Obtaining a Google Maps API Key

In order to use the Google Maps functionality in Android, you need to register for a Maps API key with Google. Until you do this, you will just see a blank grid instead of a map in your applications. You must obtain a Google Maps Android API v2 key - keys from the older Google Maps Android API key v1 will not work.

Obtaining a Maps API v2 key involves the following steps:

1. Retrieve the SHA1 fingerprint of the keystore that is used to sign the application.
2. Create a project in the Google APIs console.
3. Obtaining the API key.

Obtaining your Signing Key Fingerprint

In order to request a Maps API key from Google, you need to know the SHA1 fingerprint of the keystore that is used to sign the application. Typically, this means you will have to determin the SHA1 fingerpring for the debug keystore, and then the SHA1 fingerprint for the keystore that is used to sign your application for release.

By default the keystore that is used to sign debug versions of a Xamarin.Android application can be found at the following location:

- **Windows** - `C:\Users\[USERNAME]\AppData\Local\Xamarin\Mono for Android\debug.keystore`
- **OSX** - `/Users/[USERNAME]/.local/share/Xamarin/Mono for Android/debug.keystore`

Information about a keystore is obtained by running the `keytool` command from the JDK. This tool is typically found in the Java bin directory:

- **OSX** - `/System/Library/Java/JavaVirtualMachines/[VERSION].jdk/Contents/Home/bin/keytool`
- **Windows** - `C:\Program Files (x86)\Java\jdk[VERSION]\bin\keytool.exe`

Run keytool using the following command:

```
keytool -list -v -keystore [STORE FILENAME] -alias [KEY NAME] -storepass [STORE PASSWORD] -keypass [KEY PASSWORD]
```

For the debug key, this command will look like:

```
keytool -list -v -keystore /Users/[USERNAME]/.local/share/Xamarin/Mono\ for\ Android/debug.keystore -alias androiddebugkey -storepass android -keypass android
```

You should see something like the following output in your console window:

```
Alias name: androiddebugkey
Creation date: Jan 01, 2013
Entry type: PrivateKeyEntry
Certificate chain length: 1
Certificate[1]:
```

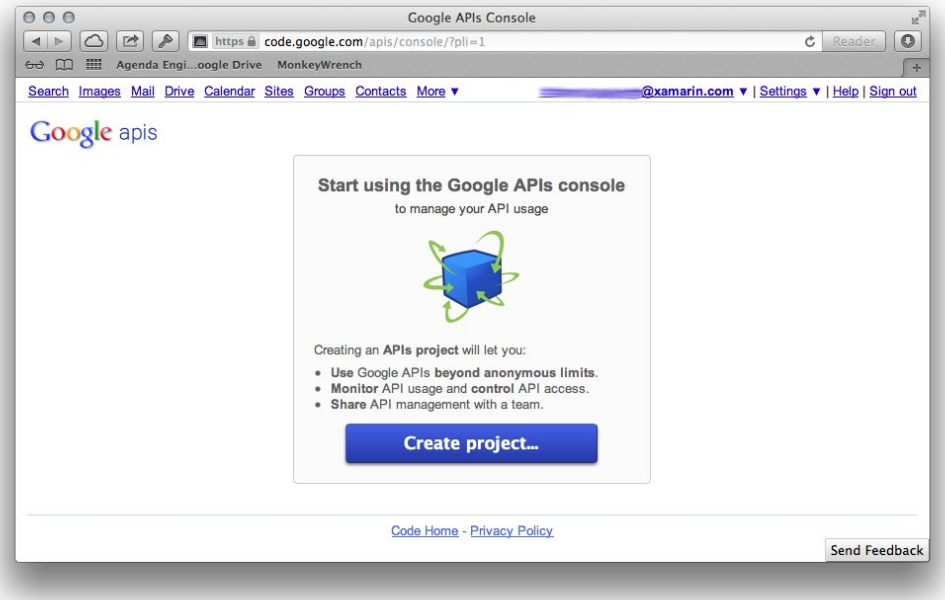
```
Owner: CN=Android Debug, O=Android, C=US
Issuer: CN=Android Debug, O=Android, C=US
Serial number: 4aa9b300
Valid from: Mon Jan 01 08:04:04 UTC 2013 until: Mon Jan 01 18:04:04 PST 2033
Certificate fingerprints:
    MD5:  AE:9F:95:D0:A6:86:89:BC:A8:70:BA:34:FF:6A:AC:F9
    SHA1: BB:0D:AC:74:D3:21:E1:43:07:71:9B:62:90:AF:A1:66:6E:44:5D:75
    Signature algorithm name: SHA1withRSA
    Version: 3
```

You will need the SHA1 fingerprint later on.

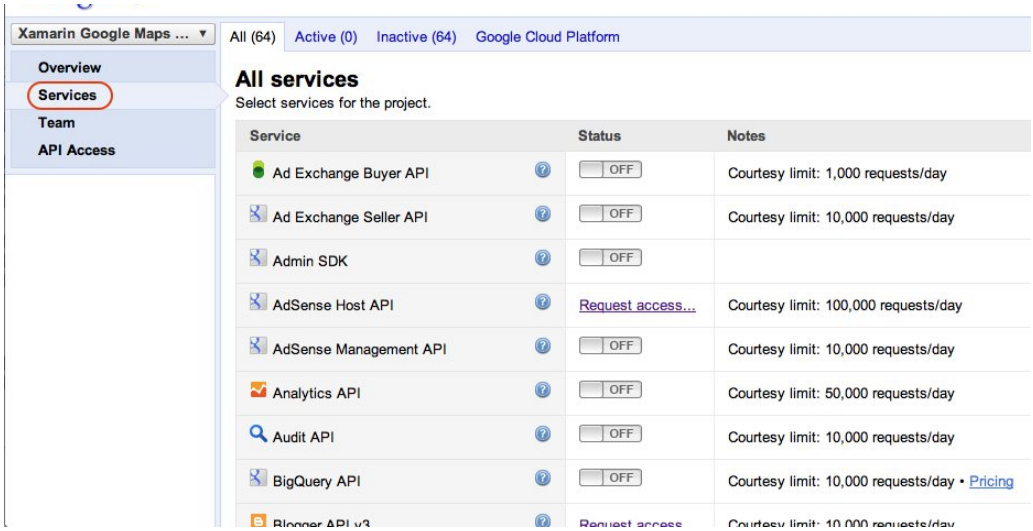
Creating an API project

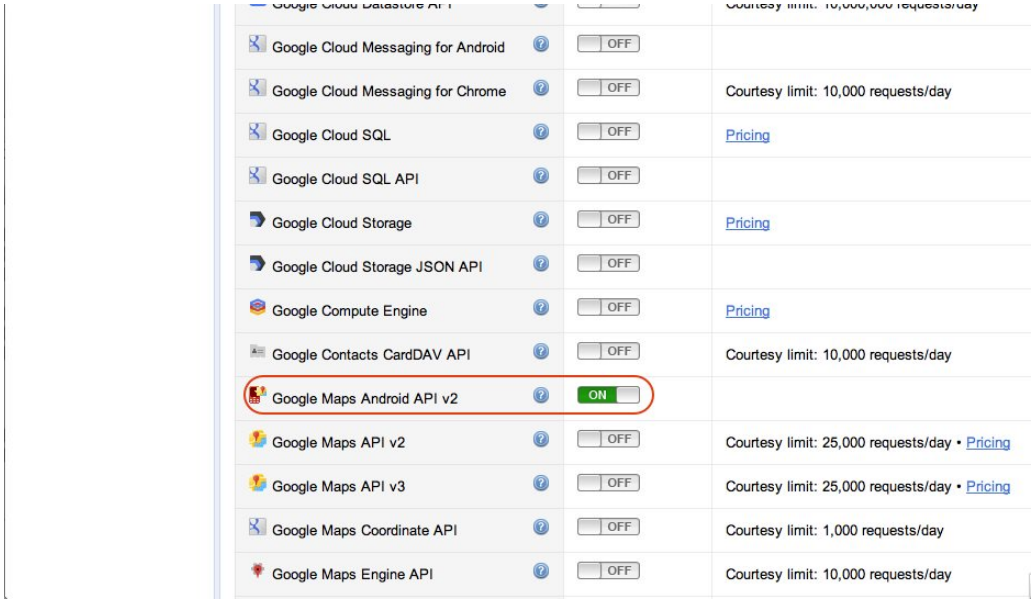
Once you have the SHA1 fingerprint of the signing keystores, it is necessary to create a new project in the Google APIs console, or to add the Google Maps Android API v2 service to an existing project.

1. In a browser, navigate to the Google APIs Console.
2. The first time you use the Google API console, you will be prompted to create a new project, as shown in the following screentshot:



3. .
4. Click the Create Project button to create the project.
5. Click on the Services tab in the left navigation bar. This will display a list of all services that are available to a project. You can see an example of this in the screenshot below:

6. 

7. Scroll down the list of services until the Google Maps Android API v2 service is visible. Toggle the switch indicator at the right to turn the service on for this project, as shown in the image below:
8. 

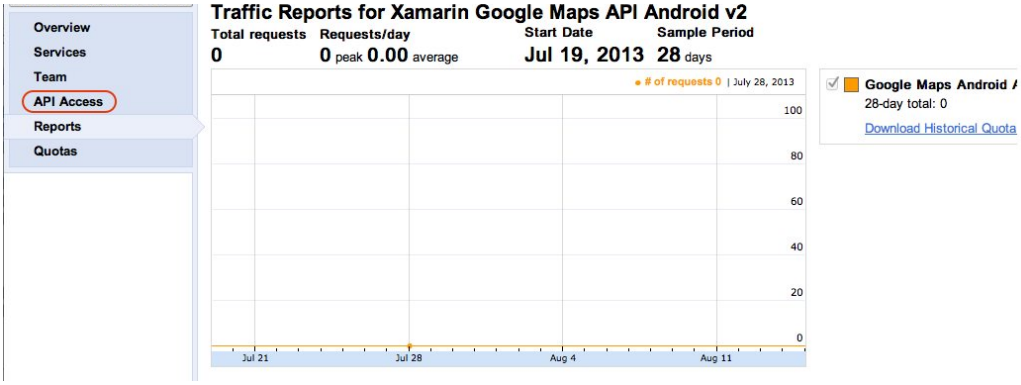
9. Once you turn the service on, the terms of service will be displayed to you. Click on the checkbox and click Accept.

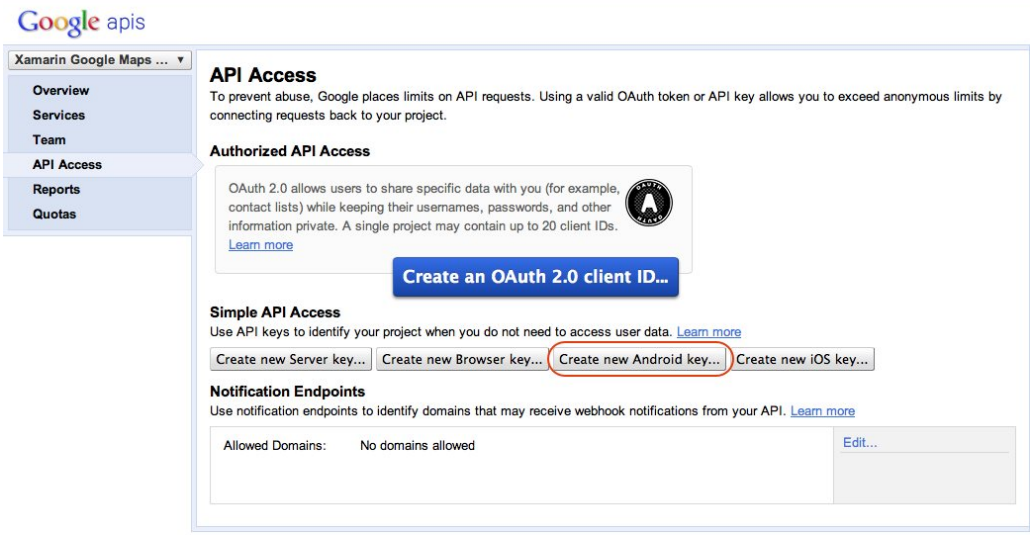
At this point the API project has been created and the Google Maps Android API v2 has been added to it. Next we will look at how to create an API key and white list a Xamarin.Android application so that it is authorized to use this key.

Obtaining the API Key

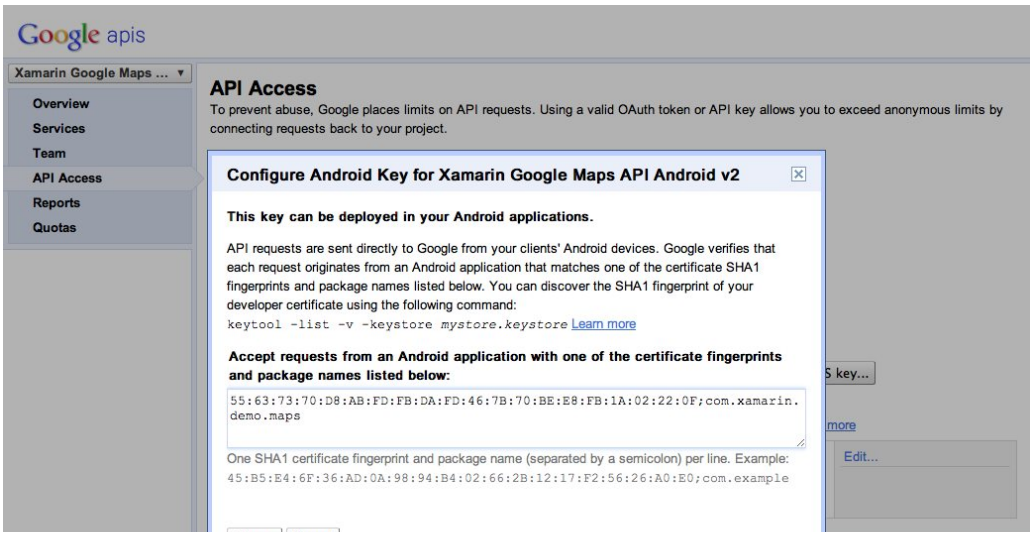
Once the Console API project has been created, it is necessary to create an Android API key. Xamarin.Android applications require the API key before they will be granted access to Android Map API v2.

1. Navigate to the Console API, and click on the API access:

2. 

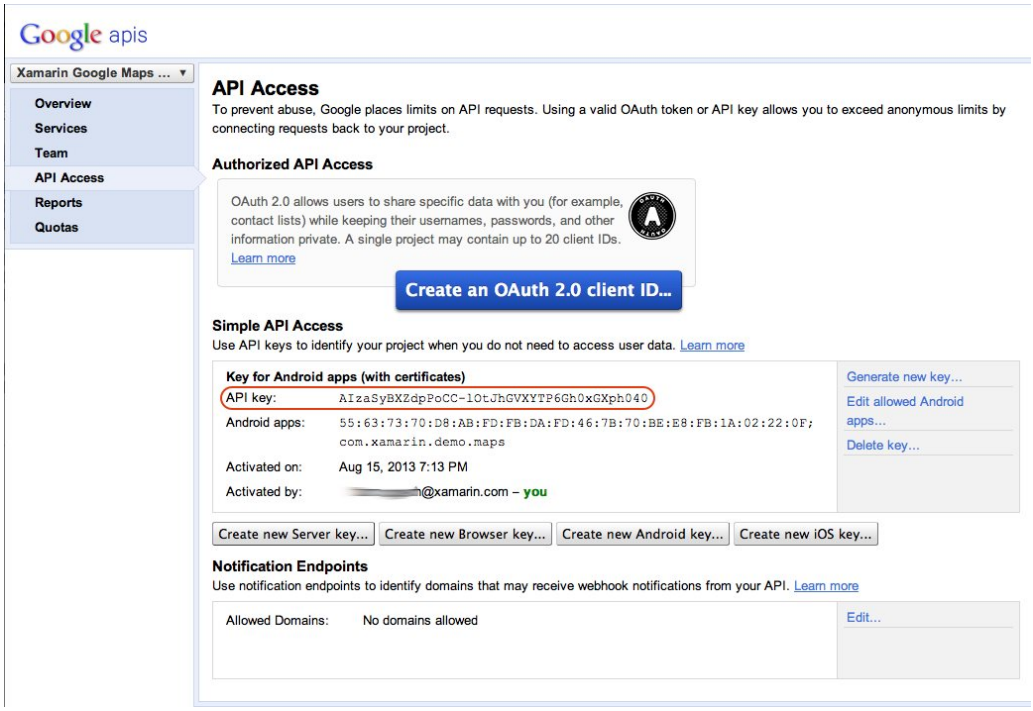
3. In the next page, click on the Create New Android Key button.
4. 

5. Next, it will be necessary to white-list an application with this API key. In the dialog that pops up, enter the SHA1 fingerprint, followed by a semi-colon, followed by the package name of your application. The following line is an example:
6. `BB:0D:AC:74:D3:21:E1:43:67:71:9B:62:91:AF:A1:66:6E:44:5D:75;com.example.android.mapexample`
7. This can be seen in the following screenshot:



8. 

9. Click on the Create button, which will return you to the API Access screen, which will display the API key and the Android apps that are authorized to use the API key. An example of this can be seen below:

10. 

This is the API key at will be added to the AndroidManifest.XML file of a Xamarin.Android application.