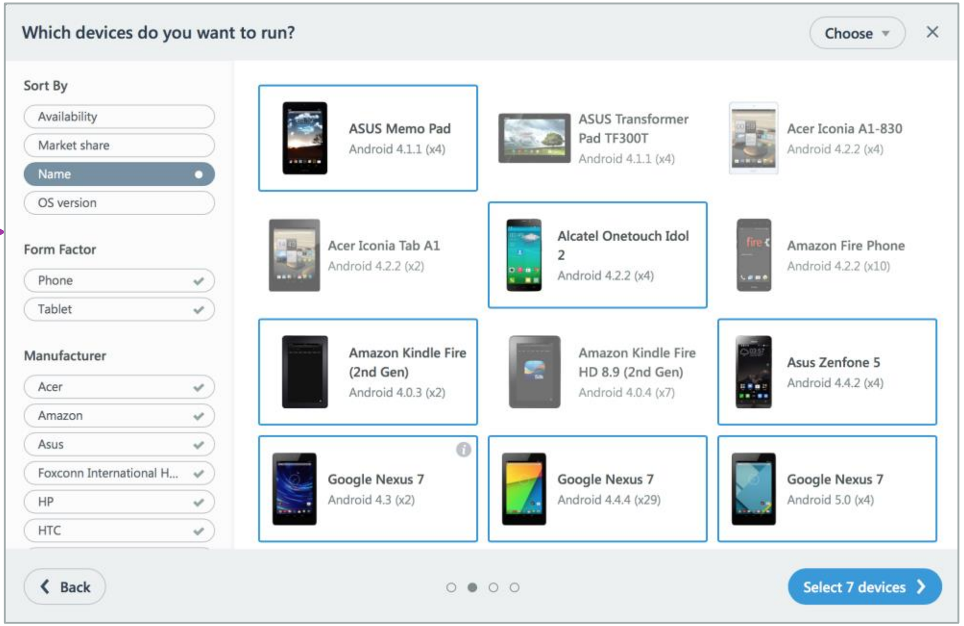
Welcome to Xamarin Test Cloud!

Check out the documentation and sample test runs below, or upload your own app to test.

Selecting the Devices

❖ Can choose appropriate devices to test on based on market share, especially useful for Android due to fragmentation

Can sort and filter the devices based on current availability, version, market share



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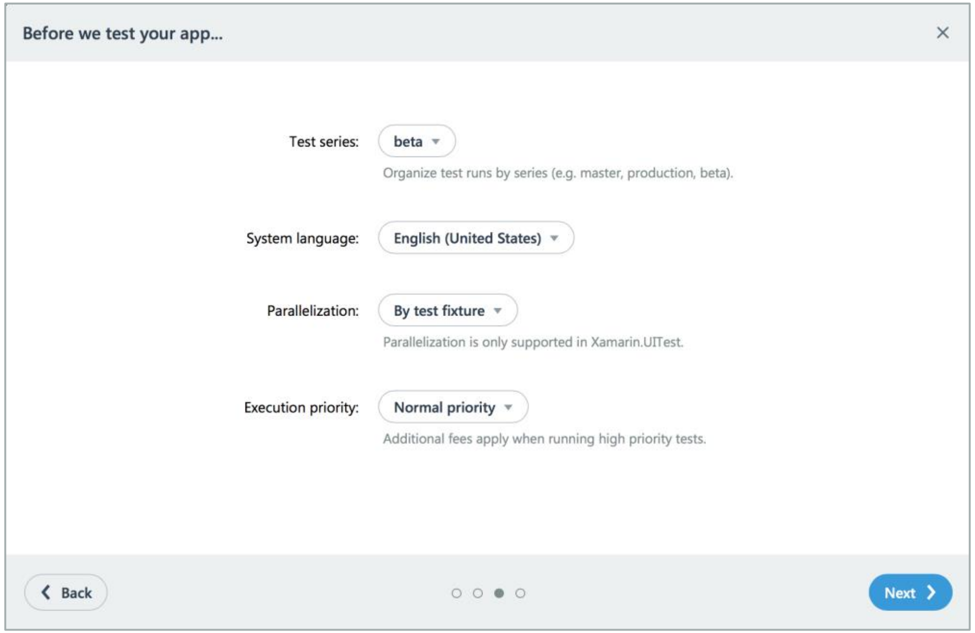
Other test run options

- Test Series allows you to organize your runs in categories – master, beta, release, etc.
- Language sets the device language
- Can parallelize tests for quicker runs (based on pricing tier)


Before we test your app...

Test series: beta
Organize test runs by series (e.g. master, production, beta).

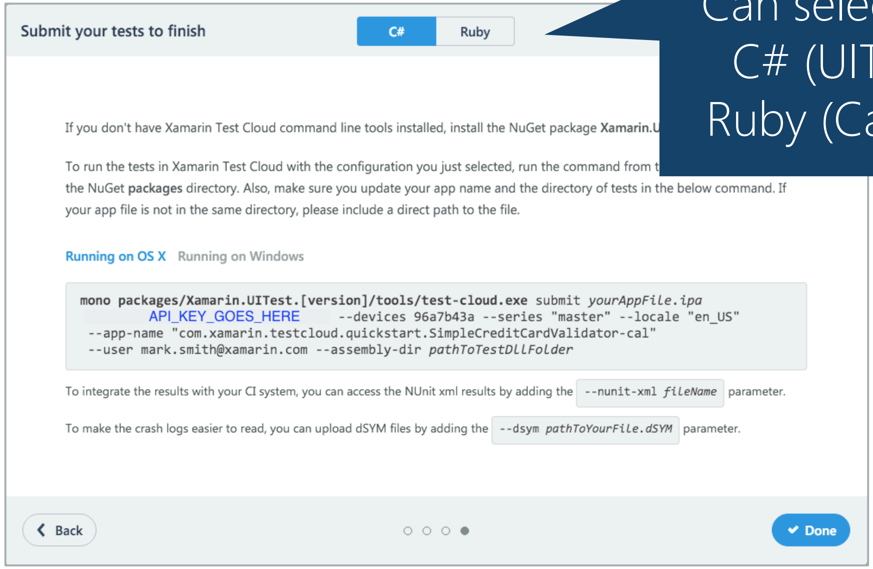
System language: English (United States)

Parallelization: By test fixture
Parallelization is only supported in Xamarin.UITest.

Execution priority: Normal priority
Additional fees apply when running high priority tests.

Getting the command line

- The Test Cloud portal provides detailed instructions to execute tests from the command line



Submit your tests to finish

C# Ruby

If you don't have Xamarin Test Cloud command line tools installed, install the NuGet package **Xamarin.U**

To run the tests in Xamarin Test Cloud with the configuration you just selected, run the command from t
the NuGet **packages** directory. Also, make sure you update your app name and the directory of tests in the below command. If your app file is not in the same directory, please include a direct path to the file.

Running on OS X Running on Windows

```
mono packages/Xamarin.UITest.[version]/tools/test-cloud.exe submit yourAppFile.ipa
          API_KEY_GOES_HERE     --devices 96a7b43a --series "master" --locale "en_US"
 --app-name "com.xamarin.testcloud.quickstart.SimpleCreditCardValidator-cal"
 --user mark.smith@xamarin.com --assembly-dir pathToTestDllFolder
```

To integrate the results with your CI system, you can access the NUnit xml results by adding the `--nunit-xml fileName` parameter.

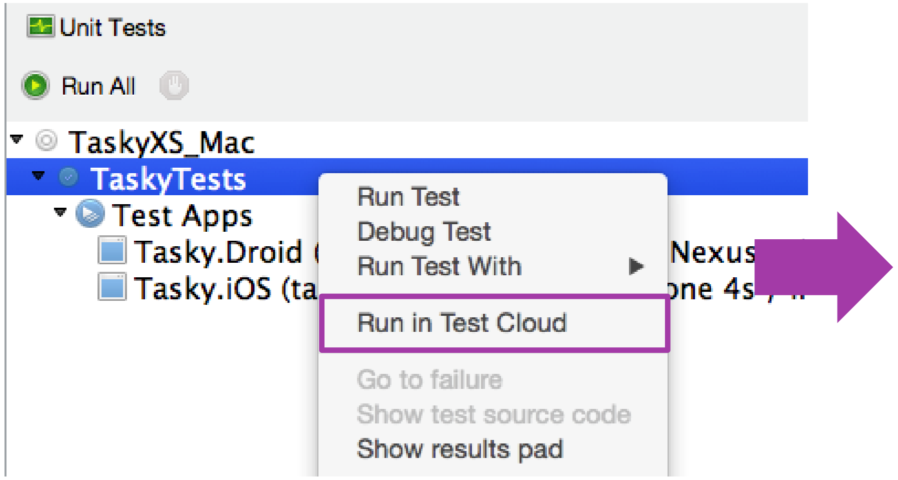
To make the crash logs easier to read, you can upload dSYM files by adding the `--dsym pathToYourFile.dSYM` parameter.

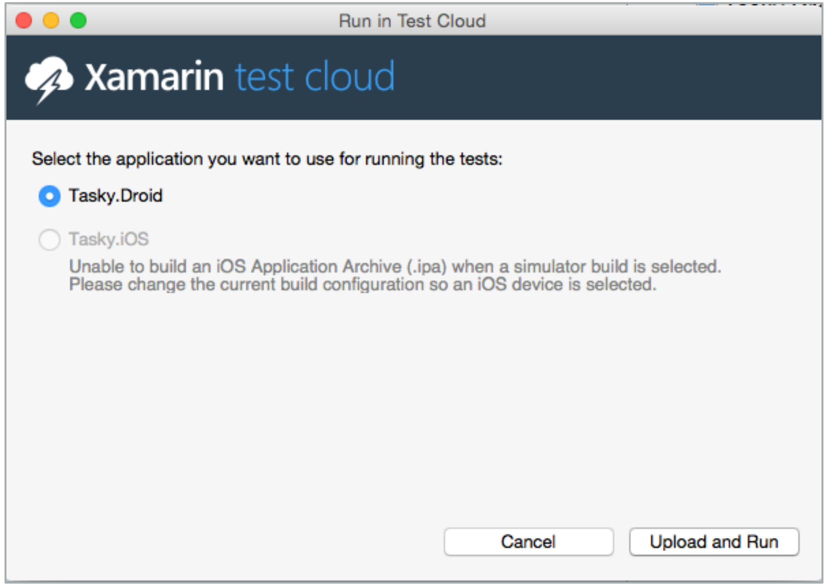
Back ○ ○ ○ ● ✔ Done

Can select either C# (UITest) or Ruby (Calabash)

Submitting tests from your IDE

- Visual Studio for Mac includes ability to upload tests from Unit Tests pad




Run in Test Cloud

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Select the application you want to use for running the tests:

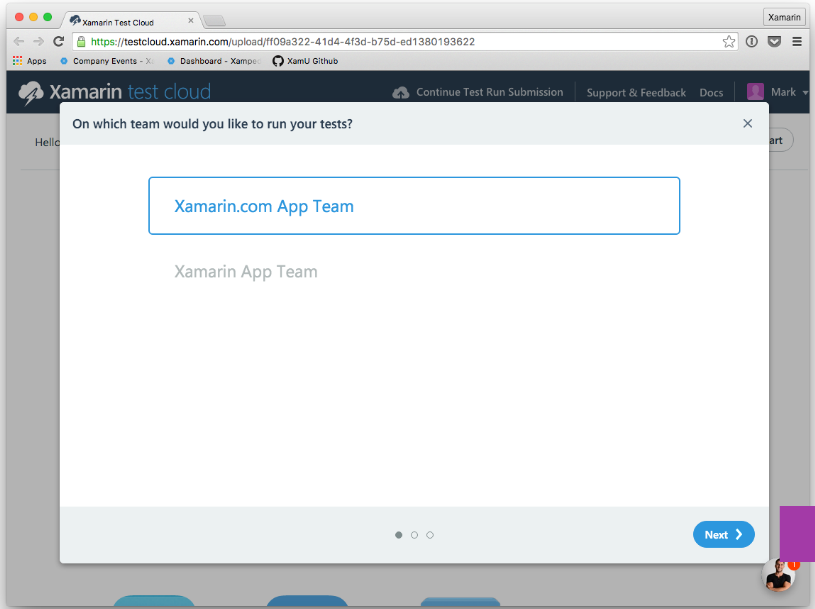
[✓ Tasky.Droid]

Tasky.iOS

Unable to build an iOS Application Archive (.ipa) when a simulator build is selected.
Please change the current build configuration so an iOS device is selected.

Submitting tests from your IDE

- Once uploaded, IDE opens a browser to walk through the options:

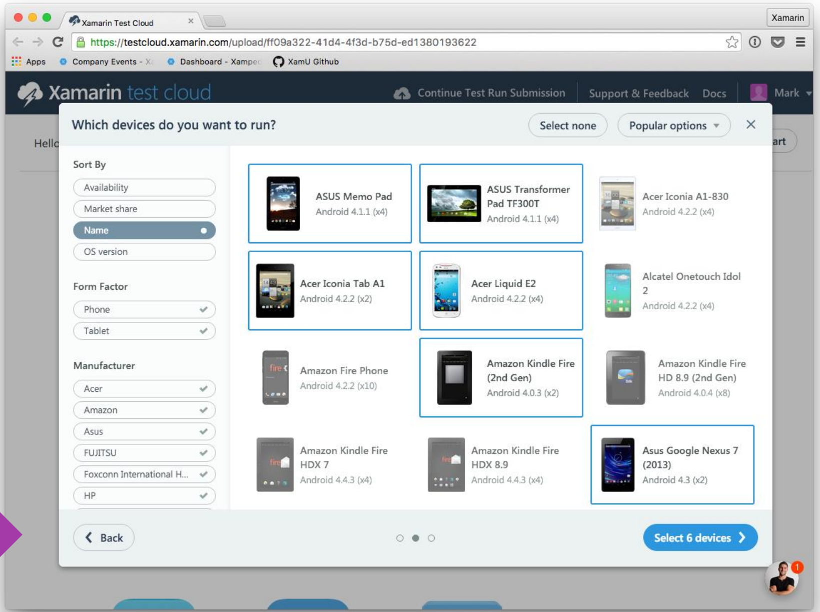


https://testcloud.xamarin.com/upload/ff09a322-41d4-4f3d-b75d-ed1380193622

On which team would you like to run your tests?

Xamarin.com App Team

Xamarin App Team



https://testcloud.xamarin.com/upload/ff09a322-41d4-4f3d-b75d-ed1380193622

Which devices do you want to run?

Sort By: Availability, Market share, Name (selected), OS version

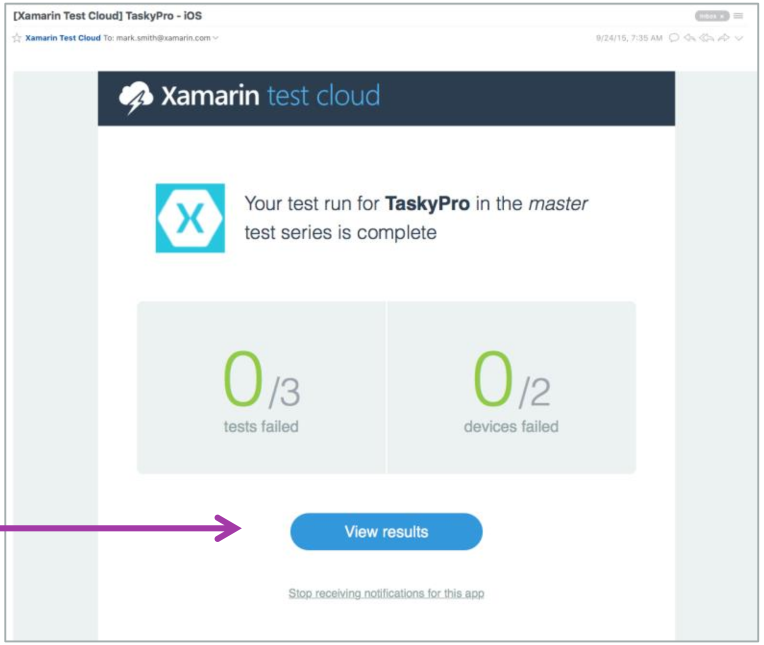
Form Factor: Phone ✓, Tablet ✓

Manufacturer: Acer ✓, Amazon ✓, Asus ✓, FUJITSU ✓, Foxconn International H... ✓, HP ✓

ASUS Memo Pad Android 4.1.1 (x4)	ASUS Transformer Pad TF300T Android 4.1.1 (x4)	Acer Iconia A1-830 Android 4.2.2 (x4)
Acer Iconia Tab A1 Android 4.2.2 (x2)	Acer Liquid E2 Android 4.2.2 (x4)	Alcatel Onetouch Idol 2 Android 4.2.2 (x4)
Amazon Fire Phone Android 4.2.2 (x10)	Amazon Kindle Fire (2nd Gen) Android 4.0.3 (x2)	Amazon Kindle Fire HD 8.9 (2nd Gen) Android 4.0.4 (x8)
Amazon Kindle Fire HDX 7 Android 4.4.3 (x4)	Amazon Kindle Fire HDX 8.9 Android 4.4.3 (x4)	Asus Google Nexus 7 (2013) Android 4.3 (x2)

Getting the test run results

- Test Cloud will send an email when the test run is complete



[Xamarin Test Cloud] TaskyPro - iOS

Xamarin Test Cloud To: mark.smith@xamarin.com   9/24/15, 7:35 AM

Xamarin test cloud

Your test run for **TaskyPro** in the *master* test series is complete

0/3 tests failed

0/2 devices failed

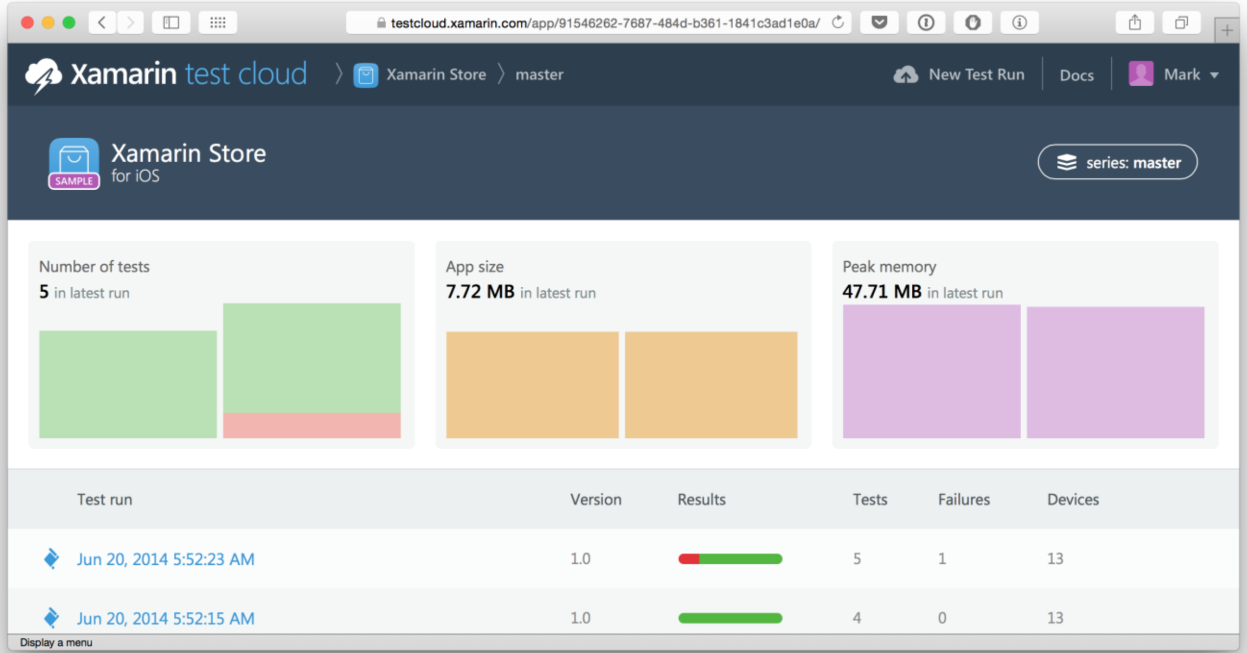
View results

Stop receiving notifications for this app

click the button to go to the portal, or just log into Test Cloud

Getting the test run results

- Test Cloud dashboard shows all the test runs by app



testcloud.xamarin.com/app/91546262-7687-484d-b361-1841c3ad1e0a/

Xamarin test cloud 〉 Xamarin Store 〉 master

New Test Run | Docs | Mark

Xamarin Store
for iOS
SAMPLE

series: master

Number of tests
5 in latest run

App size
7.72 MB in latest run

Peak memory
47.71 MB in latest run

Test run	Version	Results	Tests	Failures	Devices
Jun 20, 2014 5:52:23 AM	1.0	🟥🟩	5	1	13
Jun 20, 2014 5:52:15 AM	1.0	🟩	4	0	13

Display a menu

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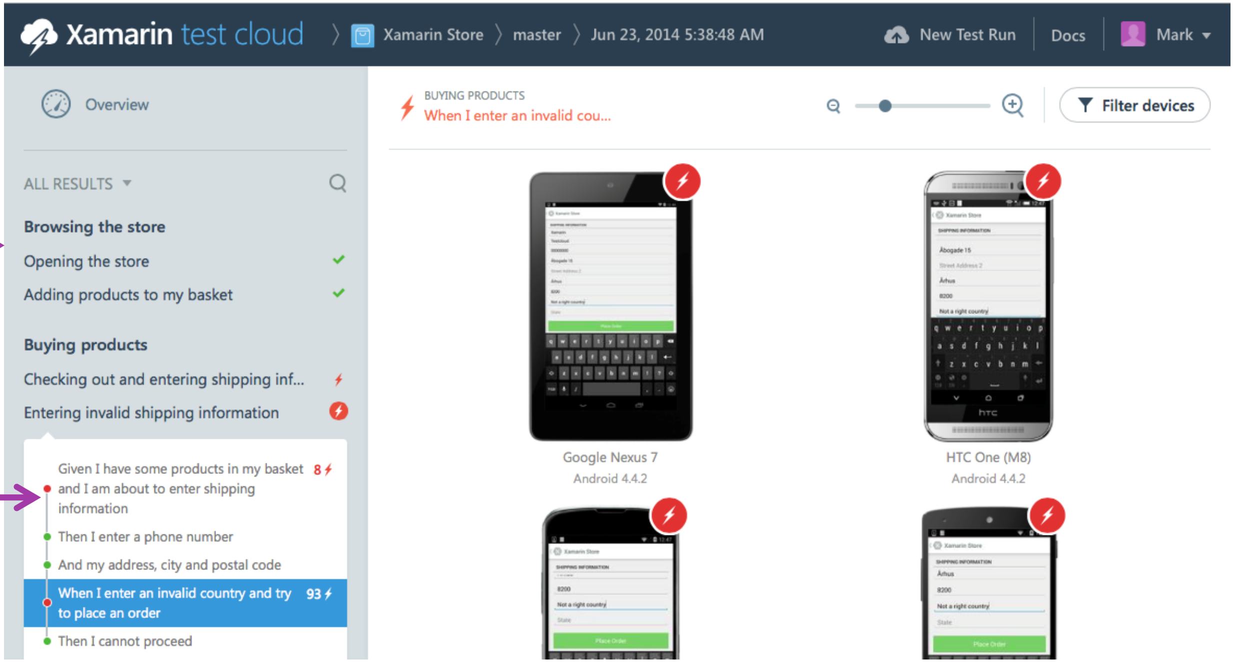
Evaluating the test results

Can go through each group and step

Failures are noted along with the # of devices that failed


Xamarin test cloud 〉 Xamarin Store 〉 master 〉 Jun 23, 2014 5:38:48 AM

New Test Run | Docs | Mark

Overview

ALL RESULTS

Browsing the store

- Opening the store ✓
- Adding products to my basket ✓

Buying products

- Checking out and entering shipping inf...
- Entering invalid shipping information

- Given I have some products in my basket and I am about to enter shipping information 8
- Then I enter a phone number
- And my address, city and postal code
- When I enter an invalid country and try to place an order 93
- Then I cannot proceed

BUYING PRODUCTS

When I enter an invalid cou...

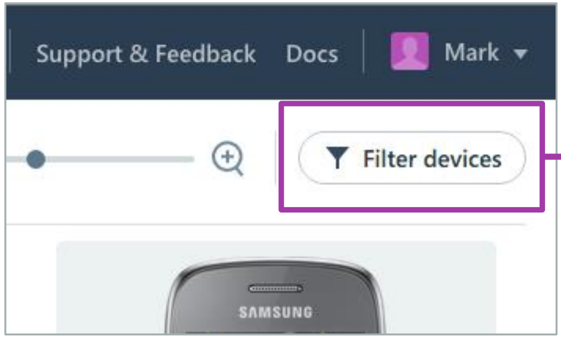
Filter devices

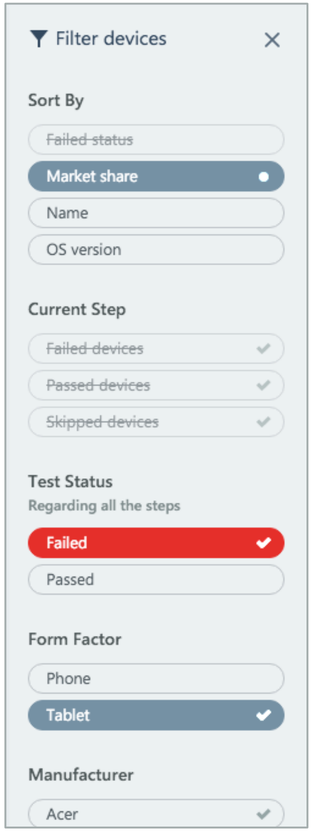
Google Nexus 7 — Android 4.4.2

HTC One (M8) — Android 4.4.2

Filtering the devices

- Can filter the displayed devices in the test results




Filter devices

Sort By
~~Failed status~~
Market share ●
Name
OS version

Current Step
~~Failed devices~~ ✓
~~Passed devices~~ ✓
~~Skipped devices~~ ✓

Test Status
Regarding all the steps
Failed ✓
Passed

Form Factor
Phone
Tablet ✓

Manufacturer
Acer ✓

Several filtering options are displayed allowing you to cut down the displayed screen results.

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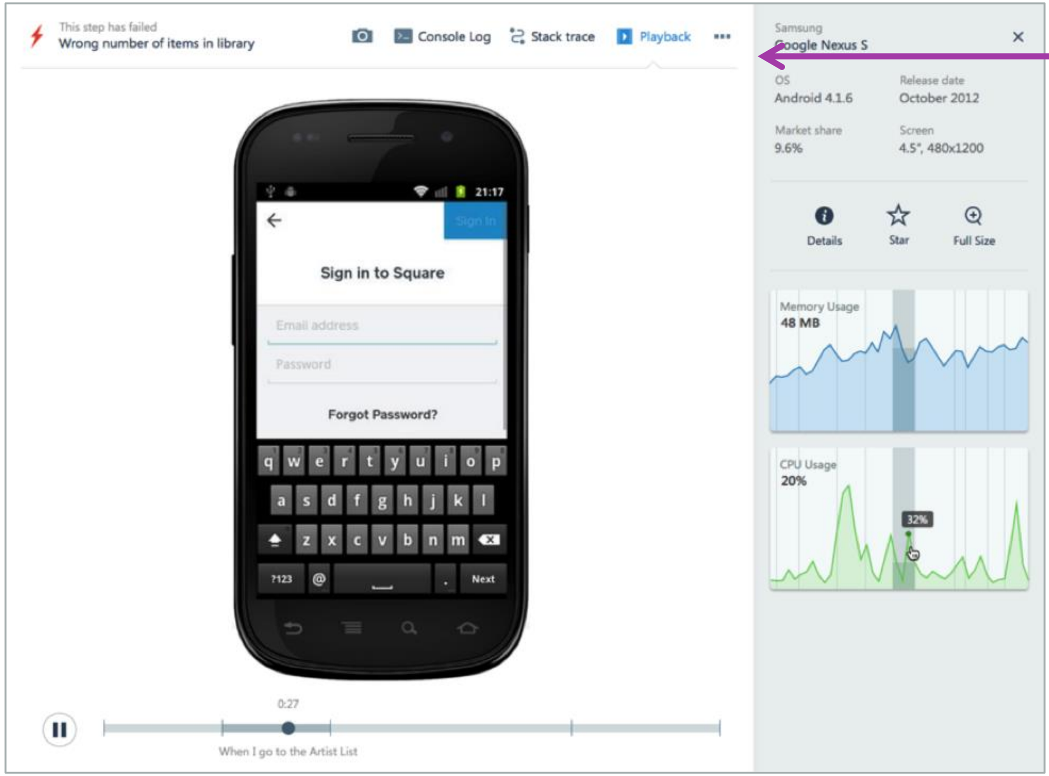
Evaluating the test results



Get stack traces and check the device log for each test

Can see performance metrics (CPU and memory) that occurred during test

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Capturing screenshots of your app

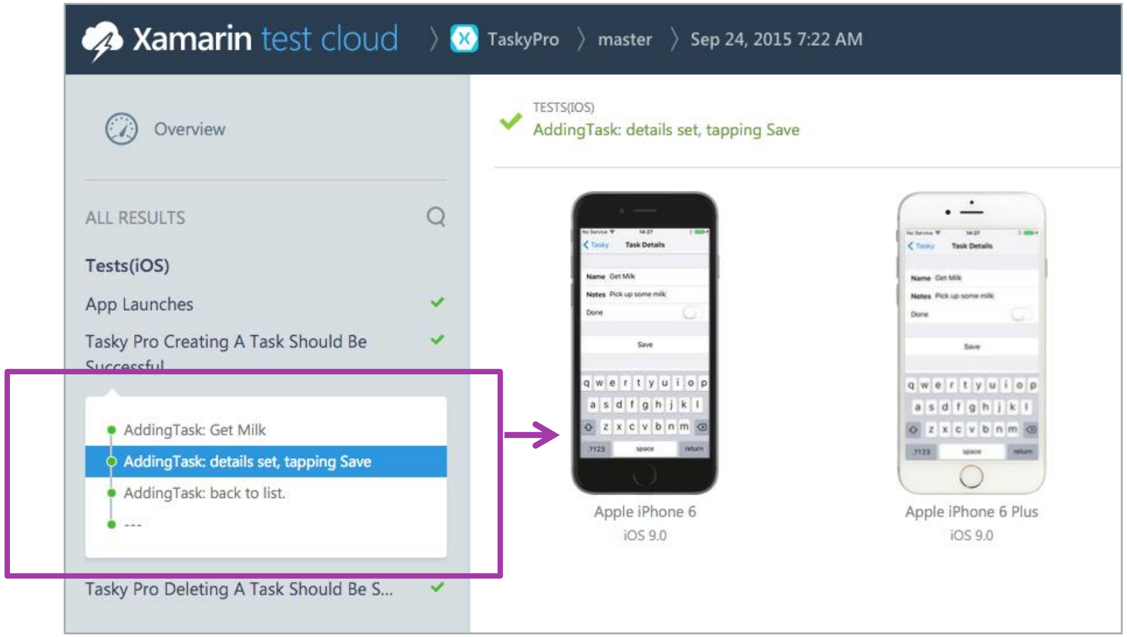
❖ Use **`IApp.Screenshot`** to capture a picture of the app's screen

```
[Test]
void TaskyPro_CreatingATask_ShouldBeSuccessful()
{
   app.Screenshot("Tapping Add Button");
   app.Tap(AddButton);
   ...
   app.Screenshot("AddingTask: details set, tapping Save");
}
```

Pass in text value which will identify this screen shot in the report screen

Viewing the screenshots in the test results

- Screenshots are listed as part of the test results



Xamarin test cloud
TaskyPro
master
Sep 24, 2015 7:22 AM
Overview
ALL RESULTS
Tests(iOS)
App Launches
Tasky Pro Creating A Task Should Be Successful
AddingTask: Get Milk
AddingTask: details set, tapping Save
AddingTask: back to list.

Tasky Pro Deleting A Task Should Be S...
TESTS(IOS)
AddingTask: details set, tapping Save
Apple iPhone 6
iOS 9.0
Apple iPhone 6 Plus
iOS 9.0

Demonstration

Uploading a project to Test Cloud

Xamarin University

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Summary

1. Getting ready for Test Cloud
2. Selecting Devices
3. Uploading Tests
4. Examining the Results

Xamarin test cloud

Thank You!

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