UTNotifications Manual

Version 1.7

Introduction

API Reference | Forum | Support Email | Issue Tracking

UTNotifications is an advanced and professional Unity extension that is yet very convenient and easy to use. It provides a convenient cross-platform API for posting and handling local, scheduled (including those appearing once and those repeating) and push notifications. It fully supports iOS (7.0 and newer), Android (4.4 and newer, Google Play featured and Amazon Kindle Android devices) and Windows Store/Universal Windows Platform (Windows Phone 8.1, Windows 8.1/10, Universal 8.1, Universal 10).

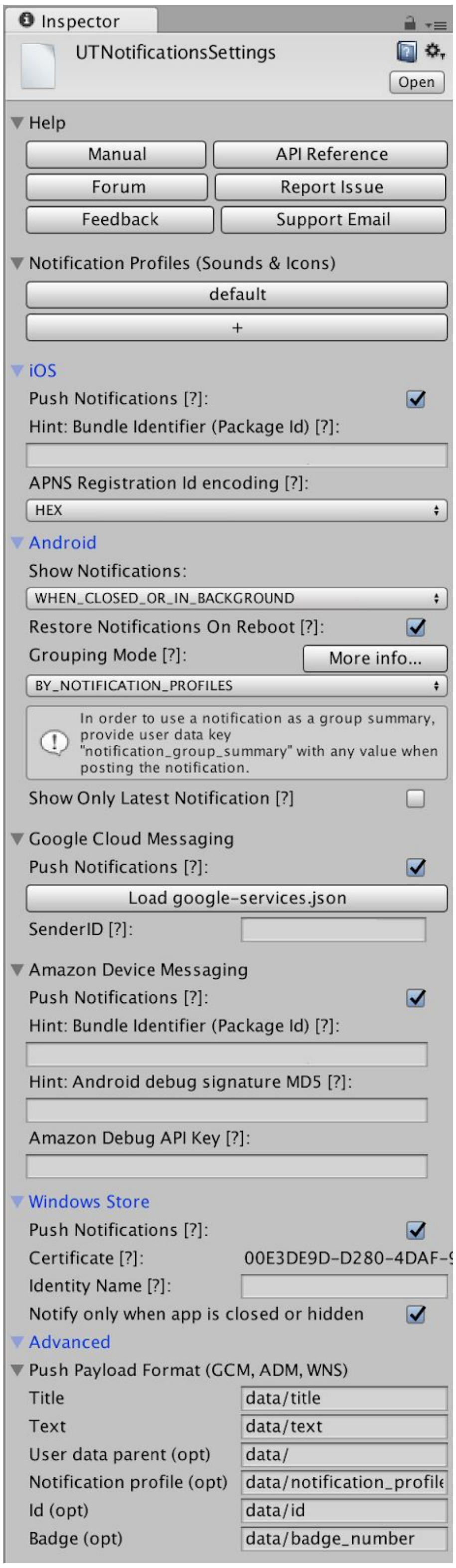
Features:

- Immediate and scheduled (those appearing once and those repeating) local notifications with automated restoring on device reboot.
- Push notifications.
- 2 Android push notifications services: Firebase Cloud Messaging (FCM) & Amazon Device Messaging (ADM) in a single build.
- Completely cross-platform API.
- The full source code is provided as well as the code of the native plugins so one can change and adjust anything one likes.
- A demo push notifications provider web server with the source code is included.
- A sample & test scene.
- A detailed manual and an API Reference docs are included.
- Default or custom notifications sounds and icons.
- Convenient Unity editor extension for configuring.
- Notifications enabling/disabling API for all supported platforms allows one to add notifications toggle to the game options.
- API for handling clicked & received notifications of any type both local and push.
- One can attach custom data to the notification of any type and access it while handling the received notification.
- Hiding or cancelling a specific notification or all of them.
- Application icon badge number management API for iOS and Android.
- Android: Image notifications.
- Android: Complete integration with Android 8+ Notification Channels.
- Android: Custom buttons.
- Android: High Priority/Heads-Up notifications support.
- And more!

UTNotifications consists of two main parts: Unity client extension and a demo server which shows you how to send push (remote) notifications. For the production version of your application your own game server or a dedicated notifications server is required, but you can use the provided demo server source code as you like. There is also a number of third-party solutions for the push notification servers, such as free and open source **Uniqush**, and services like OneSignal, which are compatible with UTNotifications as it uses plain iOS, Google Android, Amazon Android & Windows push notifications services. You can also leverage the asset for local/scheduled notifications only - in that case you don't need any backend. The asset works well with any edition of Unity 5.4 or newer.

Getting Started

Once you installed the asset into your project, you're able to open its settings from Unity menu: *Edit -> Project Settings -> UTNotifications* (Unity restart may be required first time to see this menu item).



Help

Notification Profiles (Sounds & Icons)

iOS
Push Notifications [?]: ✓
Hint: Bundle Identifier (Package Id) [?]:
APNS Registration Id encoding [?]: HEX

Android
Show Notifications: WHEN_CLOSED_OR_IN_BACKGROUND
Restore Notifications On Reboot [?]: ✓
Grouping Mode [?]: BY_NOTIFICATION_PROFILES
In order to use a notification as a group summary, provide user data key "notification_group_summary" with any value when posting the notification.
Show Only Latest Notification [?] ☐

Google Cloud Messaging
Push Notifications [?]: ✓
SenderID [?]:

Amazon Device Messaging
Push Notifications [?]: ✓
Hint: Bundle Identifier (Package Id) [?]:
Hint: Android debug signature MD5 [?]:
Amazon Debug API Key [?]:

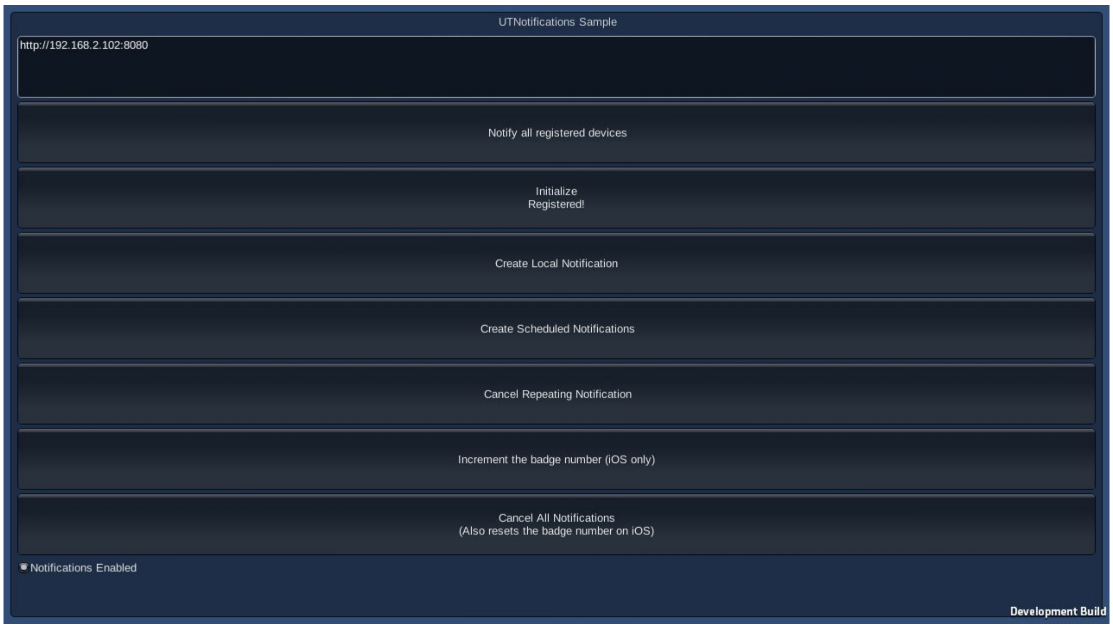
Windows Store
Push Notifications [?]: ✓
Certificate [?]: 00E3DE9D-D280-4DAF-
Identity Name [?]:
Notify only when app is closed or hidden ✓

Advanced
Push Payload Format (GCM, ADM, WNS)

Title	data/title
Text	data/text
User data parent (opt)	data/
Notification profile (opt)	data/notification_profil
Id (opt)	data/id
Badge (opt)	data/badge_number

Local notifications doesn't require any additional setting up. Configuring push notifications services is described below.

There is an example scene: `Assets/UTNotifications/Sample/UTNotificationsSample.unity` which you can use to get familiar with many of the UTNotifications features and how to use them. It also helps you checking whether the configuration is correct.


UTNotifications Sample
http://192.168.2.102:8080
Notify all registered devices
Initialize
Registered!
Create Local Notification
Create Scheduled Notifications
Cancel Repeating Notification
Increment the badge number (iOS only)
Cancel All Notifications
(Also resets the badge number on iOS)
Notifications Enabled
Development Build

You can also add script `UTNotifications.UTNotificationsSample` (`Assets/UTNotifications/Sample/UTNotificationsSample.cs`) to any GameObject in your own scene to access this test menu. Please note that notifications are not available in some device emulators and in the Unity editor, so please deploy to a device in order test or debug notifications related functionality.
You can find an API Reference in UTNotifications Unity Settings and here.

Creating Local Notifications

Local notifications are notifications shown by request of the client application itself. With UTNotifications you can create immediate, scheduled and repeated scheduled local notifications.

First thing you need to know, is that the entire UTNotifications API is stored in namespace `UTNotifications`. So you might like adding a using statement to easily access the namespace contents:

```
    using UTNotifications;
```

Now let's Initialize `UTNotifications.Manager`. It should be done prior to accessing any UTNotifications methods. `Awake()` or `Start()` method of some MonoBehaviour is a good place for it:

```
    public void Start()
    {
        UTNotifications.Manager.Instance.Initialize(false);
    }
```

UTNotifications.Manager.Instance (or just Manager.Instance if you added `using UTNotifications`) is the main access point to all methods of UTNotifications. It returns a singletone instance of the UTNotifications.Manager class. We specified false in the example above as the value of argument `willHandleReceivedNotifications` of `UTNotifications.Manager.Initialize` as we don't have any intention to handle shown notifications at the moment. For more info on handling notifications, please see the appropriate section of the manual.

Now you can start creating local notifications. F.e.:

```
UTNotifications.Manager.Instance.PostLocalNotification("Title", "Text", 1);
```

It creates an immediate local notification with title = “Title”, text = “Text” and id = 1. Notification ids are used to identify each notification. F.e. a new notification with the same id as an old one replaces that old notification instead of creating a second separate notification. id is also used to hide or cancel a specific notification (see the API Reference for the details).
Note that with the default settings you will not be able to see or hear any immediate notifications on any of the supported platforms, because notifications are not shown while the application is running by default. You can modify this behaviour in UTNotifications Settings: **Common Android Settings** -> **Show Notifications** & **Windows Store Settings** -> **Notify only when app is closed or hidden**.
Unfortunately, iOS doesn’t allow to control it: you can never see any notifications while the app is running on iOS.

Let’s now schedule a local notification:

```
UTNotifications.Manager.Instance.ScheduleNotification(15, "Title", "Text", 2);
```

A local notification with title = “Title”, text = “Text” and id = 2 wll be triggered in 15 seconds after that code is executed. You can also specify a System.DateTime value as the first argument as a date and time to trigger the notification.

Similarly you can create a repeated scheduled notification:

```
UTNotifications.Manager.Instance.ScheduleNotificationRepeating(5, 25, "Title",
"Text", 3);
```

This notification with title = “Title”, text = “Text” and id = 3 will be shown first time in 5 seconds after that code is executed and then will be repeated every 25 seconds. There is also a System.DateTime version of this method.
Note that the repeating times are approximate and may differ, especially on iOS, where only fixed options like every minute, every day, every week and so on are available. So the provided interval value will be approximated by one of the available options.

On Android there is a way to show a notification containing an image:

```
Manager.Instance.ScheduleNotification(10, "Image Notification",
    "Image notification text", 4, new Dictionary<string, string>
{
    {
        "image_url",
        "http://thecatapi.com/api/images/get?format=src&type=png&size=med"
    }
});
```

For more details on image notifications see Image Notifications (Android). See also Open URL Notifications (Android) and Notification Buttons (Android) for more information on some more options.

You can also configure notifications icons, sounds and other notifications attributes. For more details see Using Notification Profiles (Sounds, Icons and Other Attributes).

Using Notification Profiles (Sounds, Icons and Other Attributes)

By default any notification will be posted with a default system notification sound and the application icon. UTNotifications allows definining custom sounds and icons for notifications (custom notification icons are not supported by iOS, no customization is currently supported on Windows Store). What sound and icon is used for a specific notification is defined by a **notification profile** - named set of the notification options. Notification profiles also define Android 8+ Notification Channels - named user-configurable groups of notifications.

For example, a game might have two kinds of notifications - when a player receives a gift and when some in-game research is complete. One can define two notification profiles: `“gift”` & `“research_complete”`. First one will use a gift box icon when shown and some specific sound, and second one will have a bulb icon and another sound.
You can create and edit the notification profiles in UTNotifications editor: *Edit -> Project Settings -> UTNotifications -> Notification Profiles (sounds, icons and more)*.
Each of functions `UTNotifications.Manager.Instance.PostLocalNotification`, `UTNotifications.Manager.Instance.ScheduleNotification` and `UTNotifications.Manager.Instance.ScheduleNotificationRepeating` has optional argument **string notificationProfile** which defines a name of a notification profile used for this notification.

For push notifications you can also specify a notification profile.

- **iOS (APNS)**.
  Notification profile name is specified as a sound in the APNS json payload:
  ```
  {
    "aps":
    {
      <...>
      "sound" : "Data/Raw/<NOTIFICATION PROFILE NAME>"
    }
  }
  ```
  Note that `<NOTIFICATION PROFILE NAME>` should not contain any file extension.

- **Android**.
  Notification profile name is stored in node `“data”` of the notification json.
  FCM:
  ```
  {
    "registration_ids":<...>,
    "data":
    {
      <...>,
      "notification_profile":"<NOTIFICATION PROFILE NAME>"
    }
  }
  ```

  ADM:
  ```
  {
    "data":
    {
  ```

```
        <...>,
        "notification_profile":"<NOTIFICATION PROFILE NAME>"
      }
    }
```

- **Windows Store (WNS):**
  Notification profile name is stored in the payload json root node:
  ```
  {
    <...>,
    "notification_profile":"<NOTIFICATION PROFILE NAME>"
  }
  ```

Push notifications sent from the UTNotificationsSample (`Notify all registered devices`) use notification profile `"demo_notification_profile"`. You can try configuring a profile with that name to see how the feature works.

There is a predefined profile `"default"`, which is used on Android when no notification profile is specified for a notification. It's **important** to configure at least its Small Icon (Android 5.0+): Android, starting with version 5.0, ignores any color information of small notification icons: the icons are considered to be completely white and only alpha channel of the icons is applied (so icons can be only white & transparent). So any non-transparent icons turn into just white squares when using as small notification icons.

Custom User Data & Handling Notifications

UTNotifications provides a way to handle a list of all notifications shown before or when an app was running, and also a notification which was clicked by a user. Besides, each notification (local and push) can contain some custom data which can be read when handling a clicked or received notification.

In order to do so, please subscribe to UTNotifications.Manager events `OnNotificationClicked` / `OnNotificationsReceived` **before** initializing UTNotifications. F.e.:

```
UTNotifications.Manager notificationsManager = UTNotifications.Manager.Instance;

notificationsManager.OnNotificationClicked += (notification) =>
{
    Debug.Log(notification.text + " clicked");
};

notificationsManager.OnNotificationsReceived += (receivedNotifications) =>
{
    foreach (var notification in receivedNotifications)
    {
        Debug.Log(notification.text + " received/triggered");
    }
};

notificationsManager.Initialize(true);
```

Here we specified true as the value of argument `willHandleReceivedNotifications` of `UTNotifications.Manager.Initialize`, as we'd like to handle received notifications with `OnNotificationsReceived`. Please never set it to true if you don't intend to handle received notifications as it can be heavy for the app performance. Handling clicked notifications doesn't require turning on `willHandleReceivedNotifications`.
Note that iOS doesn't provide the list of all notifications shown when the app wasn't running in foreground. Received notifications list will contain only the notification which was clicked and all the notifications shown while the app is running in foreground. On the rest platforms you'll receive a list of all the shown notifications, even ones shown while the app was closed.
You can specify a Dictionary<string, string> conaining any custom data which can then be accessed when handling clicked or received notifications as ReceivedNotification.userData. Each of the methods for creating local notifications can accept optional value `userData`. Push notifications payload is used to get the value of `userData` when handling them.

Local notifications example:
```
Dictionary<string, string> userData = new Dictionary<string, string>();
userData.Add("event_type", "DAILY_GIFT_RECEIVED");

Manager.Instance.ScheduleNotificationRepeating(DateTime.Now.AddDays(1),
  TimeUtils.DaysToSeconds(1), "A gift for you!",
  "Start the game to receive your gift", 5, userData);
```

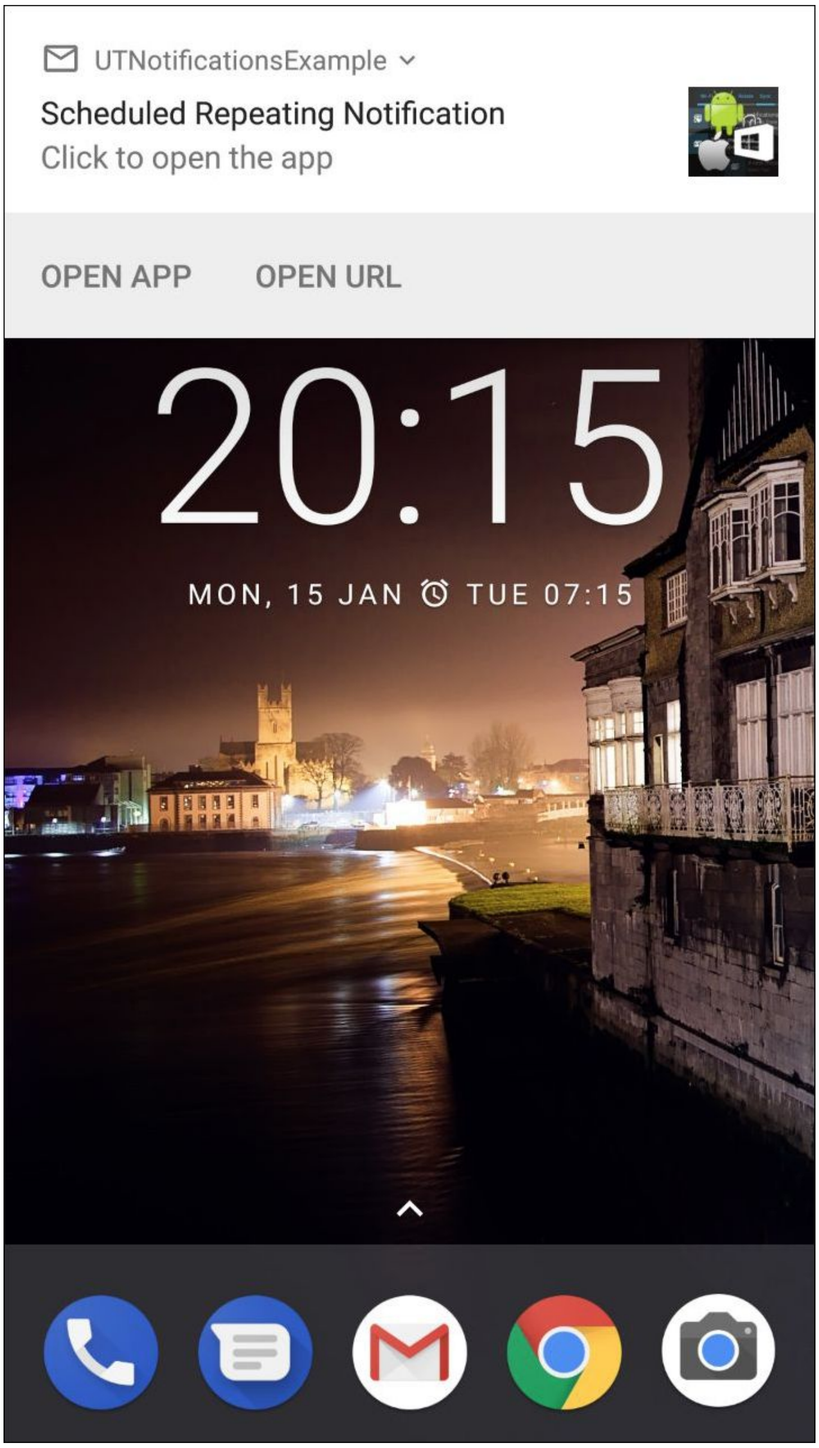
Push notifications example (ADM payload format):
```
{
  "data":
  {
    <...>,
    "event_type":"DAILY_GIFT_RECEIVED"
  }
}
```

Now, let's handle the user data:
```
// Should be subscribed before initializing UTNotifications.Manager
UTNotifications.Manager.Instance.OnNotificationClicked += (notification) =>
{
    if (notification.userData != null &&
        notification.userData.ContainsKey("event_type"))
    {
        string eventType = notification.userData["event_type"];
        switch (eventType)
        {
            case "DAILY_GIFT_RECEIVED":
                ShowDailyGiftDialog();
                break;

            default:
                Debug.LogWarning("Unexpected event_type: " + eventType);
                break;
        }
        }
    };
```

Notification Buttons (Android)

Any Android notification can contain an arbitrary number of custom buttons: local, scheduled or push. Each of the buttons has a title and optionally custom user data as Dictionary<string, string>.



Each of functions `UTNotifications.Manager.Instance.PostLocalNotification`, `UTNotifications.Manager.Instance.ScheduleNotification` and `UTNotifications.Manager.Instance.ScheduleNotificationRepeating` has optional argument ICollection<Button> buttons to specify the notification buttons, f.e.:

```
using UTNotifications;
using System.Collections.Generic;

List<Button> buttons = new List<Button>();
// (Android only) Just a simple button with some custom user data assigned
buttons.Add(new Button("Open App", new Dictionary<String, String> {{"button",
"first"}}));
// (Android only) "open_url" in userData opens an URL on a notification click
instead of the application. Can be used for the whole notification or a specific
button, like here.
buttons.Add(new Button("Open URL", new Dictionary<String, String>{{"open_url",
"https://assetstore.unity.com/packages/tools/utnotifications-professional-local-pu
sh-notification-plugin-37767"}, {"button","second"}}));
// Repeating scheduled notification
Manager.Instance.ScheduleNotificationRepeating(DateTime.Now.AddSeconds(10), 25,
"Scheduled Repeating Notification", "Click to open the app",
RepeatingNotificationId, userData, "demo_notification_profile", 1, buttons);
```

Push notifications (FCM & ADM) can contain custom buttons too:

```
"data":
{
    <...>,
    "buttons":
    "[
        {
            \"title\":\"<Button title>\",
            \"<Button user data key 1>\":\"<Button user data value 1>\", ...
        },
        <...>
    ]"
}
```

Please note, that JSON value of node “**buttons**” is actually a JSON array converted to **string**.

Buttons are not supported on the rest platforms at the moment and will be ignored on them.

Image Notifications (Android)

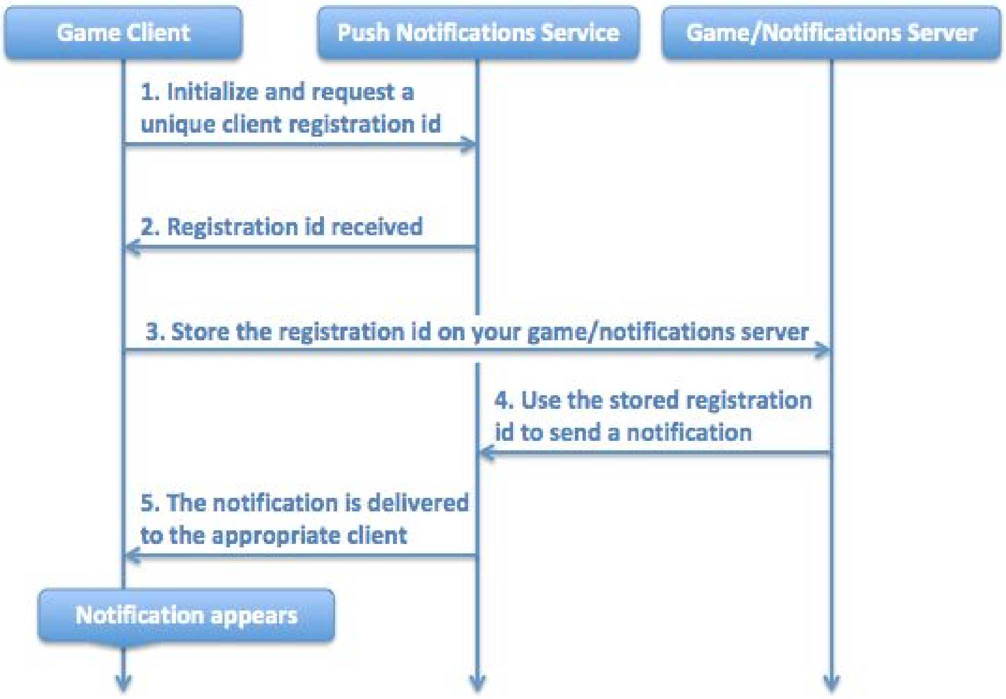
With UTNotifications you can create image notifications, i.e. notifications containing large images. It’s supported with both local and push notifications. In order to create an image notification add a user data argument `“image_url”` with a string value, containing an URL of a picture to use. `“image_url”` value may be a normal http:// or https:// URL, or an Android file system URL: `file:///<full path to a picture file>`.

Open URL Notifications (Android)

You can also make clicking on a notification open a specified URL in a browser instead of activating your application. It’s supported by both local and push notifications. To achieve that add a user data argument `“open_url”` which string value should contain an URL to open on a click.
Note, that on the rest platforms it still will activate your app.

Push Notifications Overview

Push notifications, also known as server notifications or remote notifications, are the notifications to a device without a specific request from the client. Unlike local notifications, which don't include any server part, push notifications always originate from a server.
Different devices rely on different methods to deliver push notifications. Apple, for example, uses the Apple Push Notification Service. Android doesn't have a common system, but different Android devices provide different push notifications services. **Google Play** featured ones (i.e. most of Android devices) use Firebase Cloud Messaging (FCM, ex Google Cloud Messaging - GCM). Amazon Android devices (entire **Kindle Fire** series) don't support FCM and have their own Amazon Device Messaging (ADM) API. Windows 8.1+ and Windows Phones use Windows Push Notification Services (WNS).
UTNotifications rely on OS specific push notifications systems internally, but externally provides the common for all the supported services client side API.
No matter what OS and service is used, the general scheme is the same:


Game Client
Push Notifications Service
Game/Notifications Server
1. Initialize and request a unique client registration id
2. Registration id received
3. Store the registration id on your game/notifications server
4. Use the stored registration id to send a notification
5. The notification is delivered to the appropriate client
Notification appears

1. **Initialize and request a unique registration id**. The client application using a push notifications service ("PNS": one of APNS, FCM, ADM and WNS) API requests a unique identifier for that specific PNS of that specific application on that specific device. Please note that in general it should be done on every start of the app because this identifier can get out of date and the application would receive a new one. With UTNotifications it's done by calling `UTNotifications.Manager.Instance.Initialize(...)` function.

2. **Registration id received**. The application (game client) receives the id from PNS API asynchronously or synchronously. In order to receive it you will subscribe to `UTNotifications.Manager.Instance.OnSendRegistrationId` event (please subscribe before calling the `Initialize` function because in some cases receiving the registration id may be done synchronously).

3. **Store the registration id on your game/notifications server**. You send the received id to your own server which will later send push notifications. You do it in the delegate subscribed to the `OnSendRegistrationId` event.

4. **Use the stored registration id to send a notification**. Your server requests the server side of PNS API to send (i.e. “push”) custom notification to one or more clients using their registration ids which were previously stored. Please see `DemoServer.PushNotificator` class source code (`Assets/UTNotifications/Editor/DemoServer/src/DemoServer/PushNotificator.java`) for an example.

5. **The notification is delivered to the appropriate client**. PNS delivers the notification to the client with specified registration id. You don’t have to do anything on this stage with UTNotifications (cause it takes care of everything with both Android PNSes and there is nothing to be done on iOS). A click on the notification will open your application: it’s being started if has’t been and goes foreground if it was in a background. If you would like to handle incoming notifications please see API Reference for `UTNotifications.Manager.OnNotificationsReceived` event and `UTNotifications.Manager.Initialize(...)` function.

Please note that every push notification service requires some configuring. This is described in the sections below.

What You Need for Push Notifications

General

- A server that is connected to the internet. Push notifications are always sent by a server. For development you can use your computer as the server but for production use, you need at least something like a VPS (Virtual Private Server).
  A cheap shared hosting account is not good enough in most cases. You need to be able to run a background process on the server and be able to make outgoing TLS connections on certain ports.

iOS: Apple Push Notification Service (APNS)

- An iPhone or iPad. Notifications do not work in the simulator, so you will need to test on the device.
- An iOS Developer Program membership. You need to make a new App ID and provisioning profile for each app that uses push, as well as an SSL certificate for the server. You do this at the iOS Provisioning Portal (this is described below).
- An OS X computer.

Android: Firebase Cloud Messaging (FCM)

- Any Google Play featured device with Android 4.4+.
- Please note that you can’t use Firebase Console for sending push notifications to FCM-enabled devices due to its limitations. Fore more details see Push Notifications Payload Format/FCM.

Android: Amazon Device Messaging (ADM)

- Any Amazon Kindle Fire device (tablet or phone) except the 1st generation of Kindle Fire tablets which don’t support push notifications.

Windows Store: Windows Push Notification Services (WNS)

- Any Windows Phone 8.1 or Windows 8.1/10 device.

Push Notifications Payload Format

APNS requires any push notifications sent by your server to have a specific format. It is described in this document.
Unlike it, FCM, ADM & WNS don't have one common format of the message payload. Each of them accepts a JSON data payload, which then is interpreted by the client application. The client application itself is responsible for creating notifications based on the payload received from the appropriate service. Fortunately, UTNotifications does this nasty job for you. This is why it requires the JSON payload to be in a specific format, which though you can configure in the asset options in the Unity editor. The default format looks like:

FCM:

```
{
    "registration_ids":["<id1>", ...], <or "to":"id1",>
    "data":
    {
        "title":"<Title>",
        "text":"<Text>",
        "id":<int id>,
        "badge_number":<int badge>,
        "buttons":
        "[
            {
                \"title\":\"<Button title>\",
                \"<Button user data key 1>\":\"<Button user data value 1>\", ...
            }, ...
        ]",
        "<User data key 1>":"<User data value 1>", ...
    }
}
```

Please note that UTNotifications supports "data"-only messages, and Firebase Console can send only "notification" and "notification" + "data" messages: see https://firebase.google.com/docs/cloud-messaging/concept-options#notifications_and_data_messages. It's important as messages containing "notification" node in their payload are handled by Android itself when the app is not running. It restricts the app drastically: notification profiles, image notifications and handling of received notifications gets impossible; it also creates many other issues. This is why you'll have to send FCM messages either from your own server or using a 3rd party service supporting "data"-only messages (there is a number of compatible services, including free of charge OneSignal).

ADM:

```
{
    "data":
    {
        "title":"<Title>",
        "text":"<Text>",
        "id":<int id>,
        "badge_number":<int badge>,
        "buttons":
        "[
            {
                \"title\":\"<Button title>\",
                \"<Button user data key 1>\":\"<Button user data value 1>\", ...
            }, ...
        ]",
        "<User data key 1>":"<User data value 1>", ...
    }
}
```

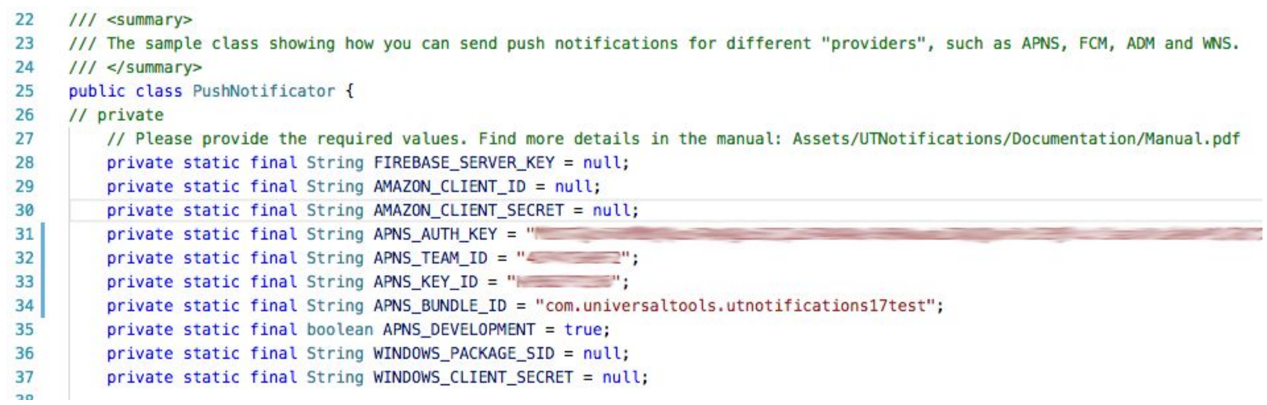
WNS:

```
{
    "title":"<Title>",
    "text":"<Text>",
    "id":<int id>,
    "badge_number":<int badge>,
    "<User data key 1>":"<User data value 1>", ...
}
```

If push server you're going to use sends push messages in a different format, you can configure it in the UTNotifications Unity settings: `Edit -> Project Settings -> UTNotifications -> Advanced -> Push Payload Format (FCM, ADM, WNS)`. "data/" prefix is always added to each of the field names (but it's ignored on WNS).

Configuring Apple Push Notification Service (APNS)

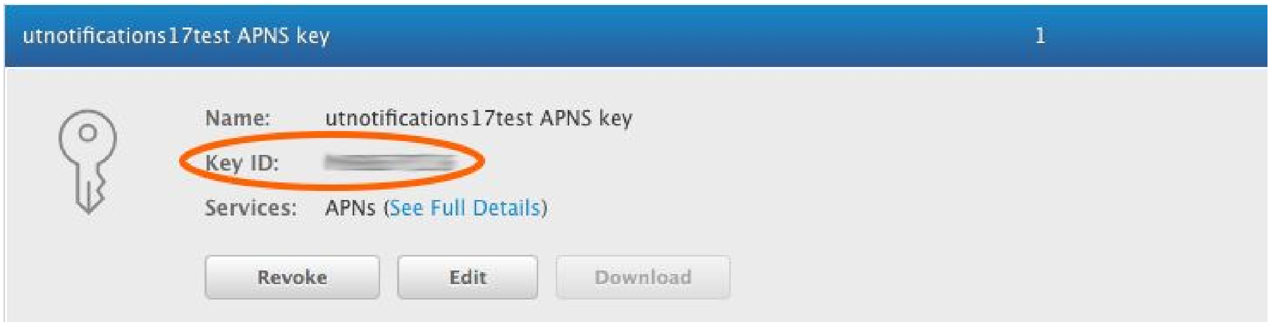
1. As explained in the official Apple documentation, generate and save a .p8 APNS enabled authentication key: http://help.apple.com/xcode/mac/current/#/dev54d690a66
2. Specify the credentials in *Assets/UTNotifications/Editor/DemoServer/src/main/java/com/universal_tools/demoserver/PushNotificator.java*:



```
/// <summary>
/// The sample class showing how you can send push notifications for different "providers", such as APNS, FCM, ADM and WNS.
/// </summary>
public class PushNotificator {
// private
    // Please provide the required values. Find more details in the manual: Assets/UTNotifications/Documentation/Manual.pdf
    private static final String FIREBASE_SERVER_KEY = null;
    private static final String AMAZON_CLIENT_ID = null;
    private static final String AMAZON_CLIENT_SECRET = null;
    private static final String APNS_AUTH_KEY = "[redacted]
    private static final String APNS_TEAM_ID = "[redacted]";
    private static final String APNS_KEY_ID = "[redacted]";
    private static final String APNS_BUNDLE_ID = "com.universaltools.utnotifications17test";
    private static final boolean APNS_DEVELOPMENT = true;
    private static final String WINDOWS_PACKAGE_SID = null;
    private static final String WINDOWS_CLIENT_SECRET = null;
```

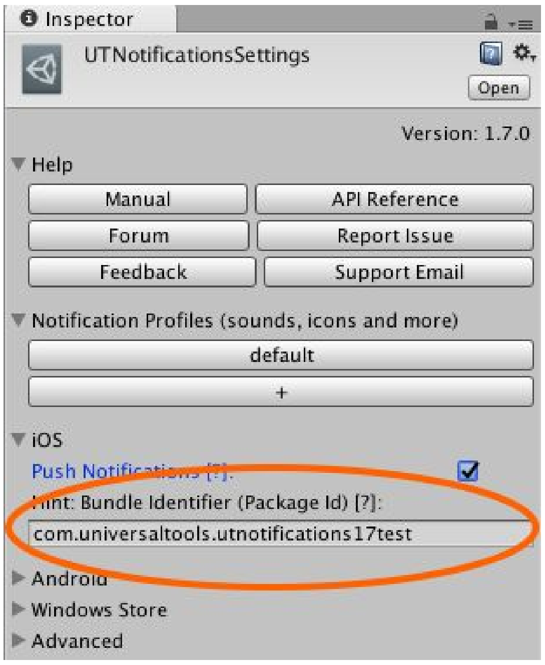
- **APNS_AUTH_KEY**: the contents of the .p8 authentication key, without `-----BEGIN PRIVATE KEY-----`, `-----END PRIVATE KEY-----` and any line breaks.
- **APNS_TEAM_ID**: can be found at https://developer.apple.com/account/#/membership/
- **APNS_KEY_ID**: is included in the .p8 key file name and also be found at

https://developer.apple.com/account/ios/authkey


utnotifications17test APNS key 1

Name: utnotifications17test APNS key
Key ID: [redacted]
Services: APNs (See Full Details)

- **APNS_BUNDLE_ID**: your application bundle id, can be found in UTNotifications Settings



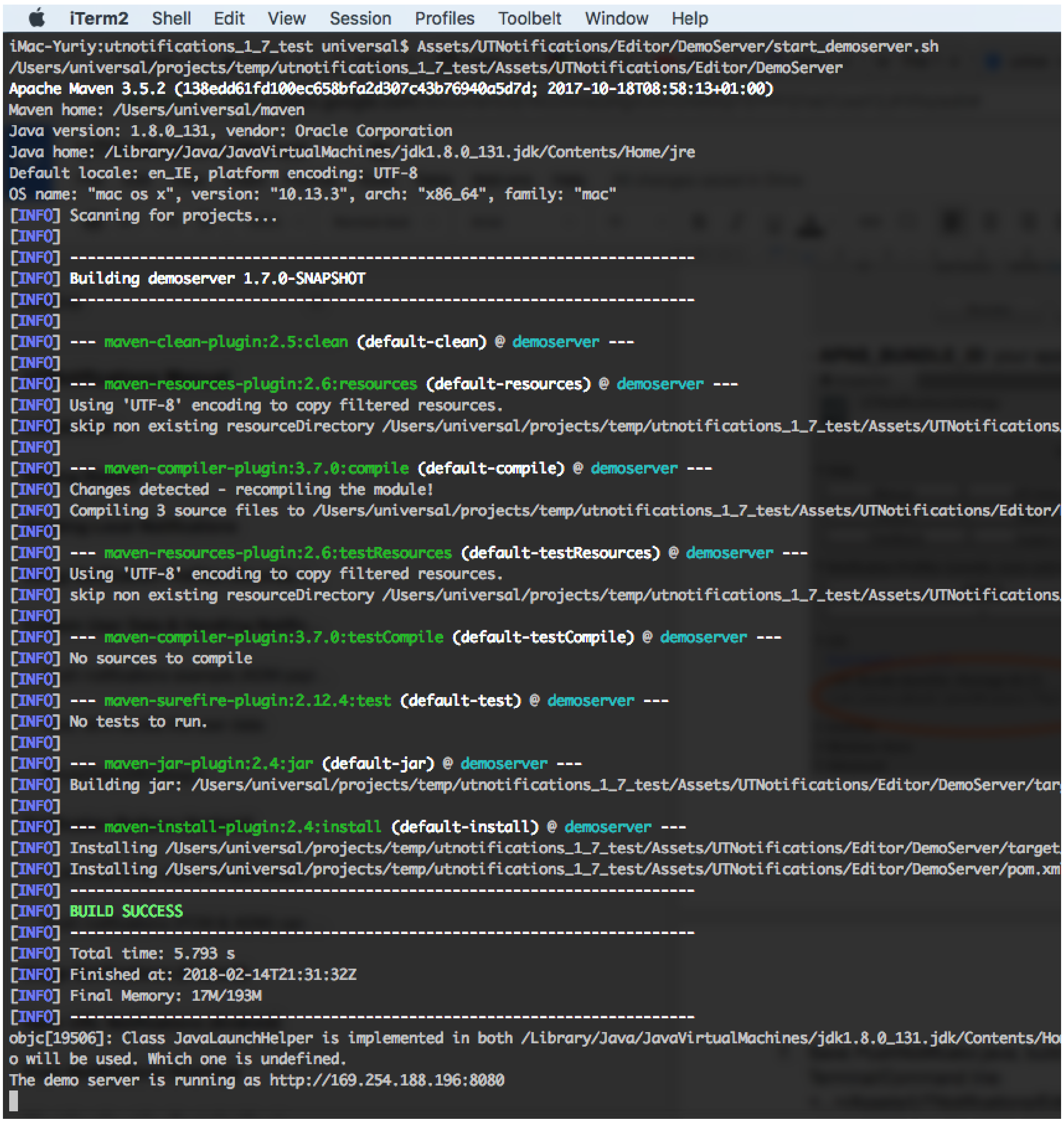
Version: 1.7.0

Notification Profiles (sounds, icons and more)

iOS
Push Notifications [?]: ✓
Hint: Bundle Identifier (Package Id) [?]:
com.universaltools.utnotifications17test

Android
Windows Store
Advanced

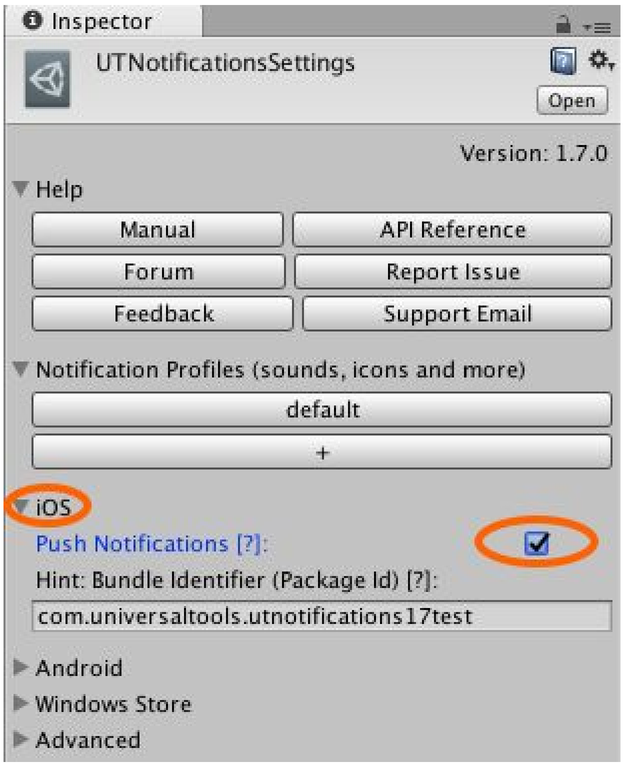
3. Save *PushNotificator.java*, build and start DemoServer, by executing the following script in Terminal/Command line:
<...>/Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh (macOS / Linux)
or
<...>\Assets\UTNotifications\Editor\DemoServer\start_demoserver.bat (Windows)
Note that you'll need JDK and Maven.



```
iMac-Yuriy:utnotifications_1_7_test universal$ Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh
/Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer
Apache Maven 3.5.2 (138edd61fd100ec658bfa2d307c43b76940a5d7d; 2017-10-18T08:58:13+01:00)
Maven home: /Users/universal/maven
Java version: 1.8.0_131, vendor: Oracle Corporation
Java home: /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Home/jre
Default locale: en_IE, platform encoding: UTF-8
OS name: "mac os x", version: "10.13.3", arch: "x86_64", family: "mac"
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demoserver 1.7.0-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ demoserver ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:compile (default-compile) @ demoserver ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 3 source files to /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:testCompile (default-testCompile) @ demoserver ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ demoserver ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ demoserver ---
[INFO] Building jar: /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/tar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ demoserver ---
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/target
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/pom.xm
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 5.793 s
[INFO] Finished at: 2018-02-14T21:31:32Z
[INFO] Final Memory: 17M/193M
[INFO] ------------------------------------------------------------------------
objc[19506]: Class JavaLaunchHelper is implemented in both /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Ho
o will be used. Which one is undefined.
The demo server is running as http://169.254.188.196:8080
```

4. The running DemoServer will print its hostname (ip address) and port. Please note, that the ip address it prints can be either a local network address (usually 192.168.*.*) or an external (like on the screenshot above). In later case, please find your internal IP address in the OS network settings.

5. In UTNotifications Settings (*Edit -> Project Settings -> UTNotifications*) enable iOS -> Push Notifications toggle:

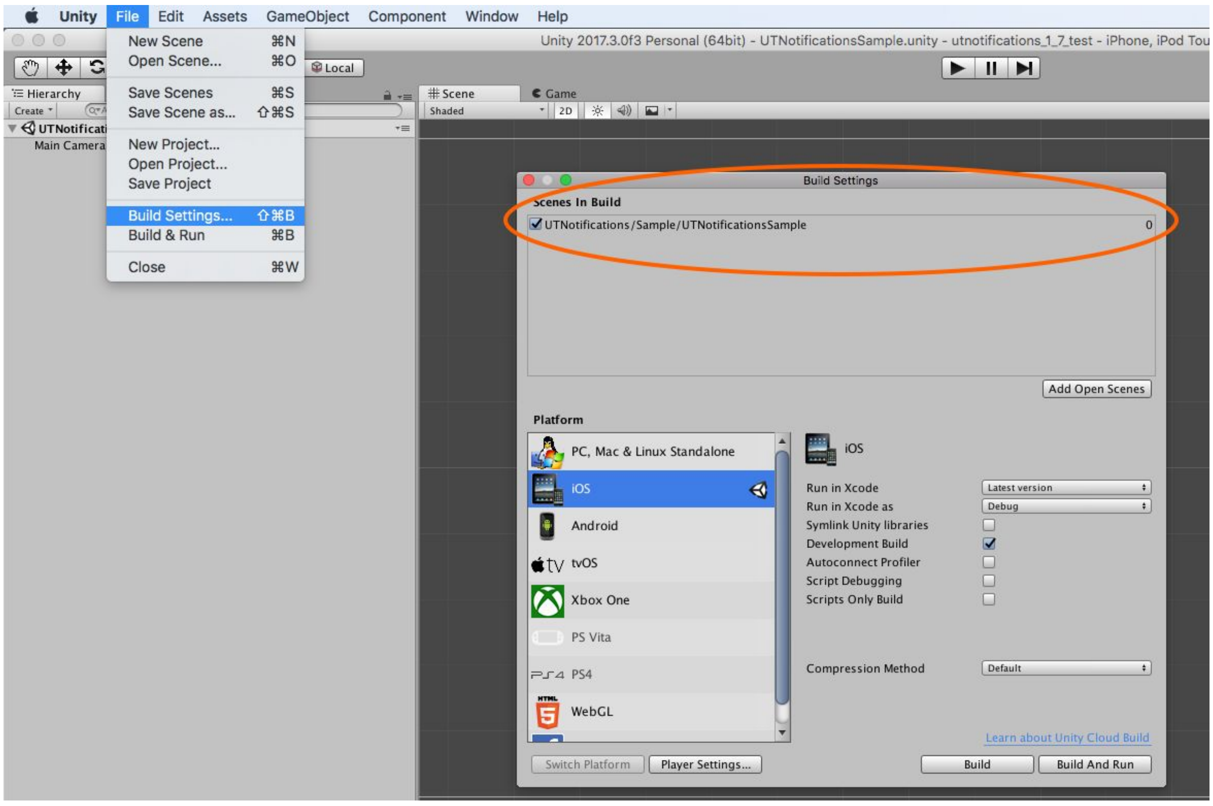


Push Notifications [?]: ✓

Hint: Bundle Identifier (Package Id) [?]:

com.universaltools.utnotifications17test

6. Temporarily make UTNotifications/Sample/UTNotificationsSample scene default for your Unity project:



Unity 2017.3.0f3 Personal (64bit) - UTNotificationsSample.unity - utnotifications_1_7_test - iPhone, iPod Tou

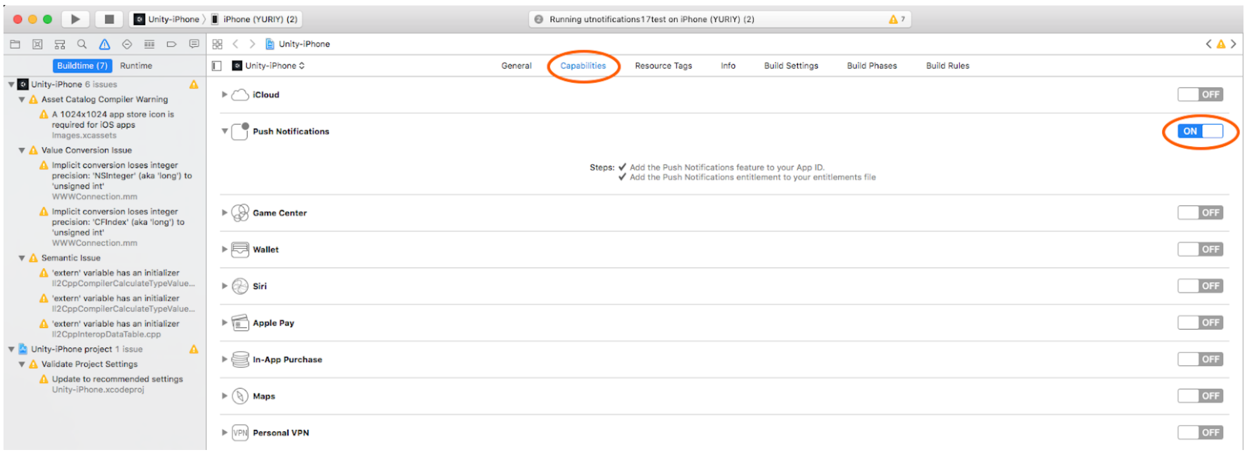
Scenes In Build

☑ UTNotifications/Sample/UTNotificationsSample 0

iOS

Run in Xcode	Latest version
Run in Xcode as	Debug
Symlink Unity libraries	☐
Development Build	☑
Autoconnect Profiler	☐
Script Debugging	☐
Scripts Only Build	☐
Compression Method	Default

7. Build and run an iOS build. Make sure Push Notifications got enabled in the project Capacities in Xcode (should be done by UTNotifications post build event automatically):



Unity-iPhone 〉 iPhone (YURIY) (2)

Running utnotifications17test on iPhone (YURIY) (2) ⚠ 7

Buildtime (7) Runtime

- Unity-iPhone 6 issues
  - Asset Catalog Compiler Warning
    - A 1024x1024 app store icon is required for iOS apps
      Images.xcassets
  - Value Conversion Issue
    - Implicit conversion loses integer precision: 'NSInteger' (aka 'long') to 'unsigned int'
      WWWConnection.mm
    - Implicit conversion loses integer precision: 'CFIndex' (aka 'long') to 'unsigned int'
      WWWConnection.mm
  - Semantic Issue
    - 'extern' variable has an initializer
      Il2CppCompilerCalculateTypeValue...
    - 'extern' variable has an initializer
      Il2CppCompilerCalculateTypeValue...
    - 'extern' variable has an initializer
      Il2CppInteropDataTable.cpp
- Unity-iPhone project 1 issue
  - Validate Project Settings
    - Update to recommended settings
      Unity-iPhone.xcodeproj

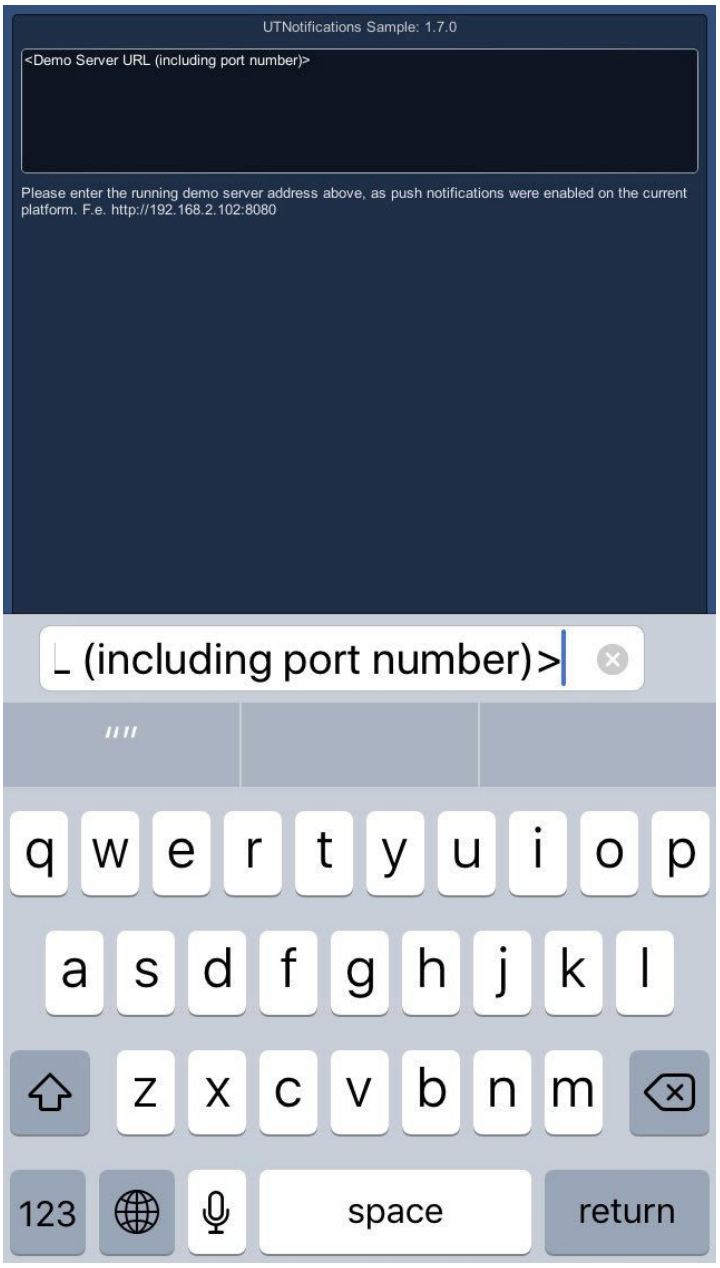
Unity-iPhone

General [✓ Capabilities] Resource Tags Info Build Settings Build Phases Build Rules

iCloud	OFF
Push Notifications	[✓ ON]
Game Center	OFF
Wallet	OFF
Siri	OFF
Apple Pay	OFF
In-App Purchase	OFF
Maps	OFF
Personal VPN	OFF

Steps: ✓ Add the Push Notifications feature to your App ID.
✓ Add the Push Notifications entitlement to your entitlements file

8. The sample scene should start requesting an URL of DemoServer in order to continue:



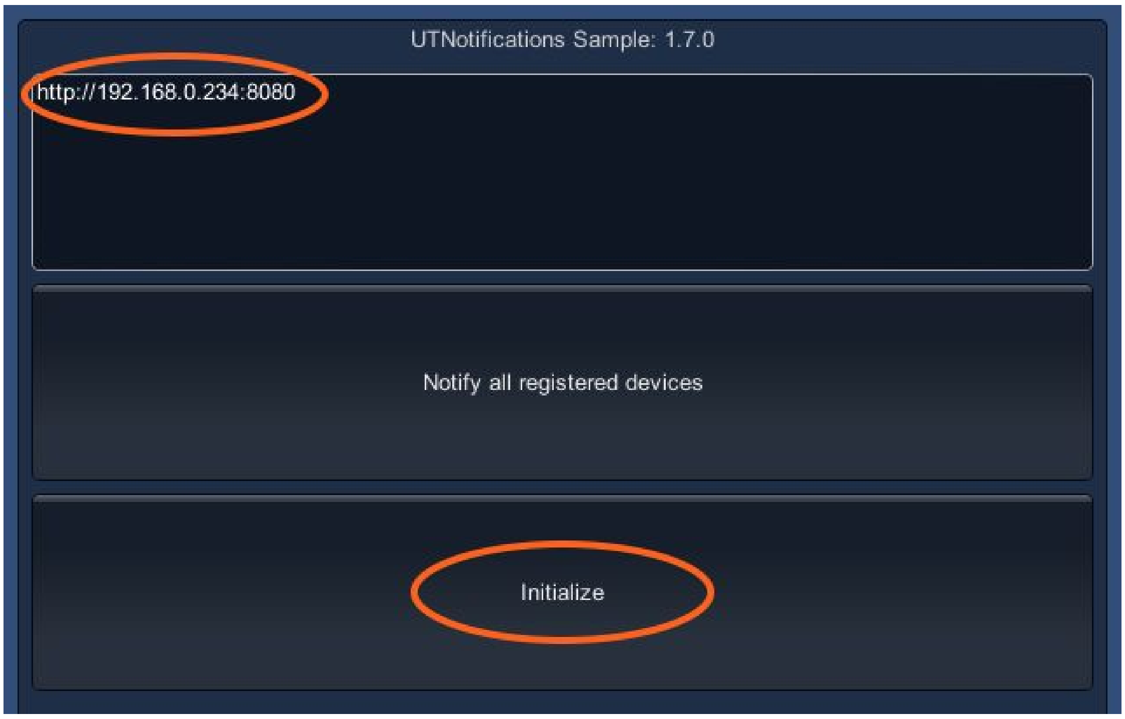
UTNotifications Sample: 1.7.0

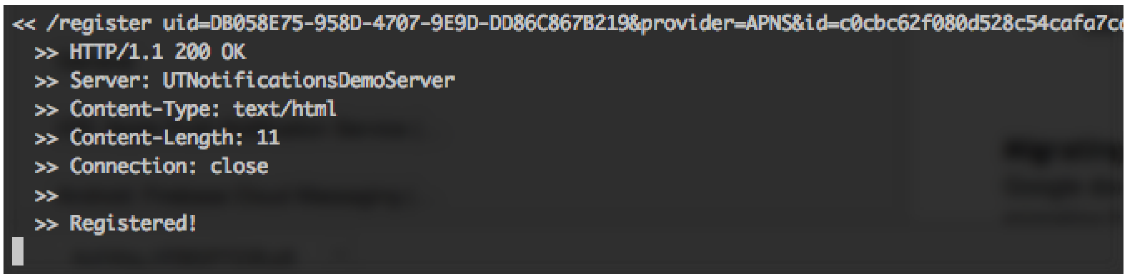
<Demo Server URL (including port number)>

Please enter the running demo server address above, as push notifications were enabled on the current platform. F.e. http://192.168.2.102:8080

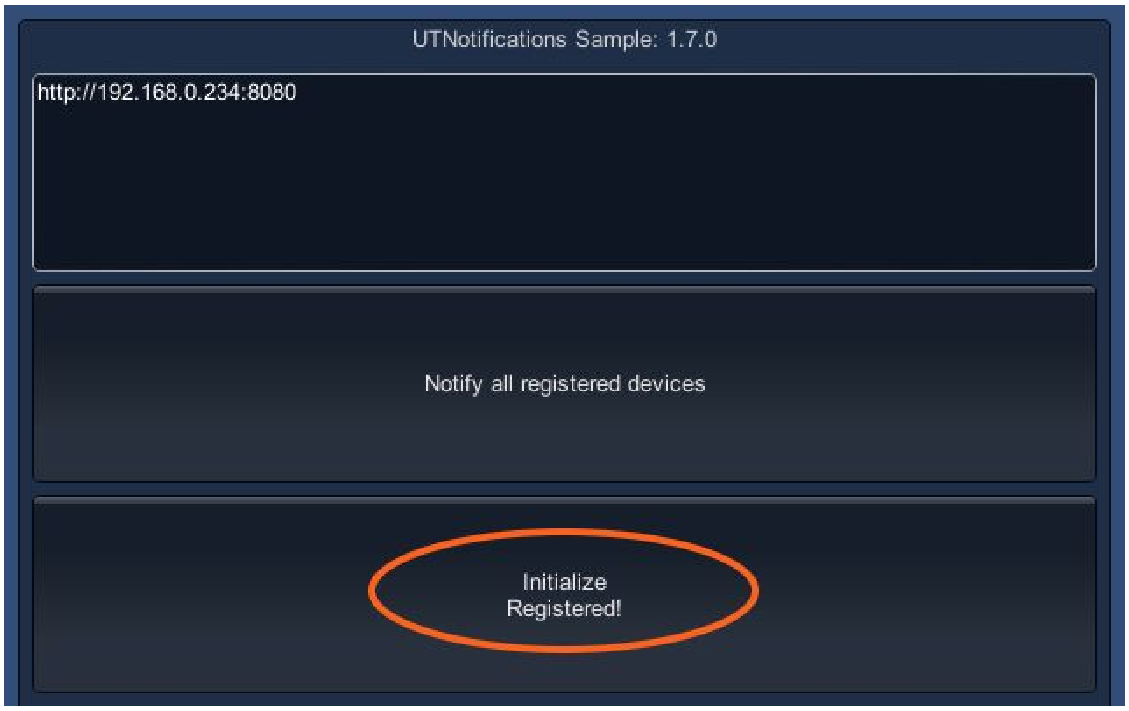
L (including port number)>

9. Make sure your test device and the computer running DemoServer belong to the same local network (f.e. connected to the same Wi-Fi router). Specify the full URL of the running DemoServer (as **http://<ip address>:8080**) and press **Initialize**:

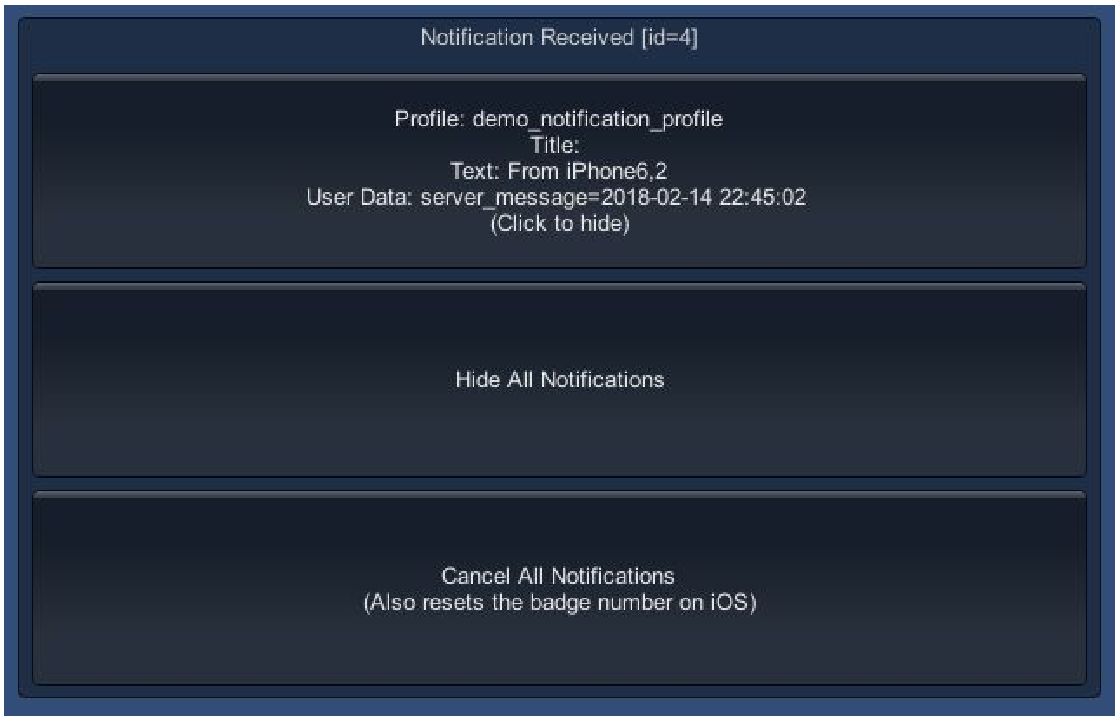

UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize



```
<< /register uid=DB058E75-958D-4707-9E9D-DD86C867B219&provider=APNS&id=c0cbc62f080d528c54cafa7c
  >> HTTP/1.1 200 OK
  >> Server: UTNotificationsDemoServer
  >> Content-Type: text/html
  >> Content-Length: 11
  >> Connection: close
  >>
  >> Registered!
```


UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize
Registered!

10. Press “Notify all registered devices” to send a push notification to all the DemoServer-registered devices. If everything was configured correctly, you should see how UTNotifications SampleScene handled the push message:


Notification Received [id=4]

Profile: demo_notification_profile
Title:
Text: From iPhone6,2
User Data: server_message=2018-02-14 22:45:02
(Click to hide)

Migrating from GCM to FCM

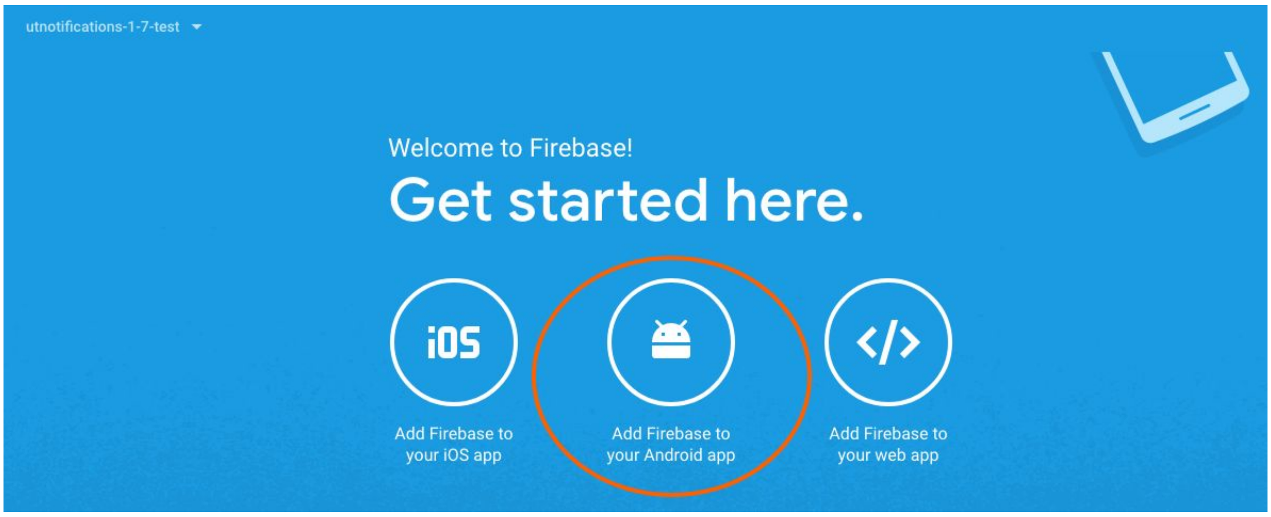
Google doesn’t allow enabling GCM in new apps anymore and will once stop to service existing ones, so migrating from GCM to FCM is what you’ll have to do anyway. But here are good news: Google updated their GCM servers so they can now send messages to both GCM and FCM using the same old GCM API and even the same URL https://android.googleapis.com/gcm/send. It means that you’ll not have to modify your server code, and also any 3rd party services supporting GCM automatically support FCM. You’ll probably have to distinguish server instances/3rd party services app accounts between GCM and FCM versions of your app, as FCM version will have different server keys. There is no reason to not migrate to FCM. Please refer to the section Configuring the Firebase Cloud Messaging (FCM) to find out how.

Configuring the Firebase Cloud Messaging (FCM)

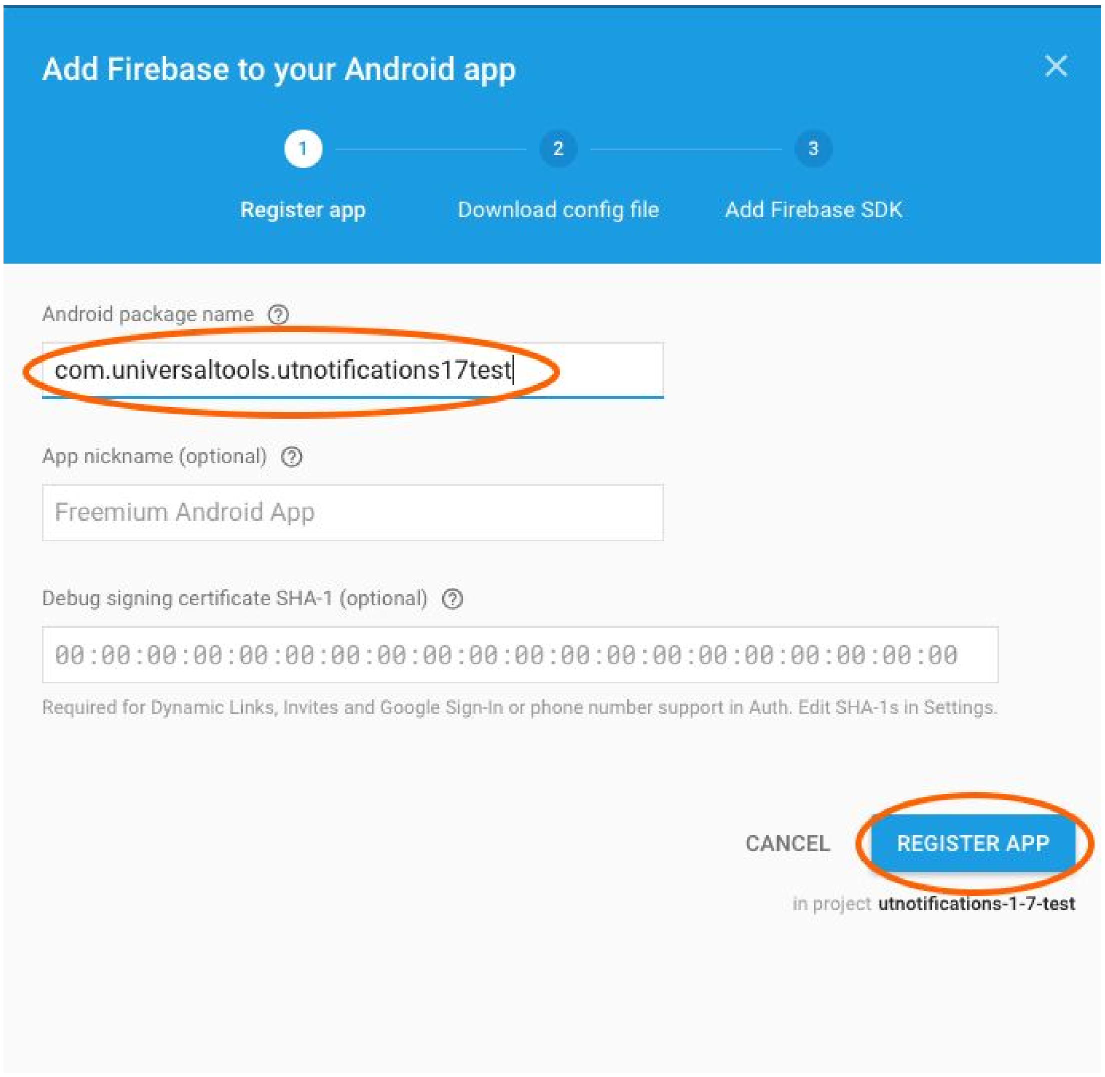
Based on FCM official documentation: https://firebase.google.com/docs/cloud-messaging/.

1. Open Firebase Developer Console.
2. Create a new Firebase project or import existing Google Project.

3. Press **Add Firebase to your Android app**.


utnotifications-1-7-test
Welcome to Firebase!
Get started here.
iOS
Add Firebase to your iOS app
Add Firebase to your Android app
Add Firebase to your web app

4. Enter your app's bundle id as **Android package name** and press **REGISTER APP** button (no need to specify any other details).


Add Firebase to your Android app

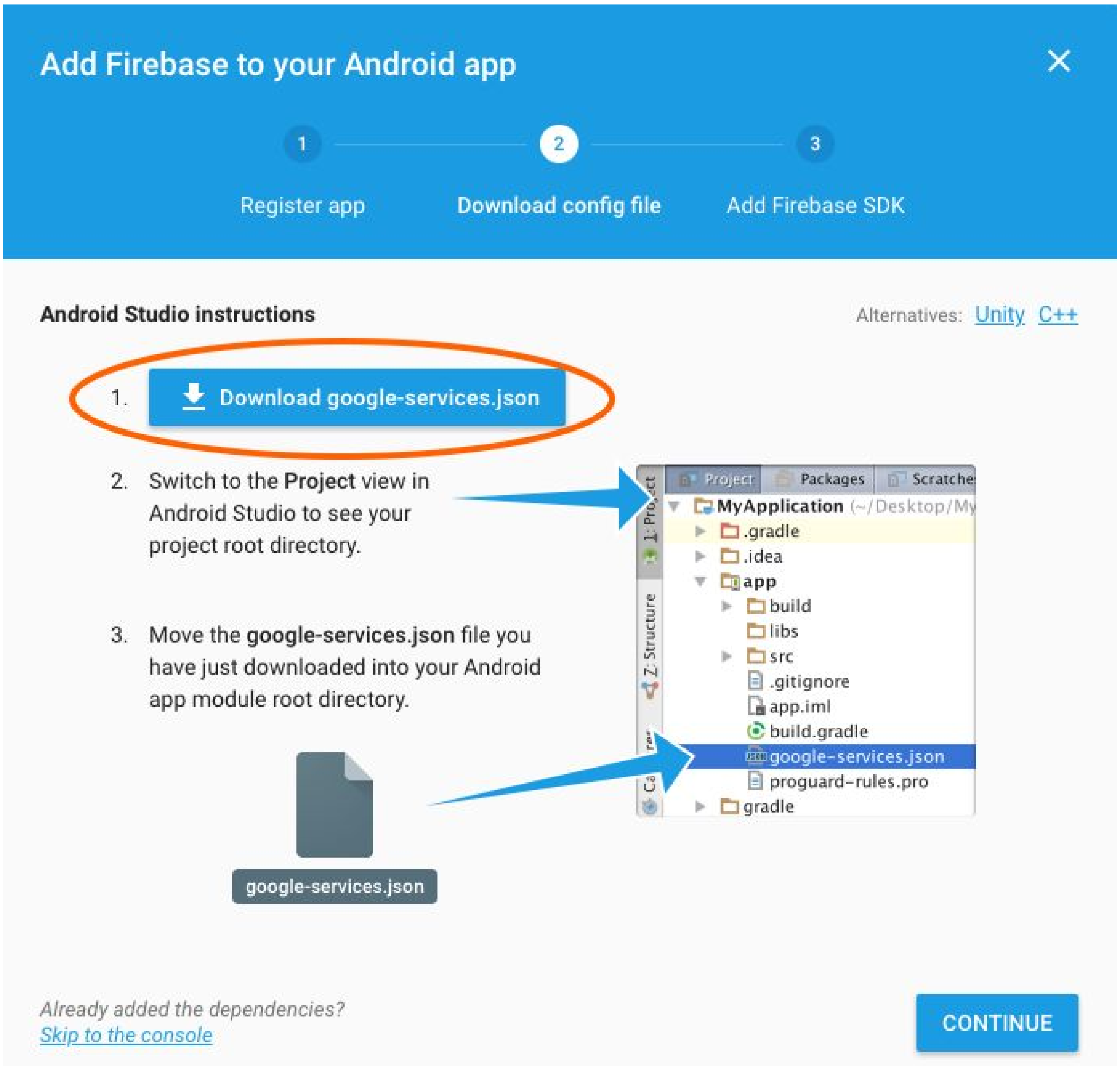
Android package name: com.universaltools.utnotifications17test

App nickname (optional): Freemium Android App

Debug signing certificate SHA-1 (optional): 00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00

Required for Dynamic Links, Invites and Google Sign-In or phone number support in Auth. Edit SHA-1s in Settings.

5. Download **google-services.json**. Store it somewhere. Close the configuration dialog (you don't have to press **Continue** button).



Add Firebase to your Android app

1 Register app — 2 Download config file — 3 Add Firebase SDK

Android Studio instructions

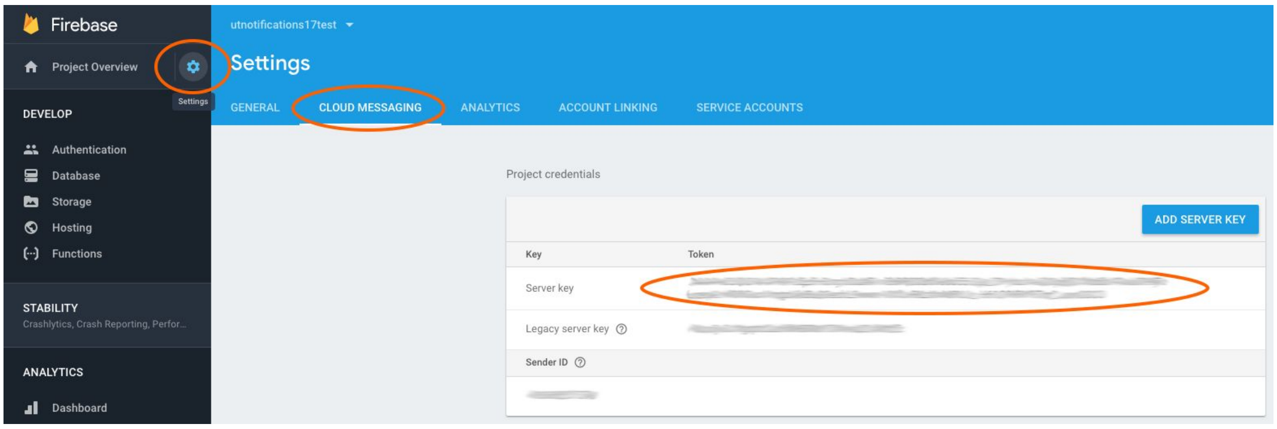
Alternatives: Unity C++

1. Download google-services.json
2. Switch to the **Project** view in Android Studio to see your project root directory.
3. Move the **google-services.json** file you have just downloaded into your Android app module root directory.

Already added the dependencies?
Skip to the console

CONTINUE

6. Open Firebase Console: https://console.firebase.google.com and choose a project you've just created/configured.
7. Open the project settings and switch to tab **CLOUD MESSAGING**.



Settings

Project credentials

Key	Token
Server key	[redacted]
Legacy server key	[redacted]

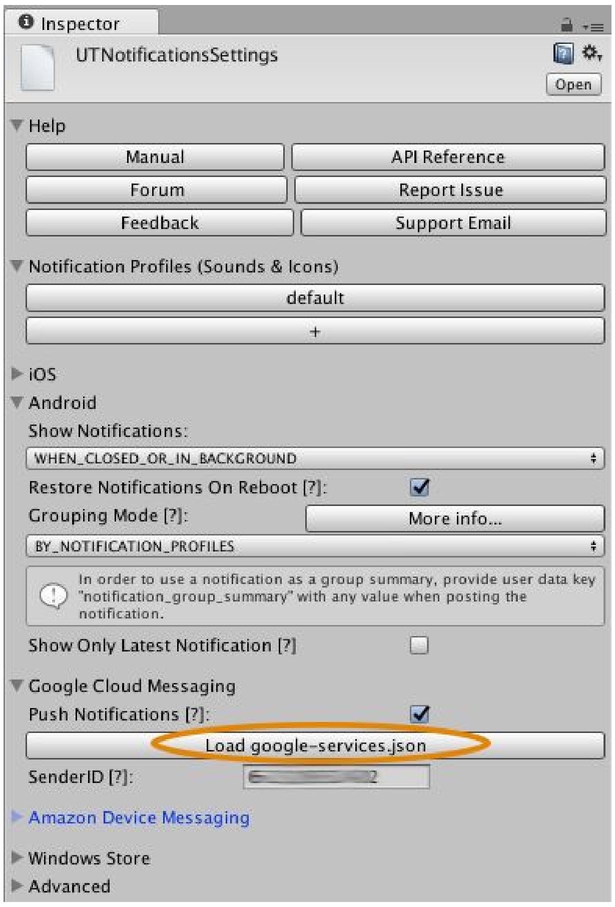
Sender ID

[redacted]

8. Copy and store somewhere the value of Server key.

Apply Credentials and Test

1. In Unity open the UTNotifications Settings in menu: `Edit -> Project Settings -> UTNotifications` (Unity restart may be required to see this menu item first time) and enable **Push Notifications** toggle in the **Firebase Cloud Messaging**.
2. In **Firebase Play Settings** press **Load google-services.json** button to load and apply the configuration file you obtained previously. You should see a numeric value of **SenderID** below the button.



Inspector

UTNotificationsSettings

Open

Help

Manual | API Reference
Forum | Report Issue
Feedback | Support Email

Notification Profiles (Sounds & Icons)

default

+

iOS

Android

Show Notifications:

WHEN_CLOSED_OR_IN_BACKGROUND

Restore Notifications On Reboot [?]: ✓

Grouping Mode [?]: More info...

BY_NOTIFICATION_PROFILES

In order to use a notification as a group summary, provide user data key "notification_group_summary" with any value when posting the notification.

Show Only Latest Notification [?]: ☐

Google Cloud Messaging

Push Notifications [?]: ✓

Load google-services.json

SenderID [?]: [redacted]

Amazon Device Messaging

Windows Store

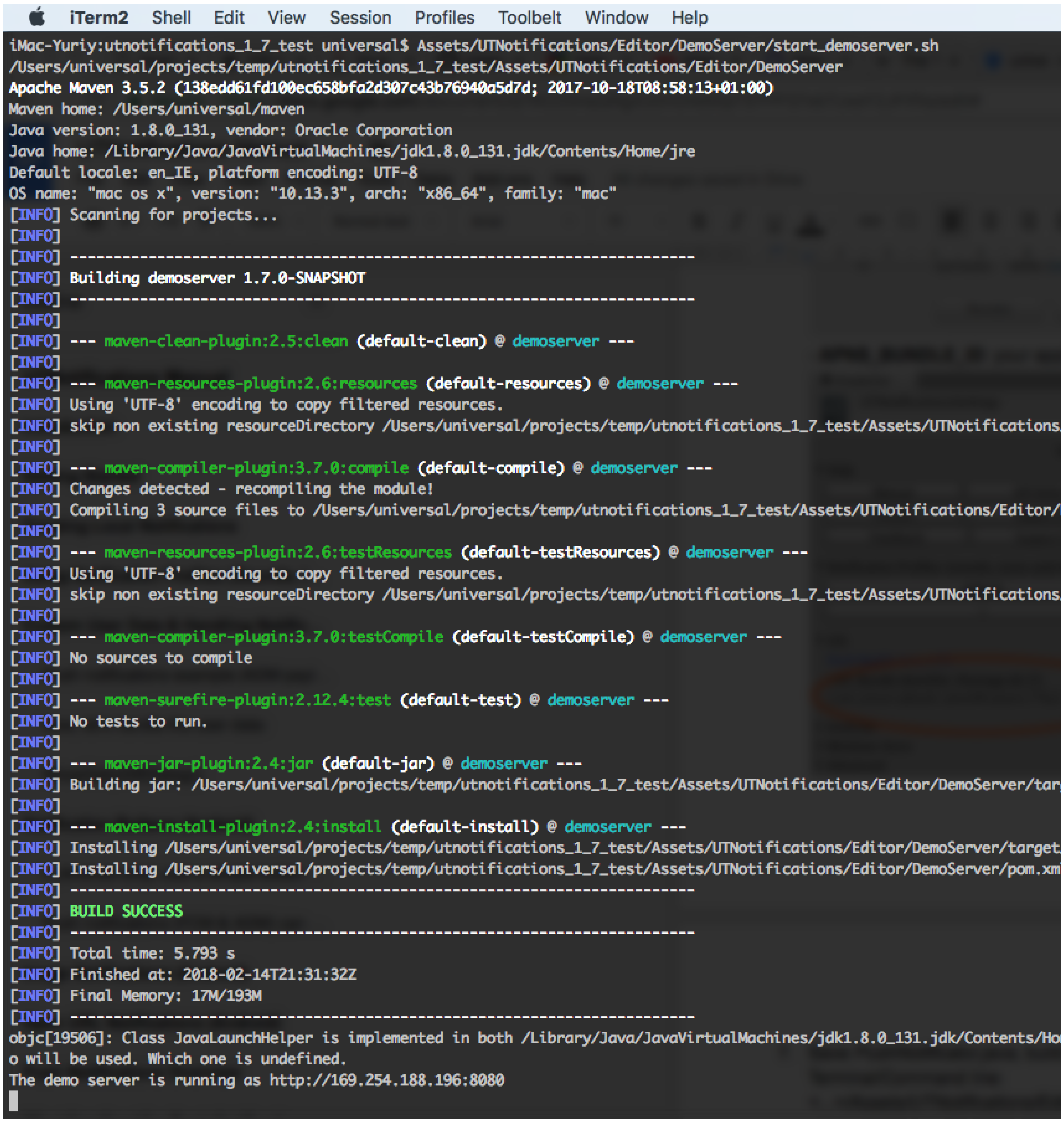
Advanced

3. Specify the credentials in *Assets/UTNotifications/Editor/DemoServer/src/main/java/com/universal_tools/demoserver/PushNotificator.java*:

```
/// <summary>
/// The sample class showing how you can send push notifications for different "providers", such as APNS, FCM, ADM and WNS.
/// </summary>
public class PushNotificator {
// private
    // Please provide the required values. Find more details in the manual: Assets/UTNotifications/Documentation/Manual.pdf
    private static final String FIREBASE_SERVER_KEY = "[redacted]
    private static final String AMAZON_CLIENT_ID = null;
    private static final String AMAZON_CLIENT_SECRET = null;
    private static final String APNS_AUTH_KEY = null;
    private static final String APNS_TEAM_ID = null;
    private static final String APNS_KEY_ID = null;
    private static final String APNS_BUNDLE_ID = null;
    private static final boolean APNS_DEVELOPMENT = true;
    private static final String WINDOWS_PACKAGE_SID = null;
    private static final String WINDOWS_CLIENT_SECRET = null;
```

- **FIREBASE_SERVER_KEY**: The value of server key you've copied from Firebase Console previously.

4. Save *PushNotificator.java*, build and start DemoServer, by executing the following script in Terminal/Command line:
   <...>/Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh (macOS / Linux)
   or
   <...>\Assets\UTNotifications\Editor\DemoServer\start_demoserver.bat (Windows)
   Note that you'll need JDK and Maven.

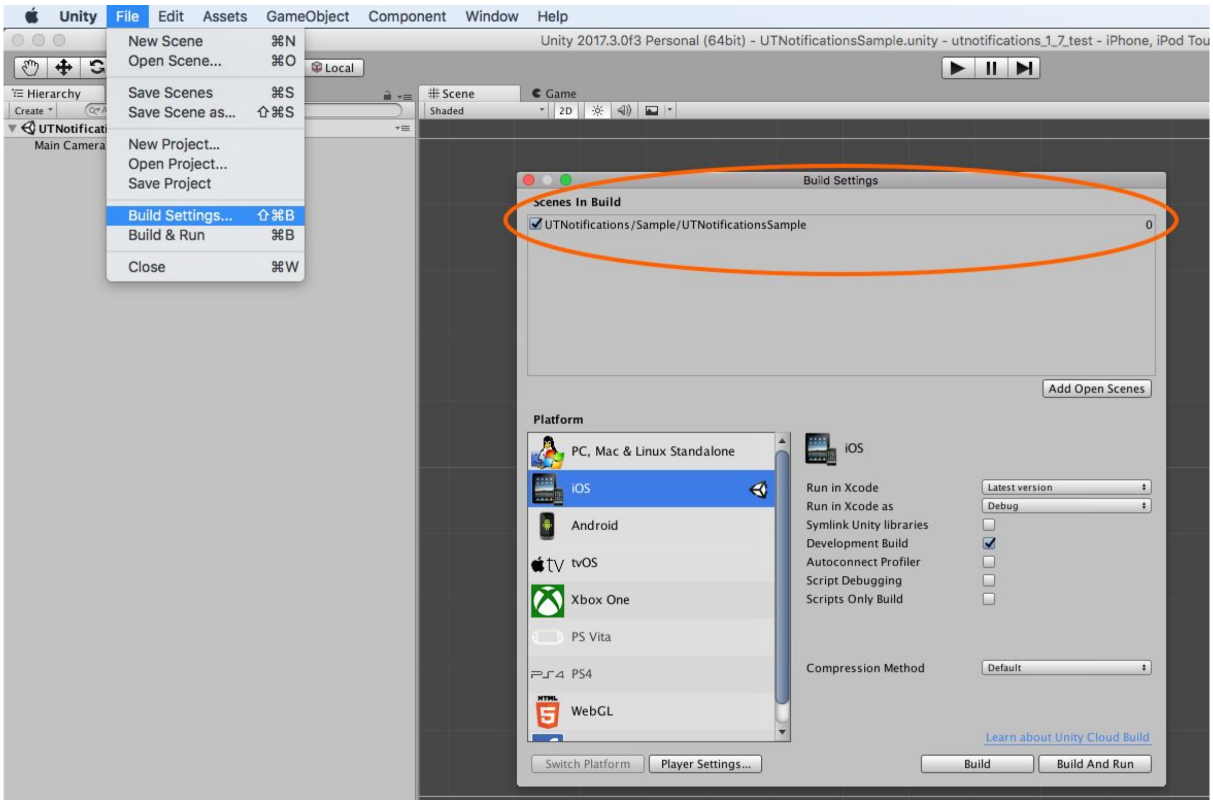


```
iMac-Yuriy:utnotifications_1_7_test universal$ Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh
/Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer
Apache Maven 3.5.2 (138edd61fd100ec658bfa2d307c43b76940a5d7d; 2017-10-18T08:58:13+01:00)
Maven home: /Users/universal/maven
Java version: 1.8.0_131, vendor: Oracle Corporation
Java home: /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Home/jre
Default locale: en_IE, platform encoding: UTF-8
OS name: "mac os x", version: "10.13.3", arch: "x86_64", family: "mac"
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demoserver 1.7.0-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ demoserver ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:compile (default-compile) @ demoserver ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 3 source files to /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:testCompile (default-testCompile) @ demoserver ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ demoserver ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ demoserver ---
[INFO] Building jar: /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/tar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ demoserver ---
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/target
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/pom.xm
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 5.793 s
[INFO] Finished at: 2018-02-14T21:31:32Z
[INFO] Final Memory: 17M/193M
[INFO] ------------------------------------------------------------------------
objc[19506]: Class JavaLaunchHelper is implemented in both /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Ho
o will be used. Which one is undefined.
The demo server is running as http://169.254.188.196:8080
```

5. The running DemoServer will print its hostname (ip address) and port. Please note, that the ip address it prints can be either a local network address (usually 192.168.*.*) or an external (like on

the screenshot above). In later case, please find your internal IP address in the OS network settings.

6. Temporarily make UTNotifications/Sample/UTNotificationsSample scene default for your Unity project:



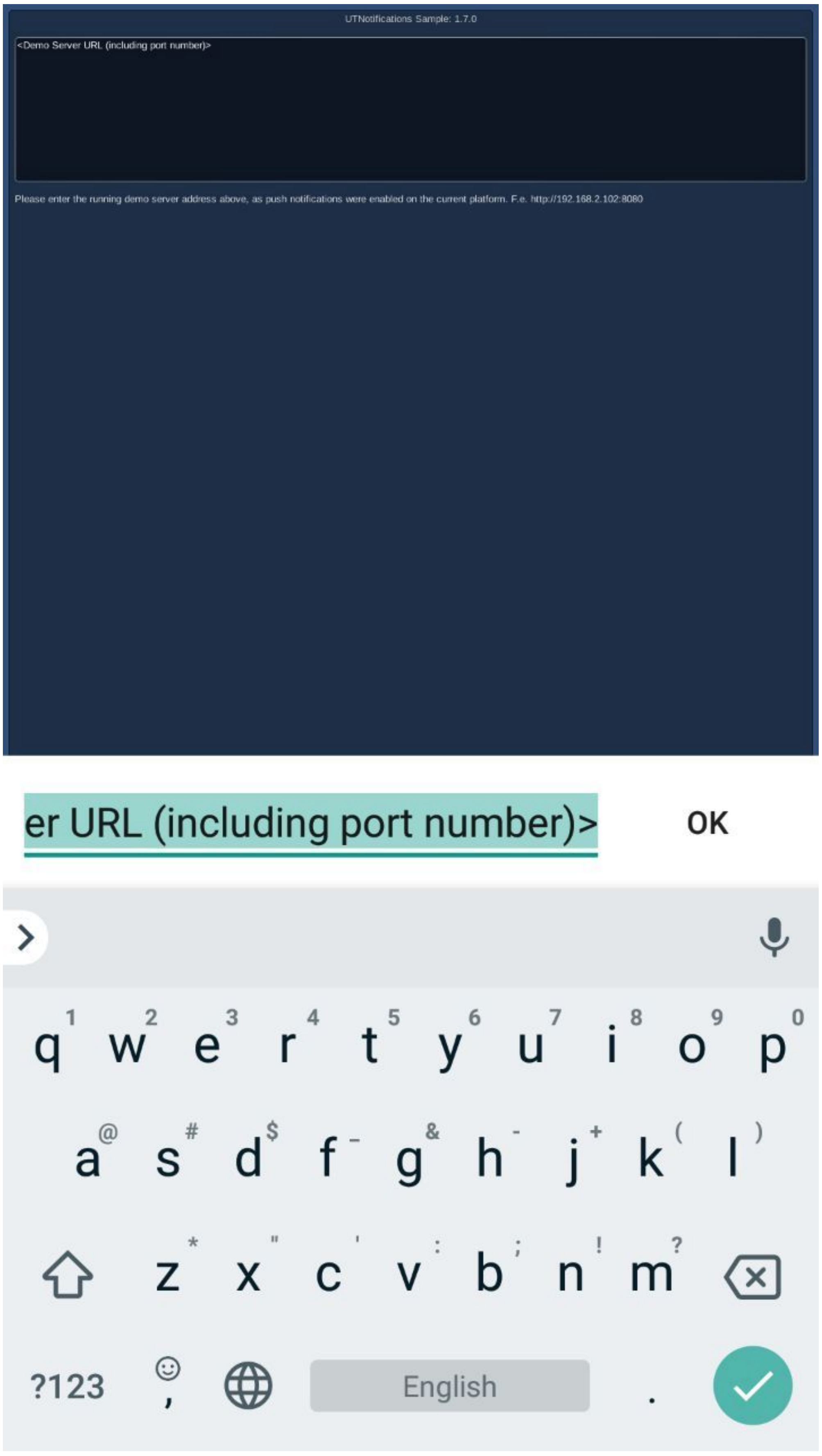
Scenes In Build:

☑ UTNotifications/Sample/UTNotificationsSample 0

iOS

Run in Xcode	Latest version
Run in Xcode as	Debug
Symlink Unity libraries	☐
Development Build	☑
Autoconnect Profiler	☐
Script Debugging	☐
Scripts Only Build	☐
Compression Method	Default

7. Build and run the Unity application on a target Android device. The sample scene should start requesting an URL of DemoServer in order to continue:



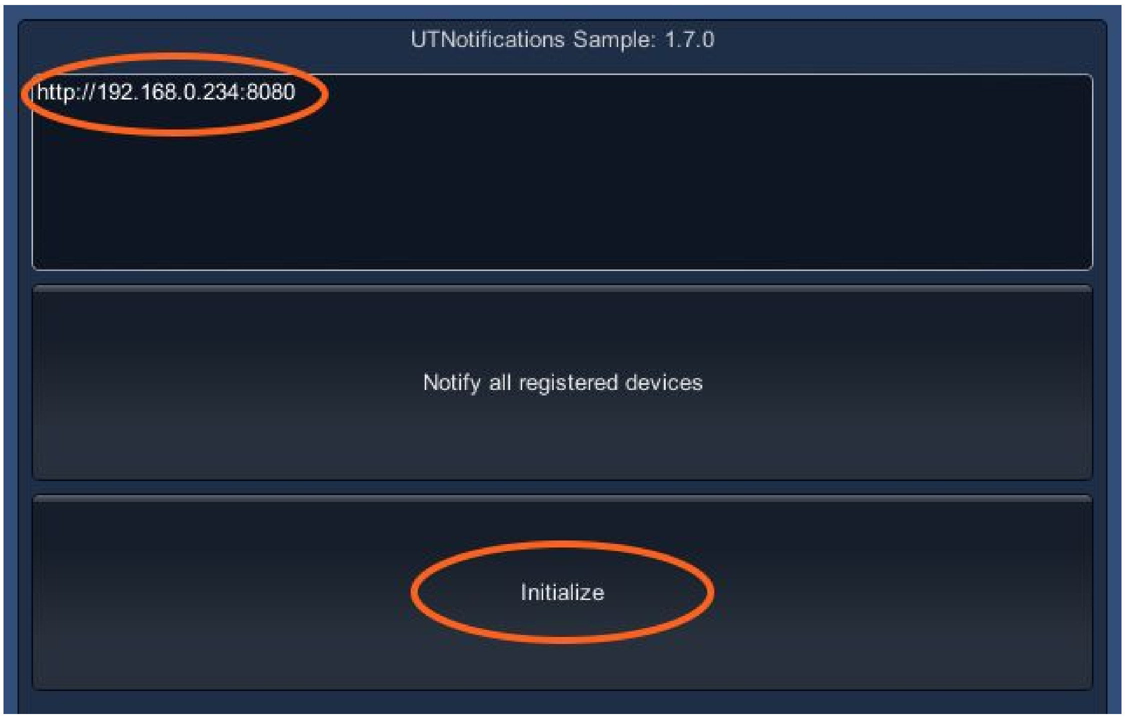
UTNotifications Sample: 1.7.0

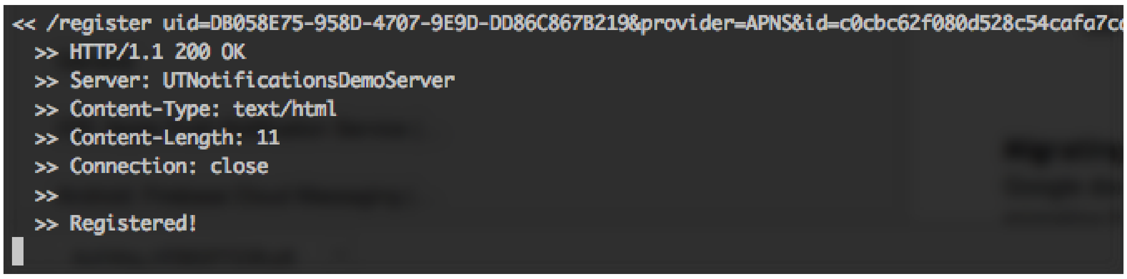
<Demo Server URL (including port number)>

Please enter the running demo server address above, as push notifications were enabled on the current platform. F.e. http://192.168.2.102:8080

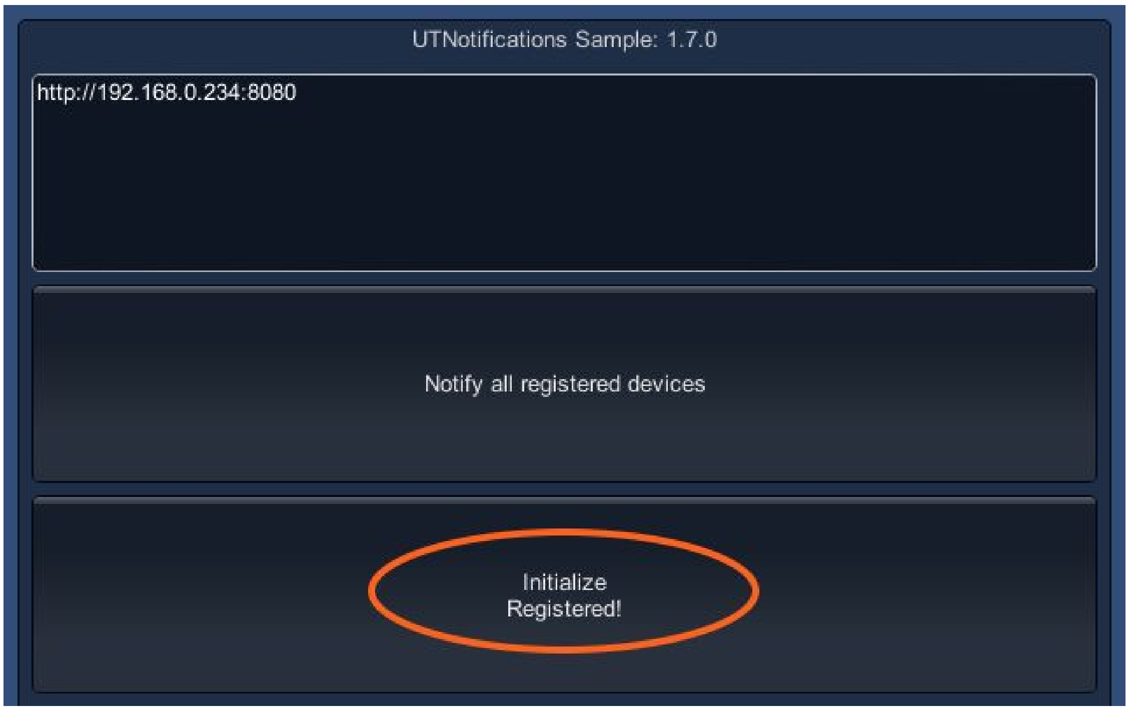
er URL (including port number)>

8. Make sure your test device and the computer running DemoServer belong to the same local network (f.e. connected to the same Wi-Fi router). Specify the full URL of the running DemoServer (as **http://<ip address>:8080**) and press **Initialize**:

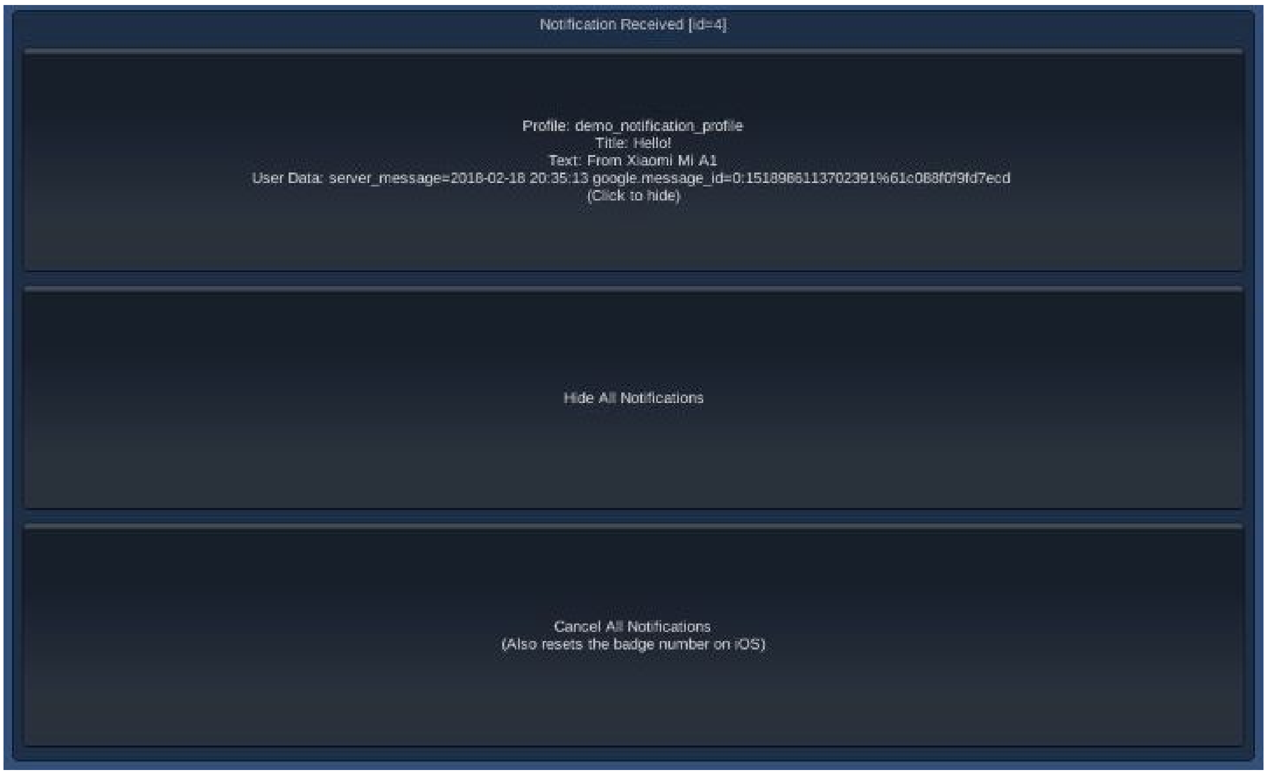

UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize



```
<< /register uid=DB058E75-958D-4707-9E9D-DD86C867B219&provider=APNS&id=c0cbc62f080d528c54cafa7c
  >> HTTP/1.1 200 OK
  >> Server: UTNotificationsDemoServer
  >> Content-Type: text/html
  >> Content-Length: 11
  >> Connection: close
  >>
  >> Registered!
```


UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize
Registered!

9. Press “Notify all registered devices” to send a push notification to all the DemoServer-registered devices. If everything was configured correctly, you should see how UTNotifications SampleScene handled the push message:



Notification Received [id=4]

Profile: demo_notification_profile
Title: Hello!
Text: From Xiaomi Mi A1
User Data: server_message=2018-02-18 20:35:13 google.message_id=0:1518986113702391%61c088f0f9fd7ecd
(Click to hide)

Hide All Notifications

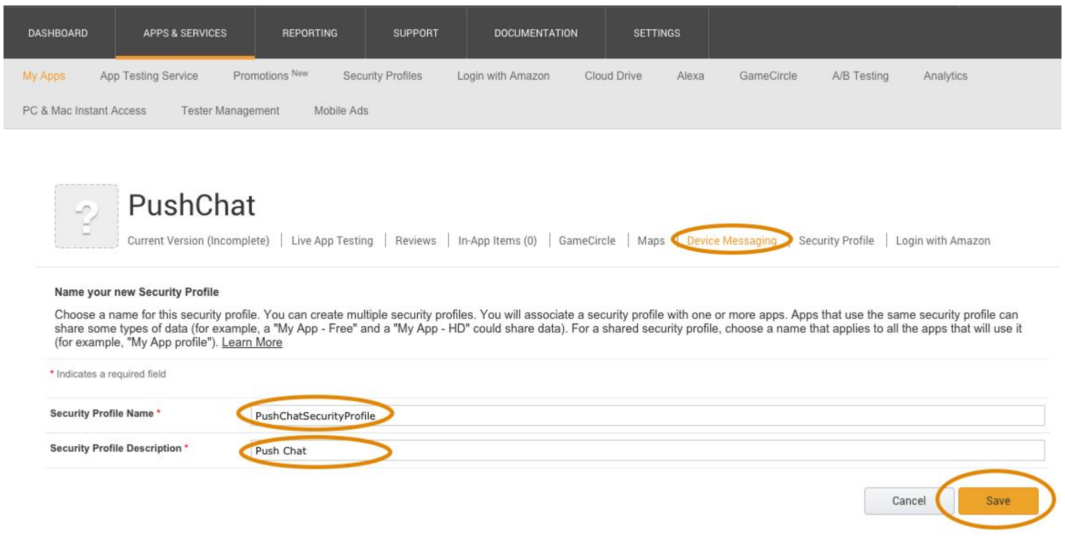
Cancel All Notifications
(Also resets the badge number on iOS)

Configuring the Amazon Device Messaging (ADM)

Based on ADM official documentation:
https://developer.amazon.com/public/apis/engage/device-messaging/tech-docs/02-obtaining-adm-credentials

Getting Your OAuth Credentials and API Key

1. Create an account on the Amazon Apps & Games Developer Portal and add your app, if you have not already done so.
2. In **Apps & Services** > **My Apps**, select the app with which you want to use ADM or create a new one.
3. Click **Device Messaging**.
4. If you have already assigned a security profile to your app, proceed to step **7**.
5. To assign a security profile to your app, choose an existing security profile from **Select a Security Profile** or click **Create a New Security Profile**. A security profile provides the OAuth credentials that you use when sending messages with ADM.
   Note: You can share the use of a security profile among more than one app. Sharing a profile allows apps to share some types of data. For example, you may have a "My Cat - Free" app and a "My Cat - HD" app. If you apply a single security profile to both apps, data accessed by that profile is available to both apps. For a shared profile, choose a name that applies to both, for example, "My Cat Apps profile".



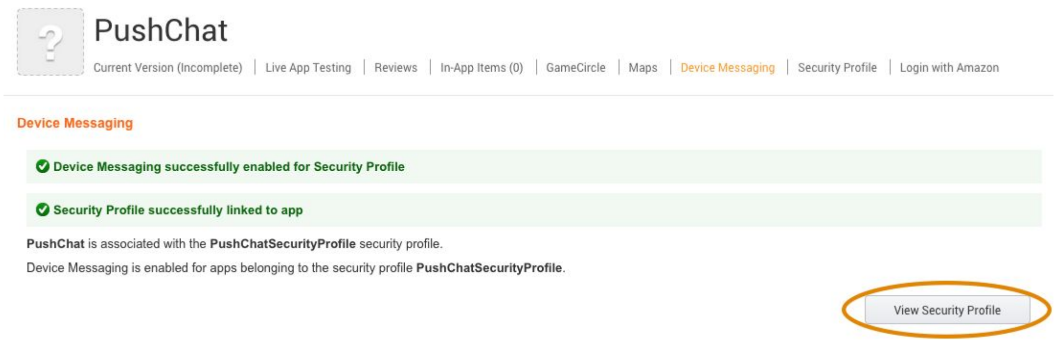
Name your new Security Profile

Choose a name for this security profile. You can create multiple security profiles. You will associate a security profile with one or more apps. Apps that use the same security profile can share some types of data (for example, a "My App - Free" and a "My App - HD" could share data). For a shared security profile, choose a name that applies to all the apps that will use it (for example, "My App profile"). Learn More

* Indicates a required field

Security Profile Name *	PushChatSecurityProfile
Security Profile Description *	Push Chat

6. If you used an existing security profile, be sure to select **Confirm** to save your changes.
7. Click **View Security Profile**.


PushChat
Current Version (Incomplete) | Live App Testing | Reviews | In-App Items (0) | GameCircle | Maps | Device Messaging | Security Profile | Login with Amazon
Device Messaging
View Security Profile

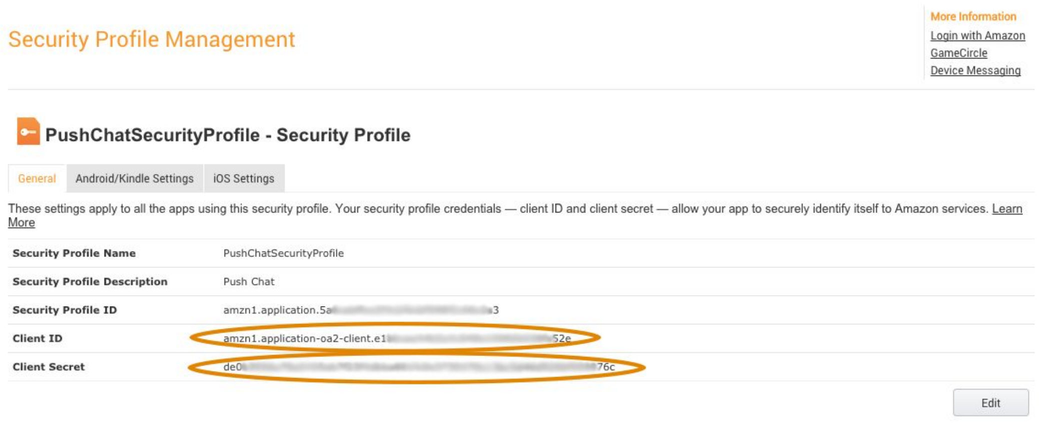
✓ Device Messaging successfully enabled for Security Profile

✓ Security Profile successfully linked to app

PushChat is associated with the **PushChatSecurityProfile** security profile.

Device Messaging is enabled for apps belonging to the security profile **PushChatSecurityProfile**.

8. Store somewhere the **Client ID** and **Client Secret** values.



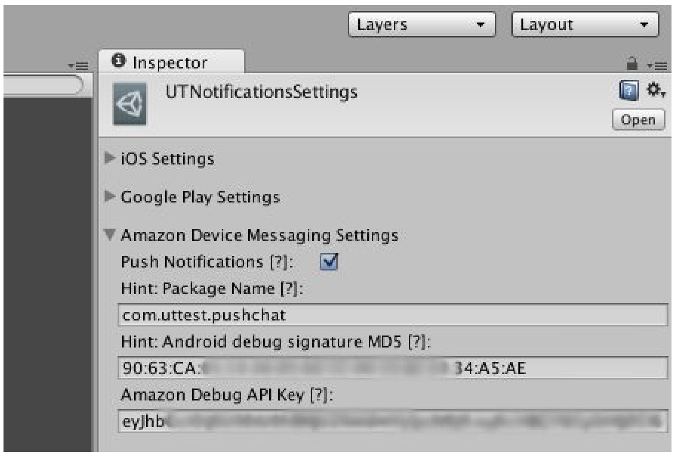
These settings apply to all the apps using this security profile. Your security profile credentials — client ID and client secret — allow your app to securely identify itself to Amazon services. Learn More

Security Profile Name	PushChatSecurityProfile
Security Profile Description	Push Chat
Security Profile ID	amzn1.application.5a[redacted]3
Client ID	amzn1.application-oa2-client.e1[redacted]52e
Client Secret	de0[redacted]76c

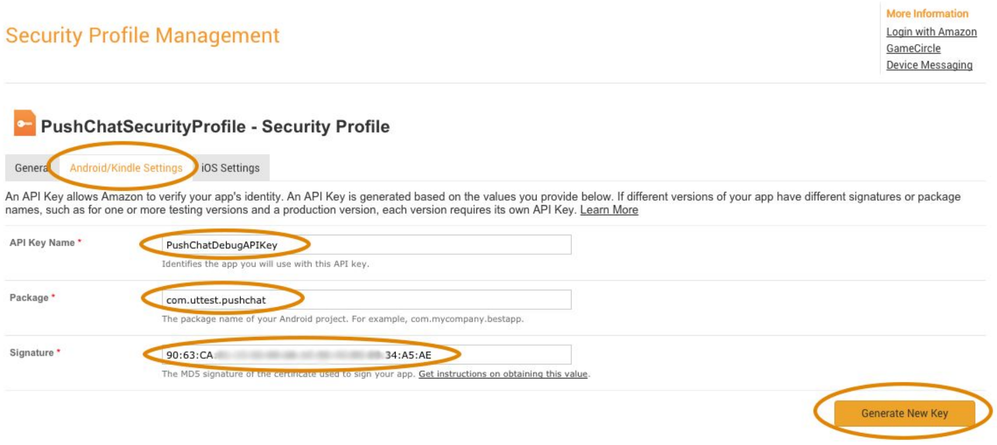
9. Then click **Android/Kindle Settings**.
10. Create an **API Key**. Your app requires one or more API Keys.
    - (**Required**) For a pre-release or "debug" version of your app. In all cases, you must create an API Key for the debug version of your app, in order to test your app with ADM.
    - (**Optional**) For a release or "production" version of your app. If you sign the release version of your app using your own certificate, you must create an additional API Key for the release version of your app. If you allow Amazon to sign your app on your behalf, you do not need to create an additional API Key.

To create an API Key, you must provide both the package name (for example, `com.mycompany.bestapplication`) for the app and its signature:

- **Debug** application signature for the pre-release version of your app.
    a. In Unity open the UTNotifications Settings in menu: `Edit` -> `Project Settings` -> `UTNotifications` (Unity restart may be required to see this menu item first time) and enable **Push Notifications** toggle in the **Amazon Device Messaging**.
    b. Copy and paste the **Package Name** and **Android debug signature MD5** hints from **UTNotifications Settings** / **Amazon Device Messaging Settings** to the Amazon **Security Profile** fields **Package** and **Signature**.
    Note: If you don't see the **Android debug signature MD5** hint value please build the Android version at least once successfully. If getting the **Android debug signature MD5** is still failed after that, please see https://developer.amazon.com/public/apis/engage/device-messaging/tech-docs/02-obtaining-adm-credentials.



Push Notifications [?]: ✓
Hint: Package Name [?]:
com.uttest.pushchat
Hint: Android debug signature MD5 [?]:
90:63:CA:[redacted]34:A5:AE
Amazon Debug API Key [?]:
eyJhb[redacted]



An API Key allows Amazon to verify your app's identity. An API Key is generated based on the values you provide below. If different versions of your app have different signatures or package names, such as for one or more testing versions and a production version, each version requires its own API Key. Learn More

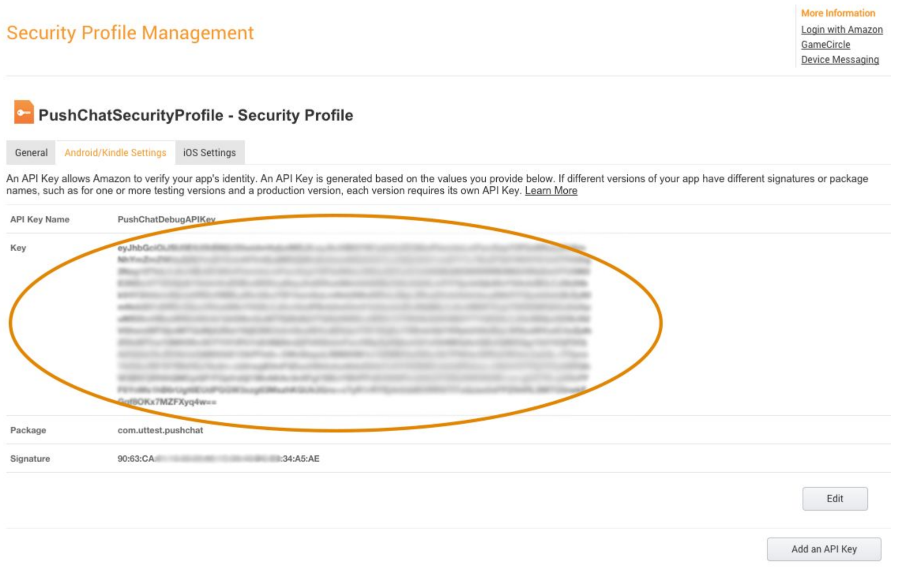
API Key Name * PushChatDebugAPIKey
Identifies the app you will use with this API key.

Package * com.uttest.pushchat
The package name of your Android project. For example, com.mycompany.bestapp.

Signature * 90:63:CA[redacted]34:A5:AE
The MD5 signature of the certificate used to sign your app. Get instructions on obtaining this value.

- **Release** application signature for the production version of your app. If you sign the release version of your app using your own certificate, provide the MD5 signature for that certificate to create an additional API Key (more details at https://developer.amazon.com/public/apis/engage/device-messaging/tech-docs/02-obtaining-adm-credentials). If you allow Amazon to sign your app on your behalf, you do not need to obtain an API Key for the release signature.

11. Click **Generate New Key**.
12. Store the retrieved **API Key** somewhere.
    Note: It shouldn't contain any spaces or newline characters.



Security Profile Management

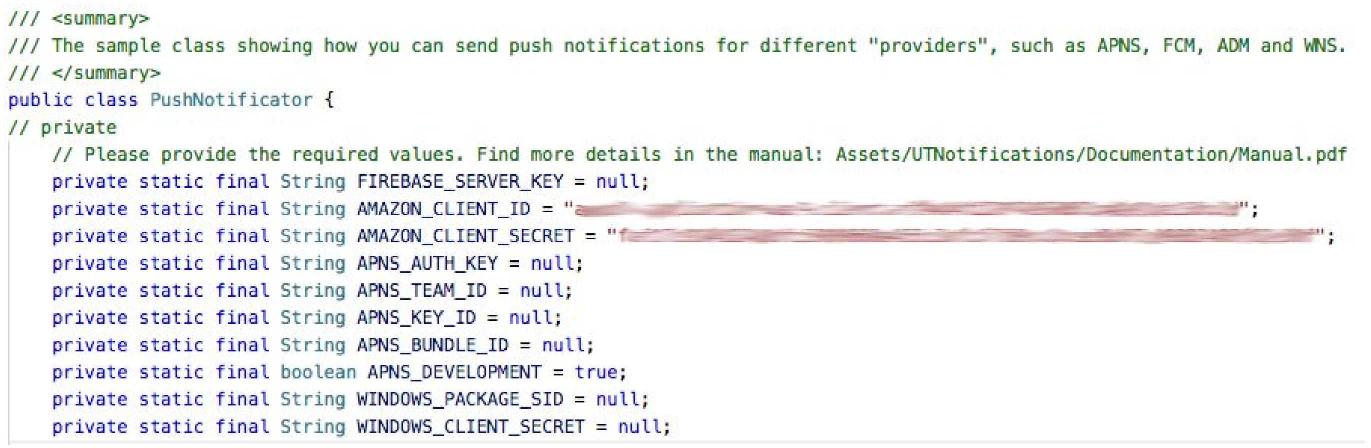
PushChatSecurityProfile - Security Profile

An API Key allows Amazon to verify your app's identity. An API Key is generated based on the values you provide below. If different versions of your app have different signatures or package names, such as for one or more testing versions and a production version, each version requires its own API Key. Learn More

API Key Name	PushChatDebugAPIKey
Key	eyJhbGci[redacted]Gqf8OKx7MZFXyq4w==
Package	com.uttest.pushchat
Signature	90:63:CA[redacted]:34:A5:AE

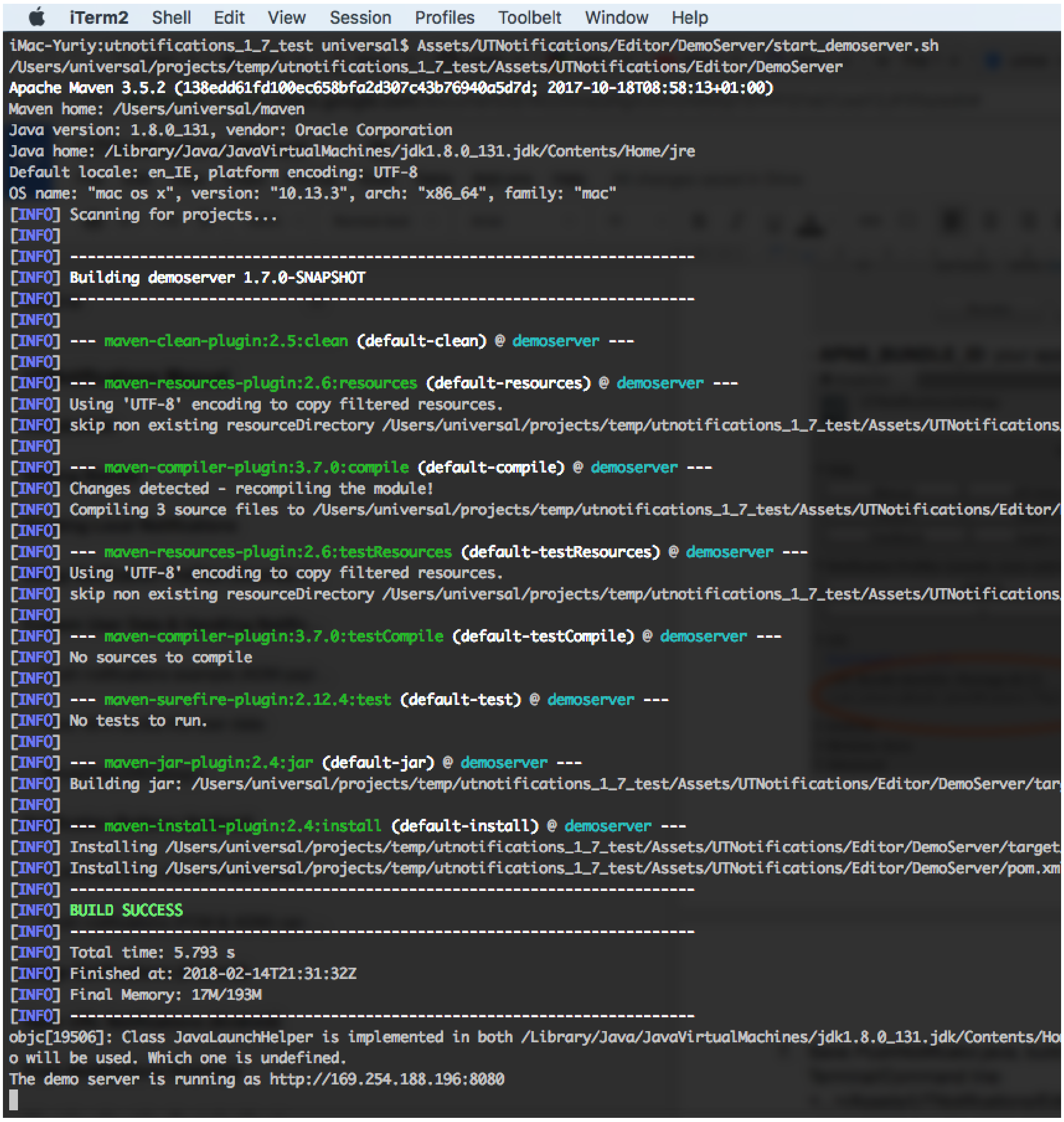
Apply Credentials and Test

1. Specify the credentials in *Assets/UTNotifications/Editor/DemoServer/src/main/java/com/universal_tools/demoserver/PushNotificator.java*:



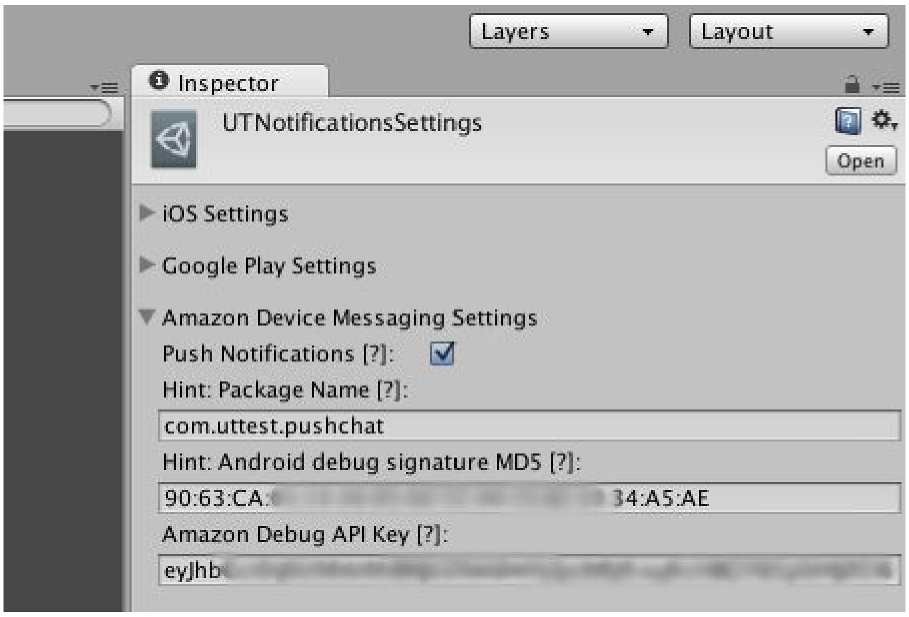
```
/// <summary>
/// The sample class showing how you can send push notifications for different "providers", such as APNS, FCM, ADM and WNS.
/// </summary>
public class PushNotificator {
// private
    // Please provide the required values. Find more details in the manual: Assets/UTNotifications/Documentation/Manual.pdf
    private static final String FIREBASE_SERVER_KEY = null;
    private static final String AMAZON_CLIENT_ID = "[redacted]";
    private static final String AMAZON_CLIENT_SECRET = "[redacted]";
    private static final String APNS_AUTH_KEY = null;
    private static final String APNS_TEAM_ID = null;
    private static final String APNS_KEY_ID = null;
    private static final String APNS_BUNDLE_ID = null;
    private static final boolean APNS_DEVELOPMENT = true;
    private static final String WINDOWS_PACKAGE_SID = null;
    private static final String WINDOWS_CLIENT_SECRET = null;
```

   - **AMAZON_CLIENT_ID**: Client ID value you've got in step 8 of Getting Your OAuth Credentials and API Key.
   - **AMAZON_CLIENT_SECRET**: Client Secret value you've got in step 8 of Getting Your OAuth Credentials and API Key.
2. Save *PushNotificator.java*, build and start DemoServer, by executing the following script in Terminal/Command line:
   <...>/Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh (macOS / Linux)
   or
   <...>\Assets\UTNotifications\Editor\DemoServer\start_demoserver.bat (Windows)
   Note that you'll need JDK and Maven.



```
iMac-Yuriy:utnotifications_1_7_test universal$ Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh
/Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer
Apache Maven 3.5.2 (138edd61fd100ec658bfa2d307c43b76940a5d7d; 2017-10-18T08:58:13+01:00)
Maven home: /Users/universal/maven
Java version: 1.8.0_131, vendor: Oracle Corporation
Java home: /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Home/jre
Default locale: en_IE, platform encoding: UTF-8
OS name: "mac os x", version: "10.13.3", arch: "x86_64", family: "mac"
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demoserver 1.7.0-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ demoserver ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:compile (default-compile) @ demoserver ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 3 source files to /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:testCompile (default-testCompile) @ demoserver ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ demoserver ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ demoserver ---
[INFO] Building jar: /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/tar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ demoserver ---
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/target
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/pom.xm
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 5.793 s
[INFO] Finished at: 2018-02-14T21:31:32Z
[INFO] Final Memory: 17M/193M
[INFO] ------------------------------------------------------------------------
objc[19506]: Class JavaLaunchHelper is implemented in both /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Ho
o will be used. Which one is undefined.
The demo server is running as http://169.254.188.196:8080
```

3. The running DemoServer will print its hostname (ip address) and port. Please note, that the ip address it prints can be either a local network address (usually 192.168.*.*) or an external (like on the screenshot above). In later case, please find your internal IP address in the OS network settings.
4. In Unity open the UTNotifications Settings in menu: `Edit -> Project Settings -> UTNotifications`.
5. In **Amazon Device Messaging Settings** write down the **Amazon Debug API Key** value you got in **12**th step of [Getting Your OAuth Credentials and API Key](#).



UTNotificationsSettings

▶ iOS Settings

▶ Google Play Settings

▼ Amazon Device Messaging Settings

Push Notifications [?]: ✓

Hint: Package Name [?]:

com.uttest.pushchat

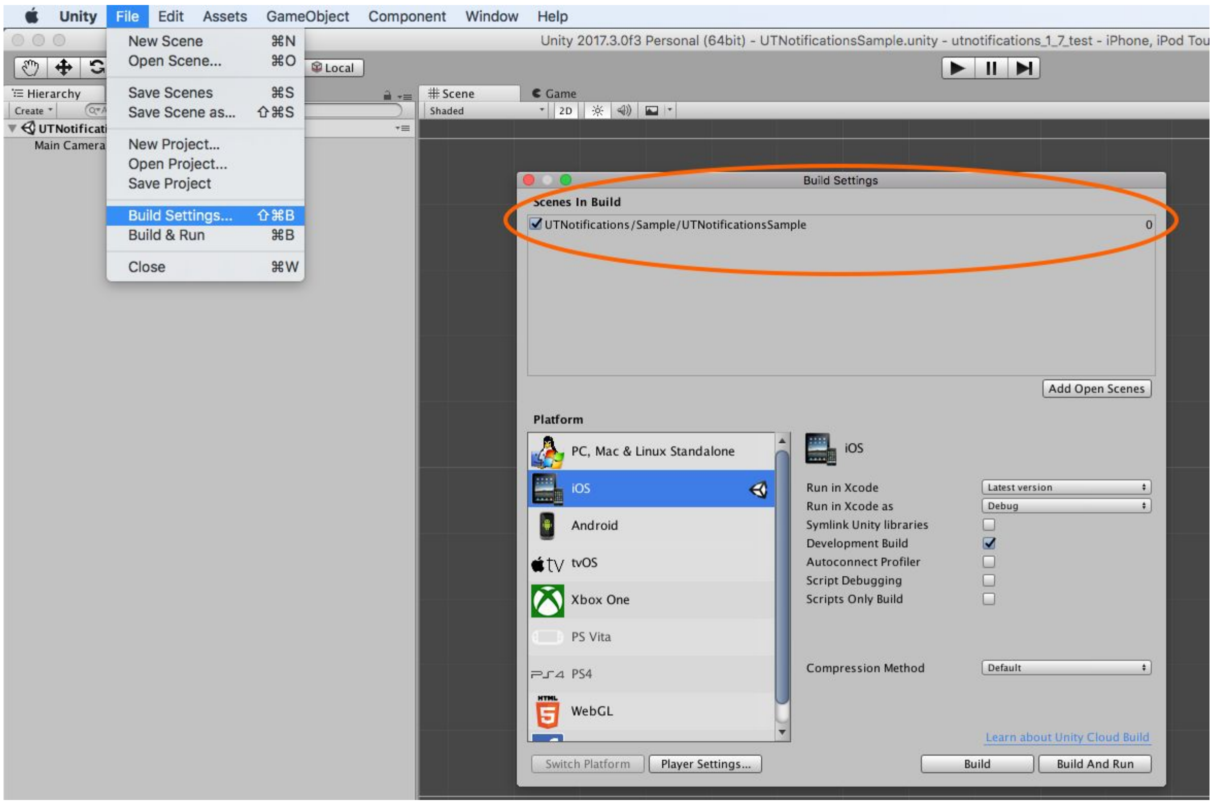
Hint: Android debug signature MD5 [?]:

90:63:CA:[redacted]34:A5:AE

Amazon Debug API Key [?]:

eyJhb[redacted]

6. Temporarily make UTNotifications/Sample/UTNotificationsSample scene default for your Unity project:



Unity 2017.3.0f3 Personal (64bit) - UTNotificationsSample.unity - utnotifications_1_7_test - iPhone, iPod Tou

Build Settings

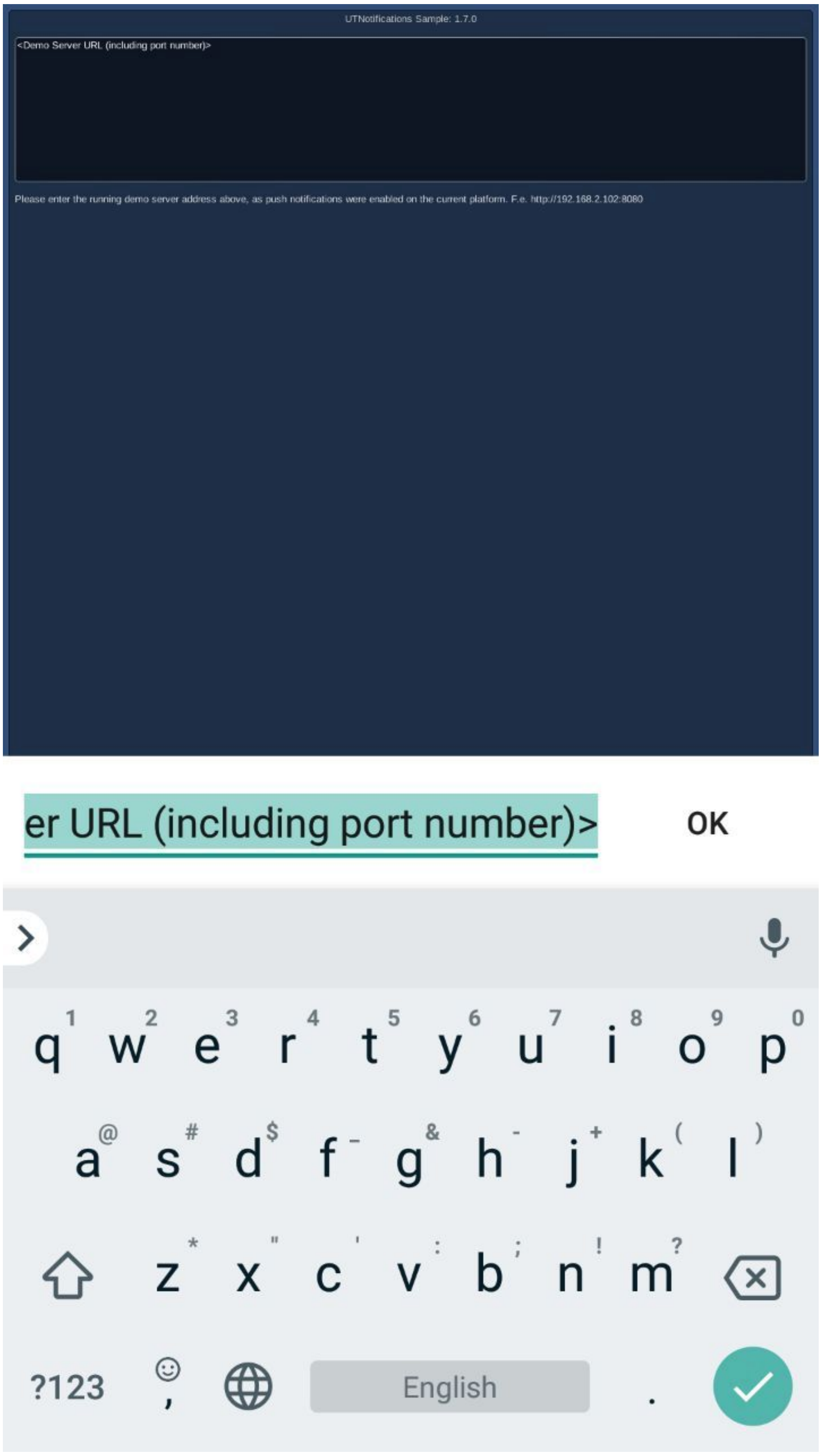
Scenes In Build

✓ UTNotifications/Sample/UTNotificationsSample 0

iOS

Run in Xcode	Latest version
Run in Xcode as	Debug
Symlink Unity libraries	☐
Development Build	✓
Autoconnect Profiler	☐
Script Debugging	☐
Scripts Only Build	☐
Compression Method	Default

7. Build and run the Unity application on a target Kindle Fire device. The sample scene should start requesting an URL of DemoServer in order to continue:

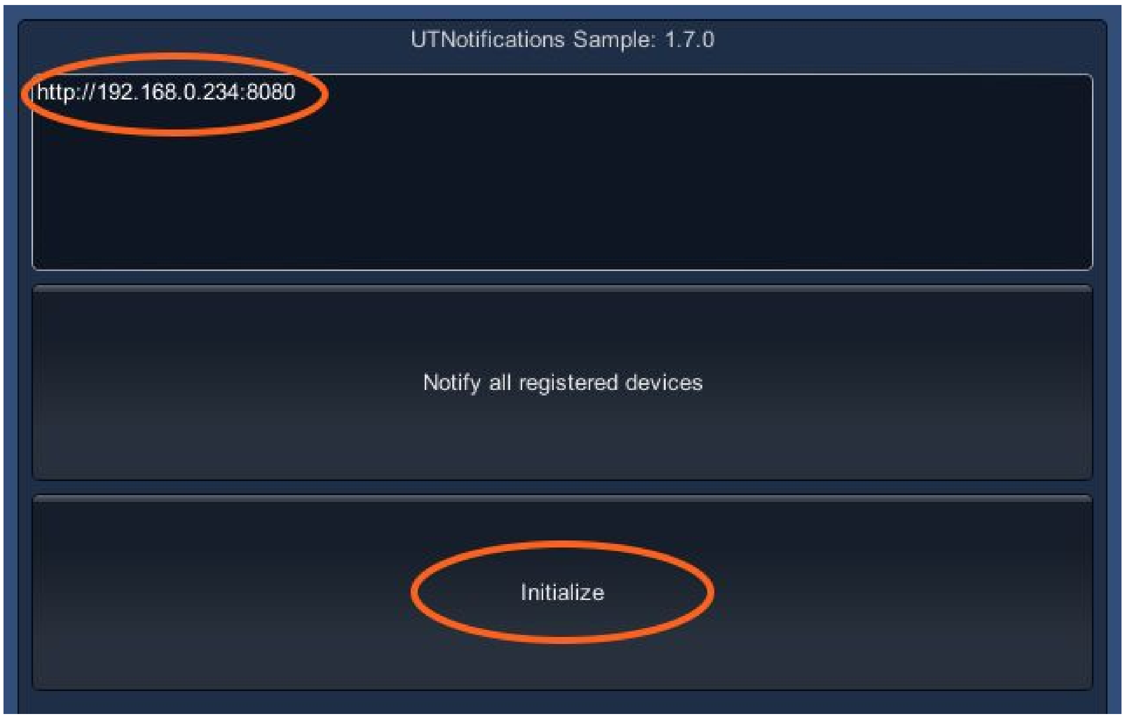

UTNotifications Sample: 1.7.0

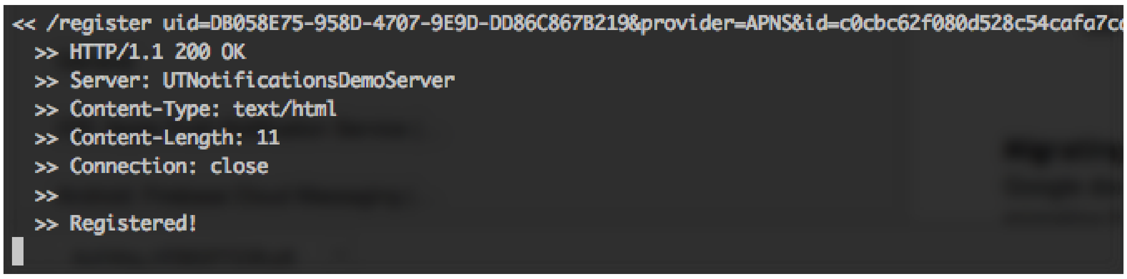
<Demo Server URL (including port number)>

Please enter the running demo server address above, as push notifications were enabled on the current platform. F.e. http://192.168.2.102:8080

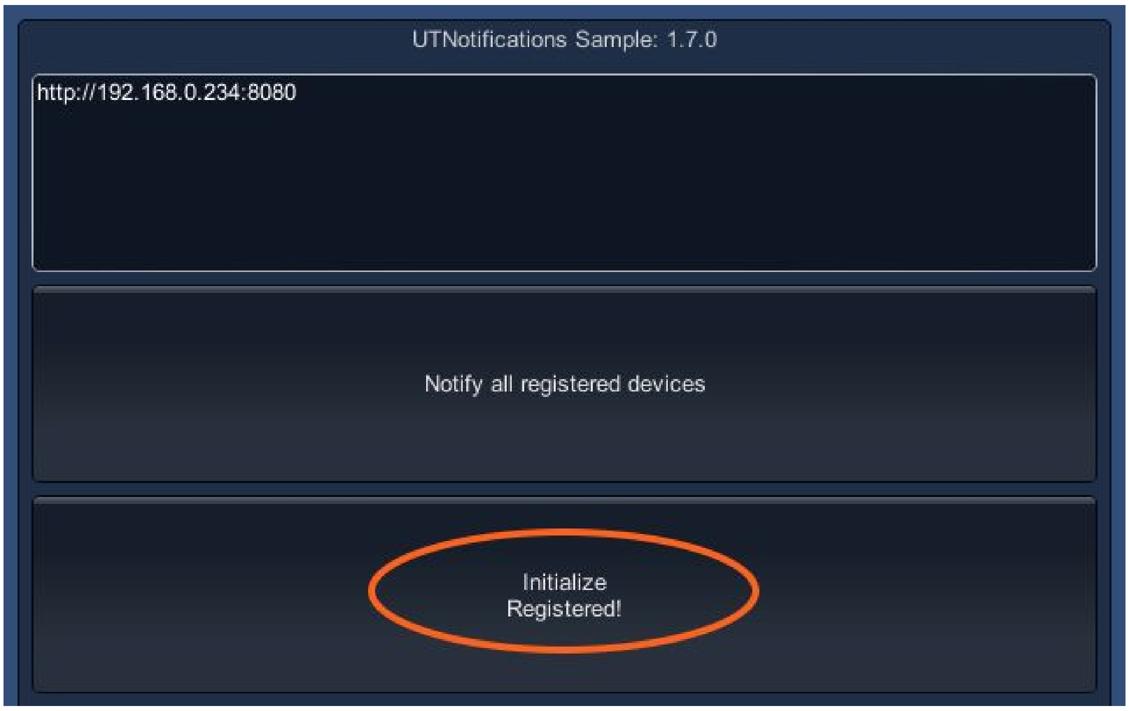
er URL (including port number)>

8. Make sure your test device and the computer running DemoServer belong to the same local network (f.e. connected to the same Wi-Fi router). Specify the full URL of the running DemoServer (as **http://<ip address>:8080**) and press **Initialize**:

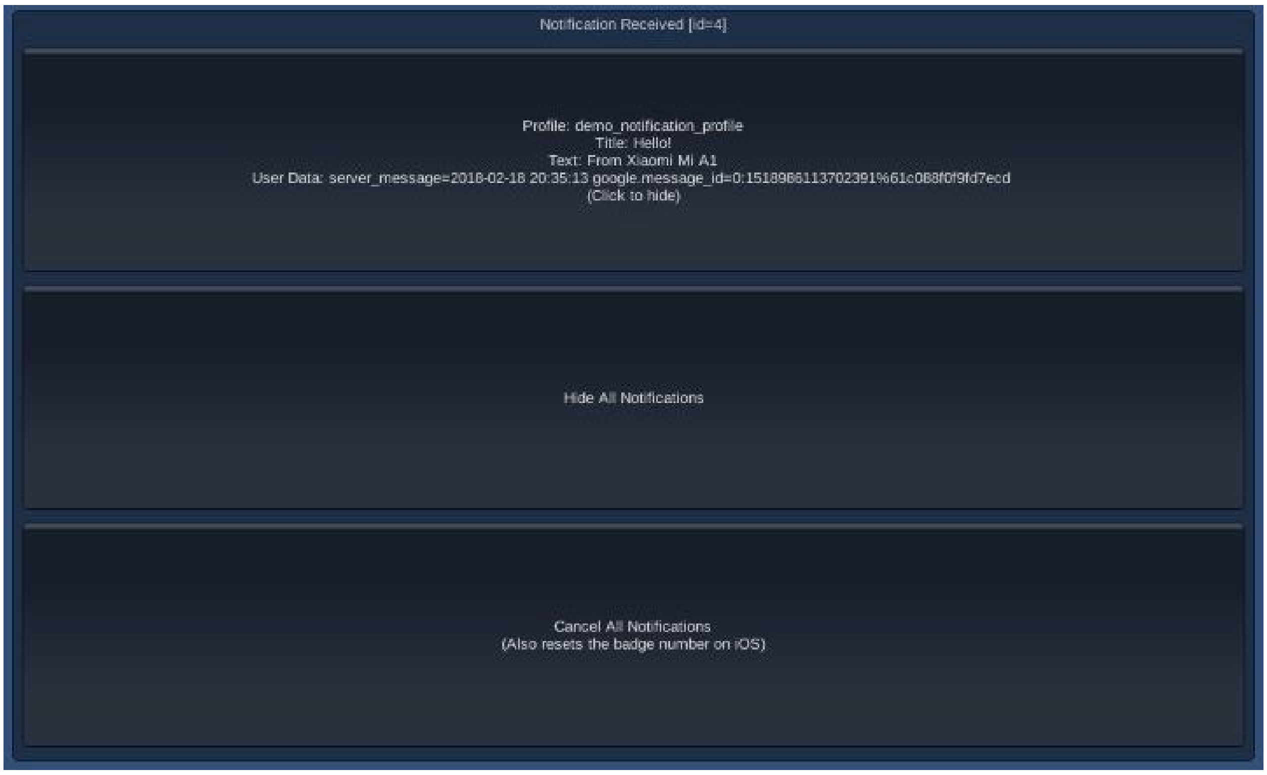

UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize



```
<< /register uid=DB058E75-958D-4707-9E9D-DD86C867B219&provider=APNS&id=c0cbc62f080d528c54cafa7c
  >> HTTP/1.1 200 OK
  >> Server: UTNotificationsDemoServer
  >> Content-Type: text/html
  >> Content-Length: 11
  >> Connection: close
  >>
  >> Registered!
```


UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize
Registered!

9. Press “Notify all registered devices” to send a push notification to all the DemoServer-registered devices. If everything was configured correctly, you should see how UTNotifications SampleScene handled the push message:



Notification Received [id=4]

Profile: demo_notification_profile
Title: Hello!
Text: From Xiaomi Mi A1
User Data: server_message=2018-02-18 20:35:13 google.message_id=0:1518986113702391%61c088f0f9fd7ecd
(Click to hide)

Hide All Notifications

Cancel All Notifications
(Also resets the badge number on iOS)

Configuring the Windows Push Notification Services (WNS)

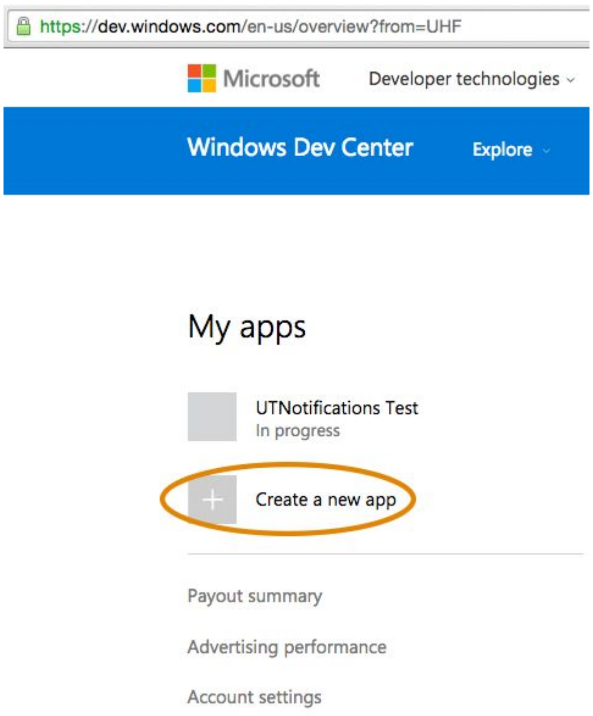
Based on WNS official documentation:
https://msdn.microsoft.com/en-us/library/windows/apps/hh465407.aspx.

Register your app with the Dashboard

Before you can send notifications through WNS, you must register your app. Do so through the Dashboard, the developer portal that enables you to submit, certify, and manage your Windows Store apps. When you register your app through the Dashboard, you are given credentials—a Package security identifier (SID) and a secret key—which your cloud service uses to authenticate itself with WNS.

To register:

1. Go to the Windows Store apps page of the Windows Dev Center and sign in with your Microsoft account.
2. Once you have signed in, click the Dashboard link.
3. On the Dashboard, select Submit an app.

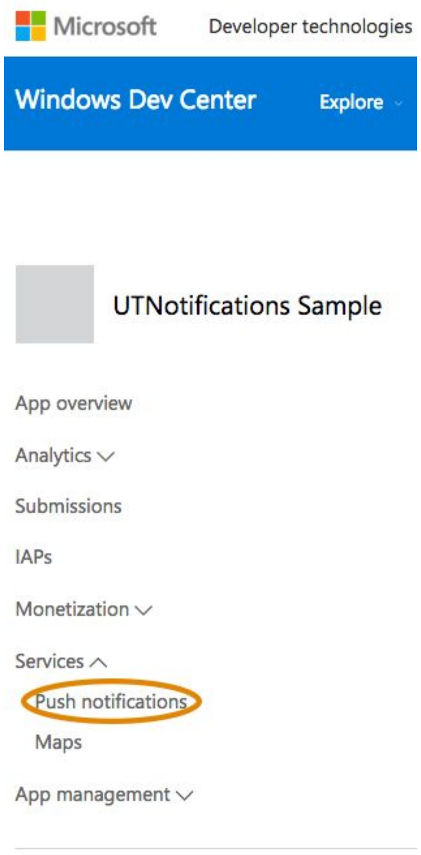


4. Choose a name and click “Reserve app name” to register an app.

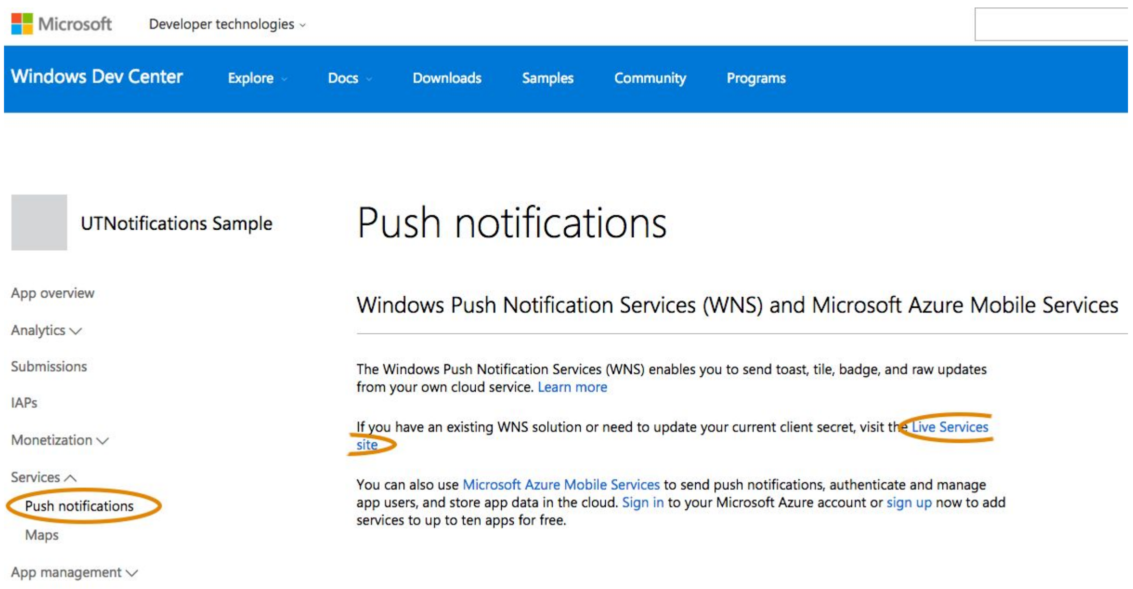
Obtain the identity values for your app

When you reserved a name for your app, the Windows Store created your associated credentials. It also assigned associated identity values—name and publisher.

1. Click at **Services** -> **Push Notifications** in the left menu.



2. Press on a link **Live Services site**.



Microsoft Developer technologies

Windows Dev Center Explore Docs Downloads Samples Community Programs

UTNotifications Sample

App overview
Analytics
Submissions
IAPs
Monetization
Services
Push notifications
Maps
App management

Push notifications

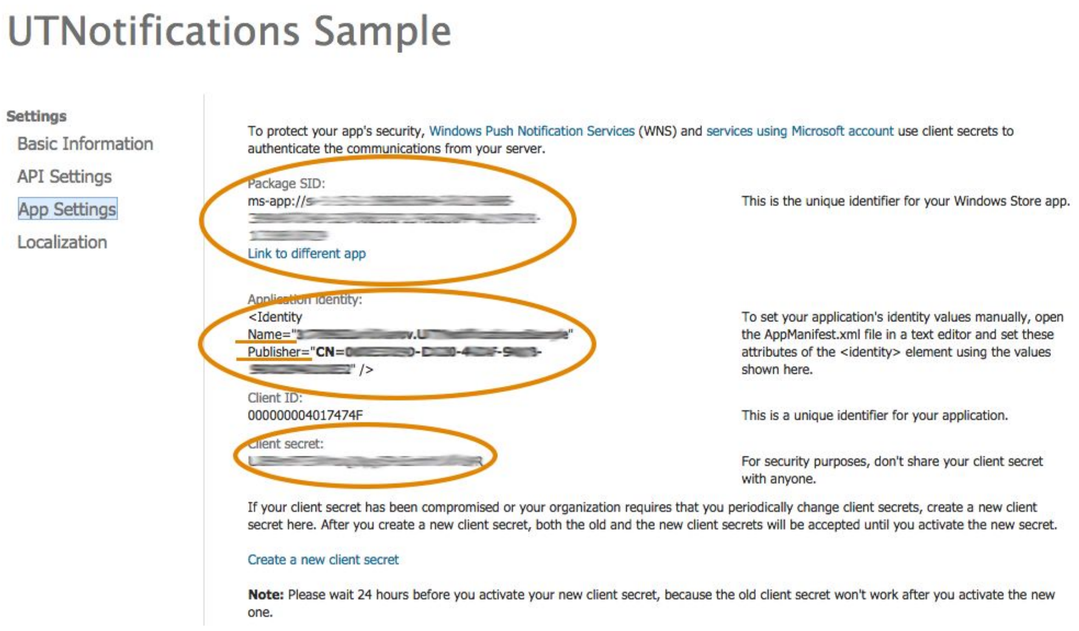
Windows Push Notification Services (WNS) and Microsoft Azure Mobile Services

The Windows Push Notification Services (WNS) enables you to send toast, tile, badge, and raw updates from your own cloud service. Learn more

If you have an existing WNS solution or need to update your current client secret, visit the Live Services site

You can also use Microsoft Azure Mobile Services to send push notifications, authenticate and manage app users, and store app data in the cloud. Sign in to your Microsoft Azure account or sign up now to add services to up to ten apps for free.

3. Save somewhere the following values: **Package SID**, **Client secret**, **Identity Name** & **Publisher**.



UTNotifications Sample

Settings
Basic Information
API Settings
App Settings
Localization

To protect your app's security, Windows Push Notification Services (WNS) and services using Microsoft account use client secrets to authenticate the communications from your server.

Package SID:
ms-app://[redacted]
Link to different app

This is the unique identifier for your Windows Store app.

Application identity:
<Identity
Name="[redacted]"
Publisher="CN=[redacted]" />

To set your application's identity values manually, open the AppManifest.xml file in a text editor and set these attributes of the <identity> element using the values shown here.

Client ID:
000000004017474F

This is a unique identifier for your application.

Client secret:
[redacted]

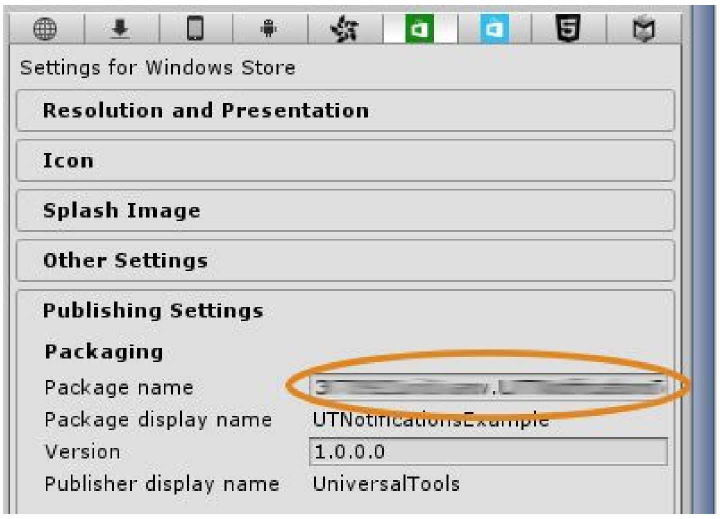
For security purposes, don't share your client secret with anyone.

If your client secret has been compromised or your organization requires that you periodically change client secrets, create a new client secret here. After you create a new client secret, both the old and the new client secrets will be accepted until you activate the new secret.

Create a new client secret

Note: Please wait 24 hours before you activate your new client secret, because the old client secret won't work after you activate the new one.

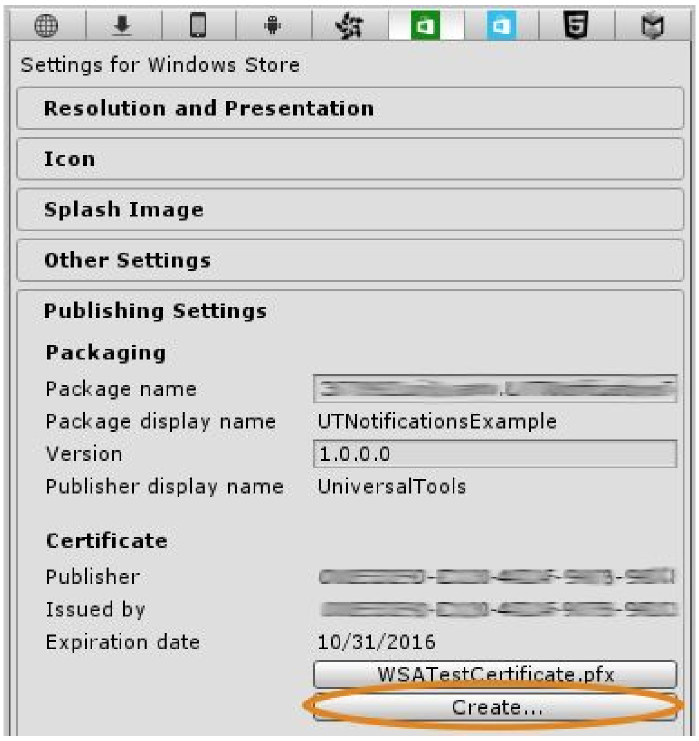
4. In Unity open the UTNotifications Settings in menu: `Edit` -> `Project Settings` -> `UTNotifications` (Unity restart may be required to see this menu item first time) and enable **Push Notifications** toggle in the **Windows Store Settings**.
5. Open Windows Store player settings: `File` -> `Build Settings…` -> `Windows Store` -> `Player Settings`.
6. Use **Identity Name** value from 3rd step as **Package Name**.


Settings for Windows Store

Packaging

Package name [redacted]
Package display name UTNotificationsExample
Version 1.0.0.0
Publisher display name UniversalTools

7. Press Create button to create a certificate.


Settings for Windows Store

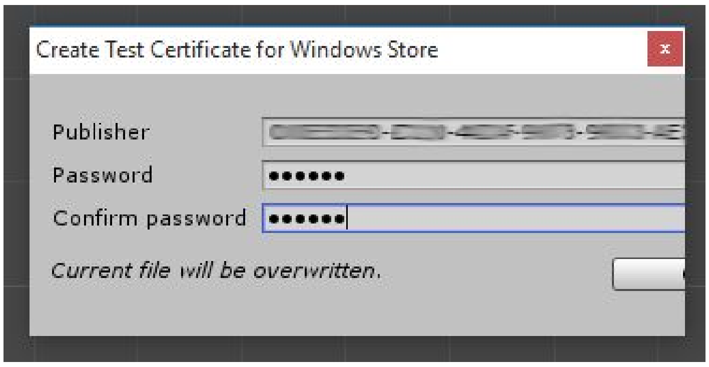
Packaging

Package name [redacted]
Package display name UTNotificationsExample
Version 1.0.0.0
Publisher display name UniversalTools

Certificate

Publisher [redacted]
Issued by [redacted]
Expiration date 10/31/2016

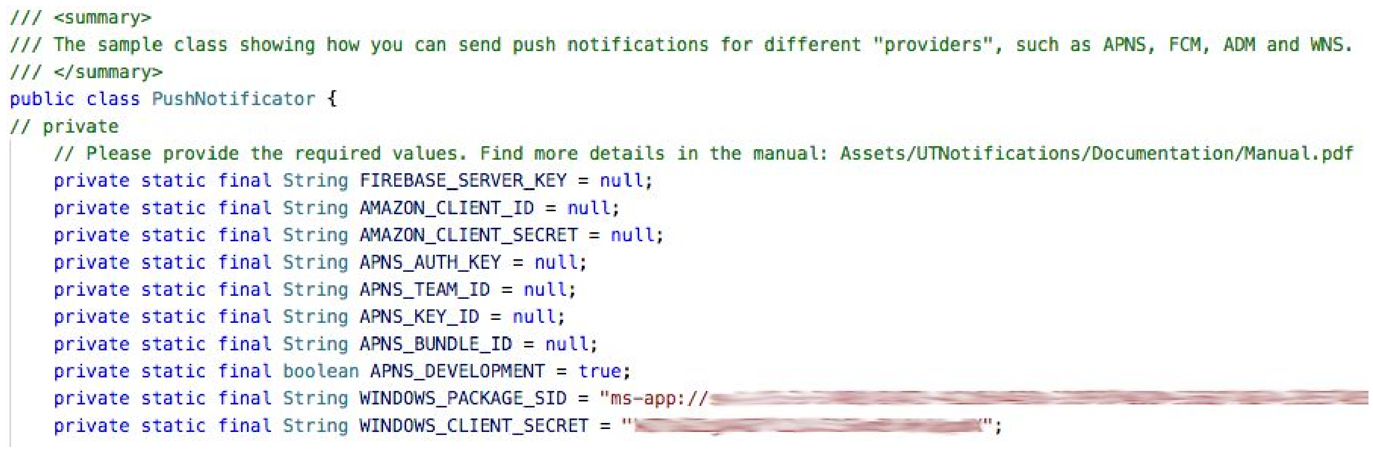
8. Use **Publisher** from 3rd step for **Publisher**. Don't include starting **CN=** to this value, only the rest. Note, that at least in Unity 5.2 the certificate creation dialog is buggy (it's not optimized for such a long values of Publisher). Anyway, it works.


Create Test Certificate for Windows Store

Publisher [redacted]
Password ••••••
Confirm password ••••••

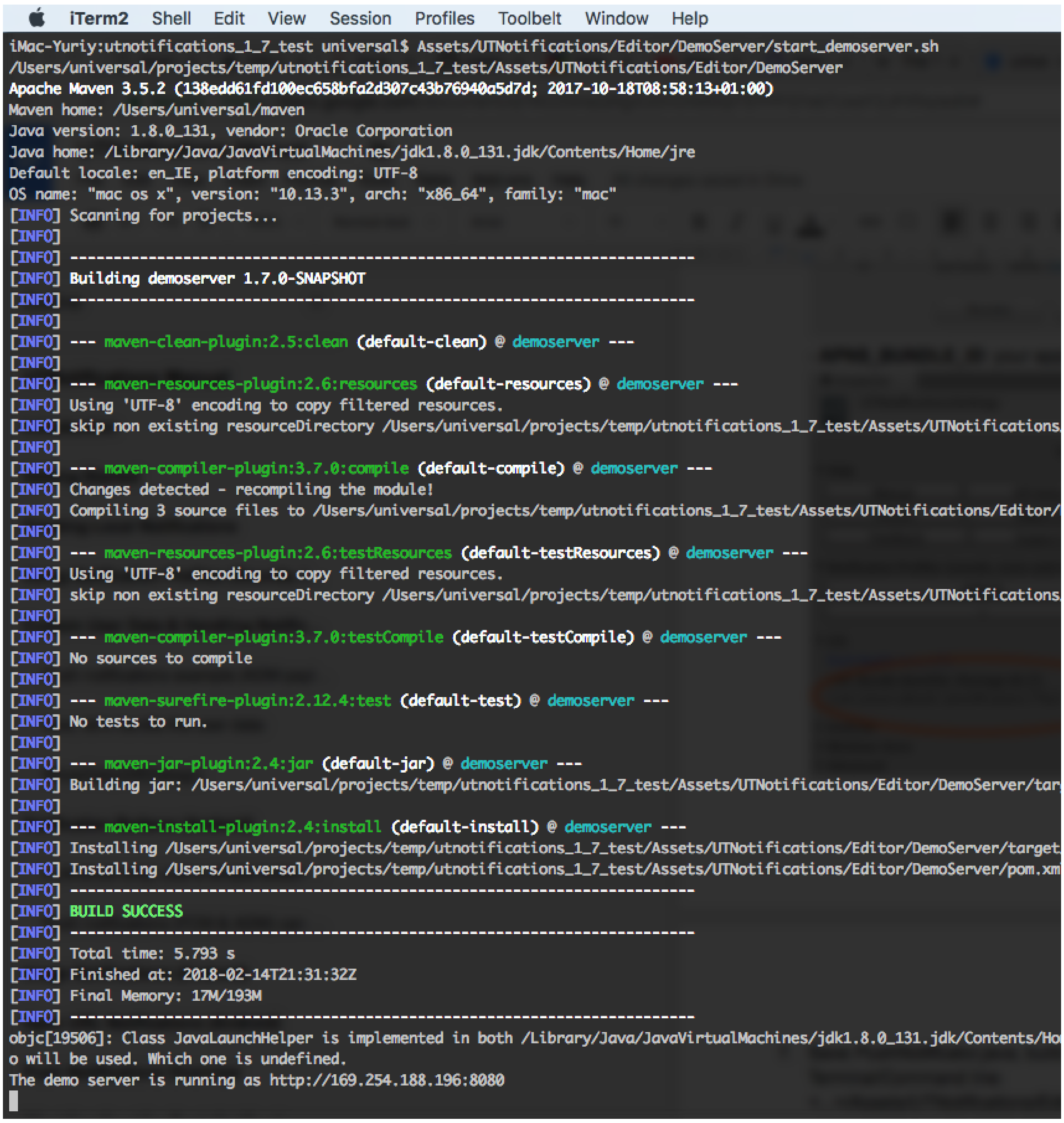
Current file will be overwritten.

Apply Credentials and Test

1. Specify the credentials in *Assets/UTNotifications/Editor/DemoServer/src/main/java/com/universal_tools/demoserver/PushNotificator.java*:


```
/// <summary>
/// The sample class showing how you can send push notifications for different "providers", such as APNS, FCM, ADM and WNS.
/// </summary>
public class PushNotificator {
// private
    // Please provide the required values. Find more details in the manual: Assets/UTNotifications/Documentation/Manual.pdf
    private static final String FIREBASE_SERVER_KEY = null;
    private static final String AMAZON_CLIENT_ID = null;
    private static final String AMAZON_CLIENT_SECRET = null;
    private static final String APNS_AUTH_KEY = null;
    private static final String APNS_TEAM_ID = null;
    private static final String APNS_KEY_ID = null;
    private static final String APNS_BUNDLE_ID = null;
    private static final boolean APNS_DEVELOPMENT = true;
    private static final String WINDOWS_PACKAGE_SID = "ms-app://[redacted]
    private static final String WINDOWS_CLIENT_SECRET = "[redacted]";
```

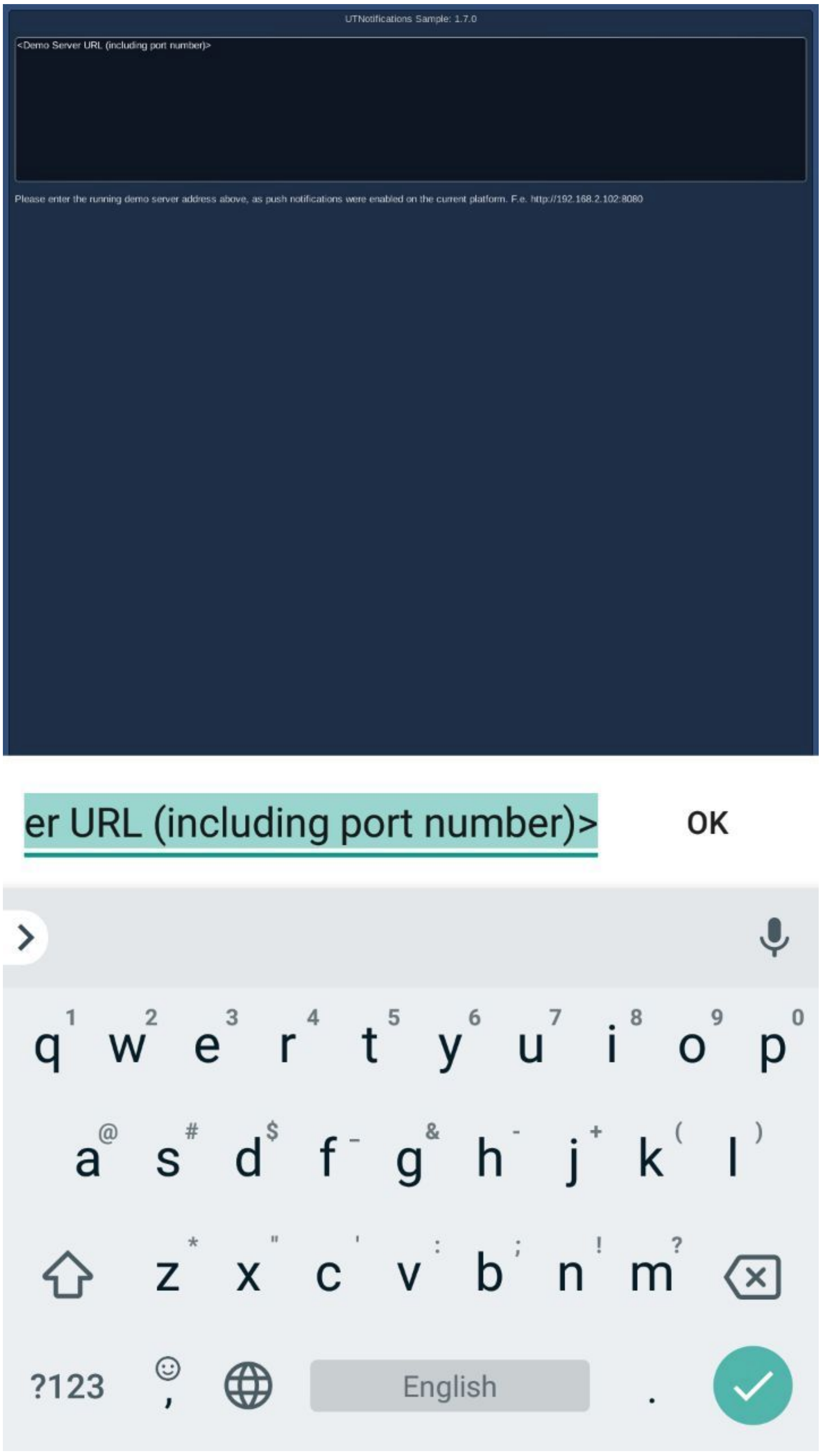
   - **WINDOWS_PACKAGE_SID**: Package SID you got in 3rd step of Obtain the identity values for your app section.
   - **WINDOWS_CLIENT_SECRET**: Client secret you got in 3rd step of Obtain the identity values for your app section.
2. Save *PushNotificator.java*, build and start DemoServer, by executing the following script in Terminal/Command line:
   <...>/Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh (macOS / Linux)
   or
   <...>\Assets\UTNotifications\Editor\DemoServer\start_demoserver.bat (Windows)
   Note that you'll need JDK and Maven.



```
iMac-Yuriy:utnotifications_1_7_test universal$ Assets/UTNotifications/Editor/DemoServer/start_demoserver.sh
/Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer
Apache Maven 3.5.2 (138edd61fd100ec658bfa2d307c43b76940a5d7d; 2017-10-18T08:58:13+01:00)
Maven home: /Users/universal/maven
Java version: 1.8.0_131, vendor: Oracle Corporation
Java home: /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Home/jre
Default locale: en_IE, platform encoding: UTF-8
OS name: "mac os x", version: "10.13.3", arch: "x86_64", family: "mac"
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demoserver 1.7.0-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ demoserver ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:compile (default-compile) @ demoserver ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 3 source files to /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ demoserver ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications
[INFO]
[INFO] --- maven-compiler-plugin:3.7.0:testCompile (default-testCompile) @ demoserver ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ demoserver ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ demoserver ---
[INFO] Building jar: /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/tar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ demoserver ---
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/target
[INFO] Installing /Users/universal/projects/temp/utnotifications_1_7_test/Assets/UTNotifications/Editor/DemoServer/pom.xm
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 5.793 s
[INFO] Finished at: 2018-02-14T21:31:32Z
[INFO] Final Memory: 17M/193M
[INFO] ------------------------------------------------------------------------
objc[19506]: Class JavaLaunchHelper is implemented in both /Library/Java/JavaVirtualMachines/jdk1.8.0_131.jdk/Contents/Ho
o will be used. Which one is undefined.
The demo server is running as http://169.254.188.196:8080
```

3. The running DemoServer will print its hostname (ip address) and port. Please note, that the ip address it prints can be either a local network address (usually 192.168.*.*) or an external (like on the screenshot above). In later case, please find your internal IP address in the OS network settings.

4. Build and run the Unity application on a target Windows / Windows Phone device. The sample scene should start requesting an URL of DemoServer in order to continue:



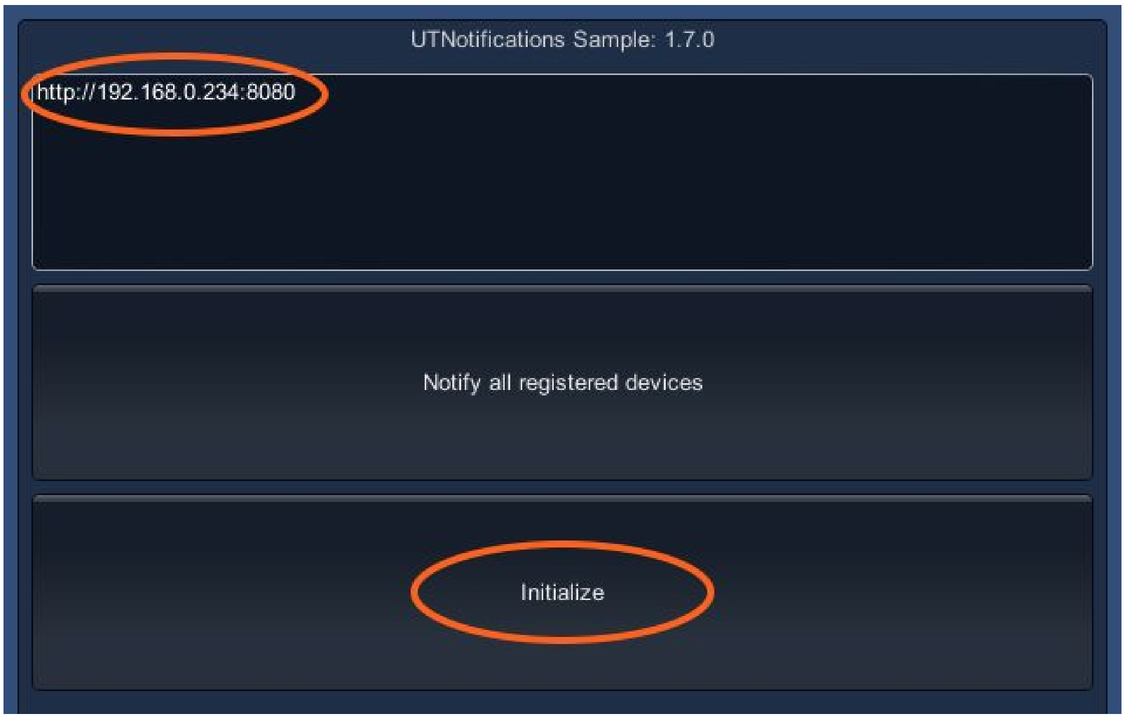
UTNotifications Sample: 1.7.0

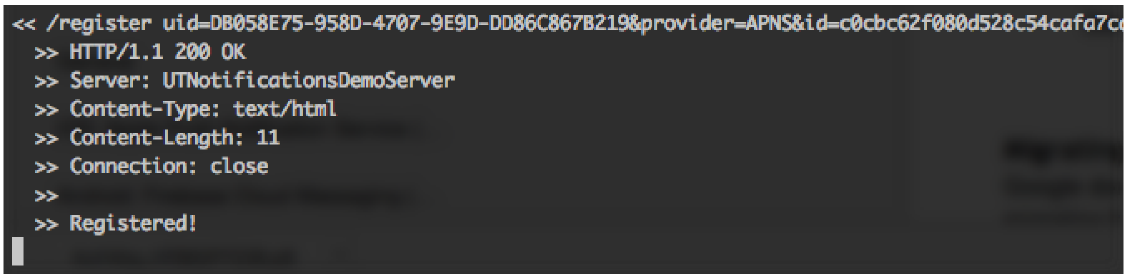
<Demo Server URL (including port number)>

Please enter the running demo server address above, as push notifications were enabled on the current platform. F.e. http://192.168.2.102:8080

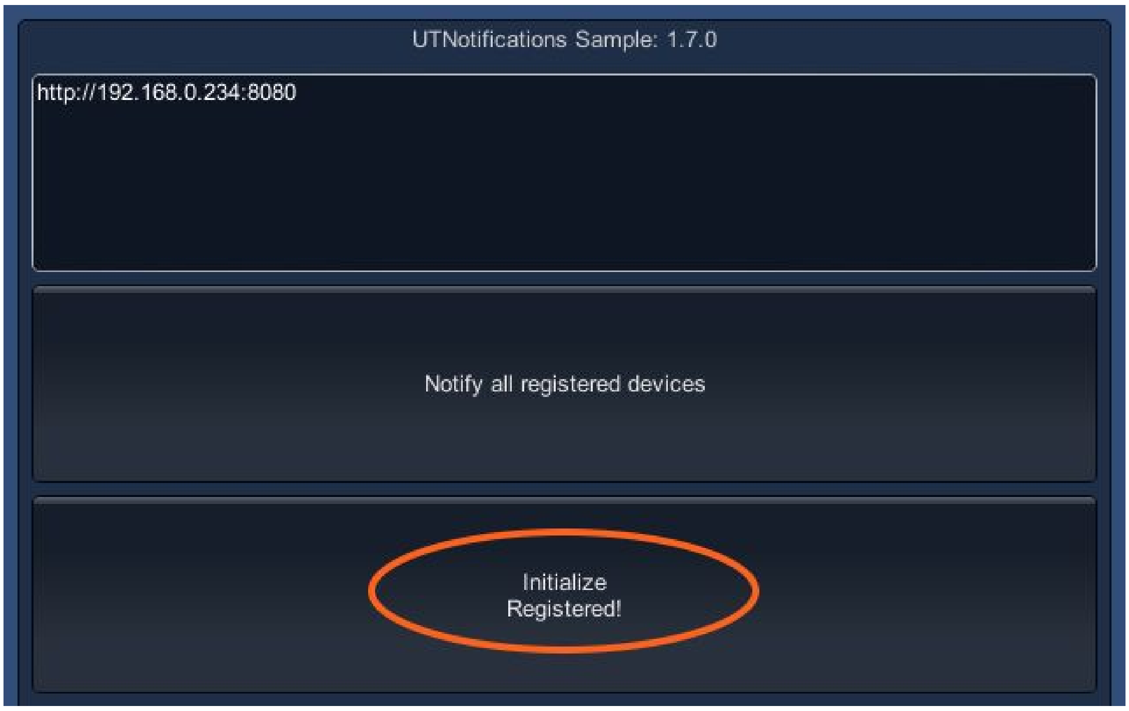
er URL (including port number)>

5. Make sure your test device and the computer running DemoServer belong to the same local network (f.e. connected to the same Wi-Fi router). Specify the full URL of the running DemoServer (as **http://<ip address>:8080**) and press **Initialize**:

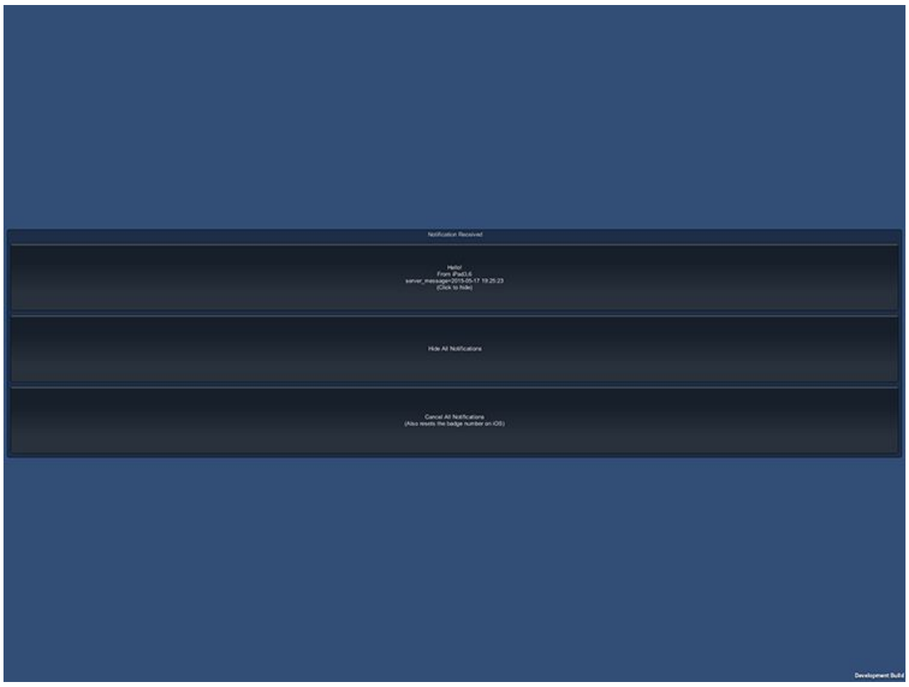

UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize



```
<< /register uid=DB058E75-958D-4707-9E9D-DD86C867B219&provider=APNS&id=c0cbc62f080d528c54cafa7c
  >> HTTP/1.1 200 OK
  >> Server: UTNotificationsDemoServer
  >> Content-Type: text/html
  >> Content-Length: 11
  >> Connection: close
  >>
  >> Registered!
```


UTNotifications Sample: 1.7.0
http://192.168.0.234:8080
Notify all registered devices
Initialize
Registered!

6. Press “Notify all registered devices” to send a push notification to all the DemoServer-registered devices. If everything was configured correctly, you should see how UTNotifications SampleScene handled the push message:


Notification Received

Hello!
From iPad3,6
server_message=2015-05-17 19:25:23
(Click to hide)

Contacts

If you got any questions please feel free to contact us: universal.tools.contact@gmail.com.
You can post bugs and feature requests at
https://github.com/universal-tools/UTNotificationsFeedback/issues.

If you liked using UTNotifications, please rate it, but any criticism is also welcome - please help us make the asset better!

Thank you for using UTNotifications!
Your Universal Tools team.