



# **Mobile Application Development**

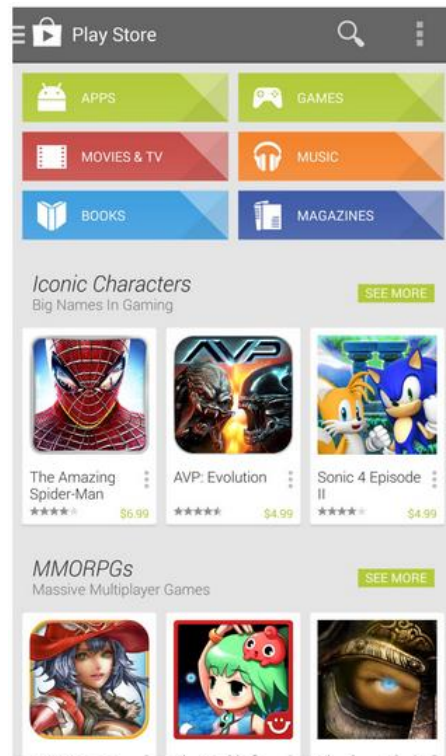
Publishing / Distributing Your App

# Publish your app



Publishing is the general process that makes your Android applications available to users. When you publish an Android application you perform two main tasks:

- You prepare the application for release. During the preparation step you build a release version of your application, which users can download and install on their Android-powered devices.
- You release the application to users. During the release step you publicize, sell, and distribute the release version of your application to users.



# Preparing your app for release



Preparing your application for release is a multi-step process that involves the following tasks:

- Configuring your application for release. You should provide values for the `android:versionCode` and `android:versionName` attributes, which are located in the `<manifest>` element.
- Building and signing a release version of your application. You can use the Gradle build files with the *release* build type to build and sign a release version of your application.
- Testing the release version of your application. Before you distribute your application, you should thoroughly test the release version on at least one target handset device and one target tablet device.
- Updating application resources for release.
- Preparing remote servers and services that your application depends on.

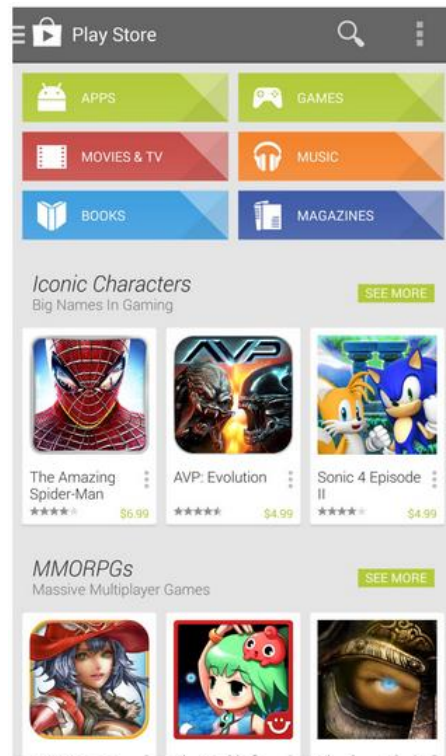
# Preparing your app for release



You may have to perform several other tasks as part of the preparation process. For example, you will need to get a private key for signing your application. You will also need to create an icon for your application, and you may want to prepare an End User License Agreement (EULA) to protect your person, organization, and intellectual property.

When you are finished preparing your application for release you will have a signed .apk file that you can distribute to users.

Detail: <https://developer.android.com/studio/publish/preparing>



# Releasing your app to users



Releasing your application on Google Play is a simple process that involves three basic steps:

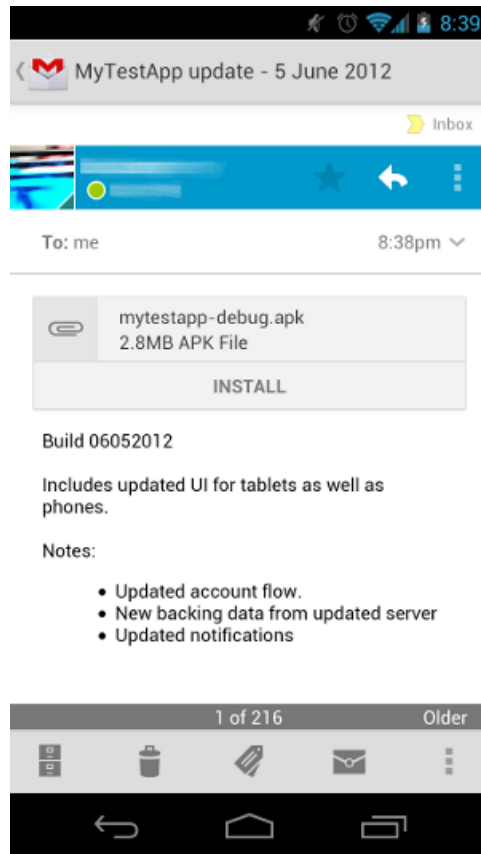
- Preparing promotional materials. To fully leverage the marketing and publicity capabilities of Google Play, you need to create promotional materials for your application, such as screenshots, videos, graphics, and promotional text.
- Configuring options and uploading assets. Google Play lets you target your application to a worldwide pool of users and devices. By configuring various Google Play settings, you can choose the countries you want to reach, the listing languages you want to use, and the price you want to charge in each country. You can also configure listing details such as the application type, category, and content rating.
- Publishing the release version of your application. You can simply click **Publish** in the Play Console and within minutes your application will be live and available for download around the world.

# Releasing your app to users



## Releasing your application through email

- The easiest and quickest way to release your application is to send it to a user through email. To do this, you prepare your application for release and then attach it to an email and send it to a user. When the user opens your email message on their Android-powered device the Android system will recognize the APK and display an **Install Now** button in the email message



# Releasing your app to users



## Releasing through a website

- If you do not want to release your app on a marketplace like Google Play, you can make the app available for download on your own website or server, including on a private or enterprise server. To do this, you must first prepare your application for release in the normal way. Then all you need to do is host the release-ready APK file on your website and provide a download link to users. However, the installation process will start automatically only if the user has configured their Settings to allow the installation of apps from [unknown sources](#).
- Although it is relatively easy to release your application on your own website, it can be inefficient. For example, if you want to monetize your application you will have to process and track all financial transactions yourself and you will not be able to use Google Play's [In-app Billing service](#) to sell in-app products. In addition, you will not be able to use the [Licensing service](#) to help prevent unauthorized installation and use of your application.

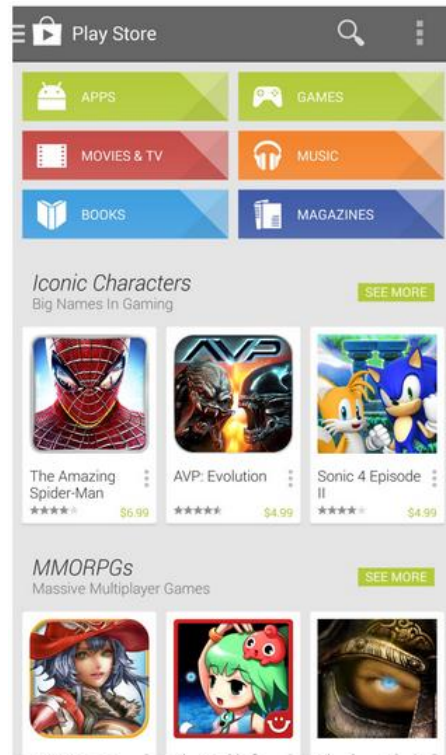
# Google Play



Largest and most popular Android  
app store

Automated systems for finding  
policy-violating apps (e.g.,  
Bouncer)

Sells other types of content  
(movies, music, books, etc.)





# Steps to publish your app on Google Play

1. Export your app

2. Register on [Google Play Developer Console](#)

Consider using a separate Google Account

Pay \$25 registration fee

3. Upload your APK and set metadata

4. Visit your app's page at

<https://play.google.com/store/apps/details?id=com.yourpackagename>

# Export your app



In Android Studio: Build -> Generate Signed APK

# Recall: Signing your app



Every app must be signed before it can be installed  
Android Studio signs your app with a debug key  
when deploying to emulator or phone

Before distributing, you must sign your app with a  
private key

Offers protection to users from developers who may  
have been hacked.

# Keystores



A **keystore file** stores pairs of private and public keys.

Each pair stored in the keystore is referred by a unique **alias**.

The keystore protects each private key with its individual password, and also protects the entire keystore with a password.

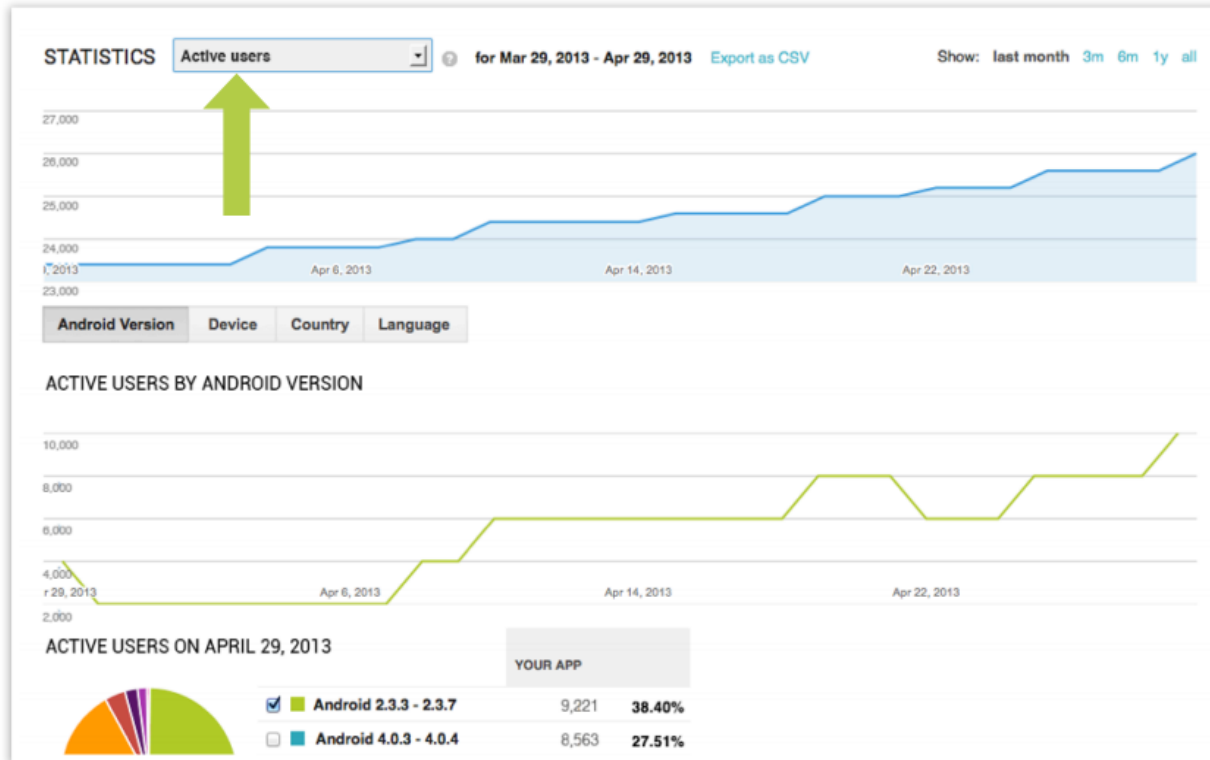
# Keys are important



If you lose your key, you cannot provide updates for  
your app!

Backup your keystore!

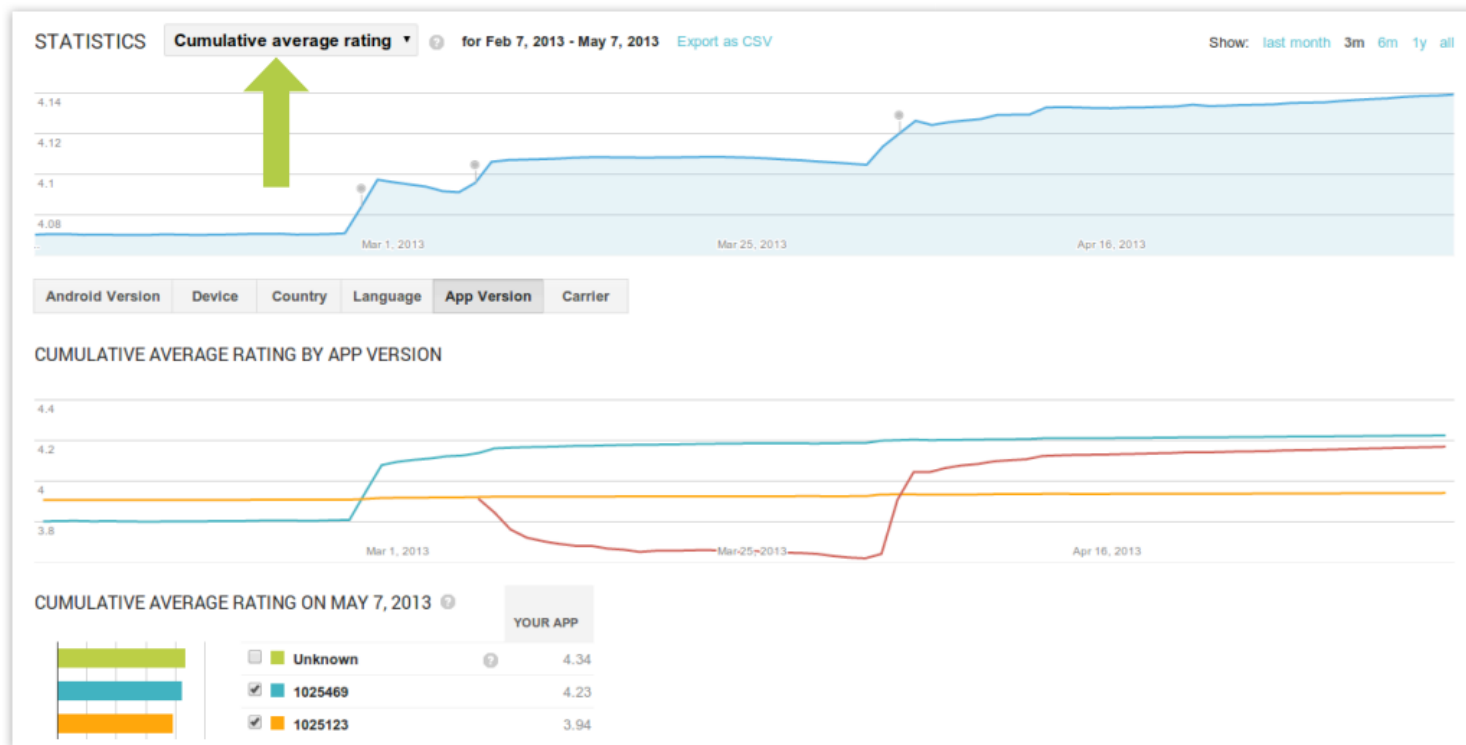
# User feedback metrics



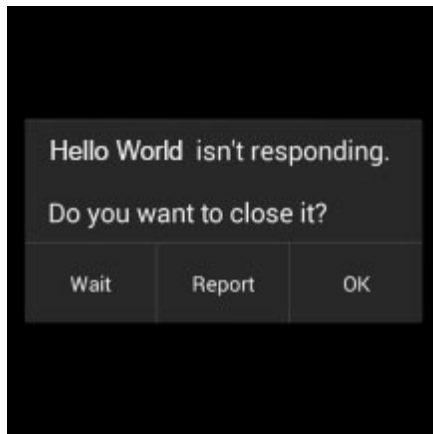
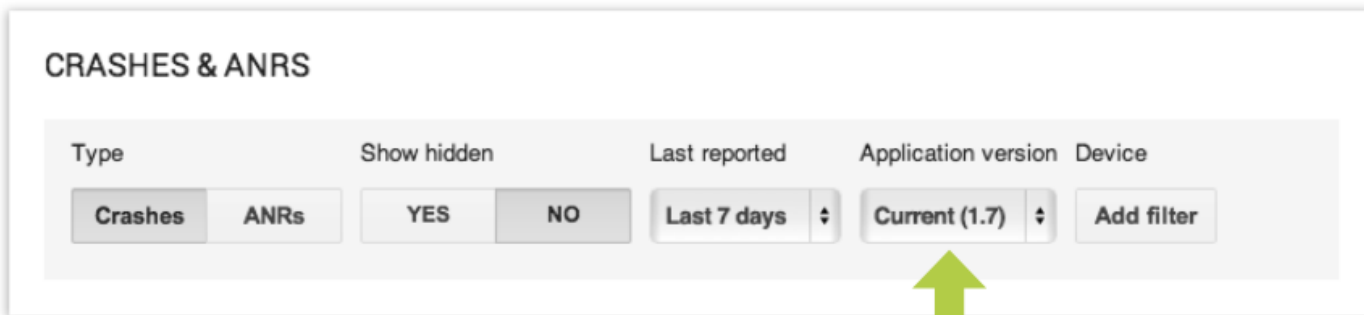
Slice metrics by:

- Android Version
- Device
- Country
- Language

# Average rating metrics



# Error Reports



When an app crashes, users have an option to Report it. This data is recorded in the developer console.



# Monetizing Your App



- Paid applications
- Ad-supported
- In-app billing

# Paid Apps



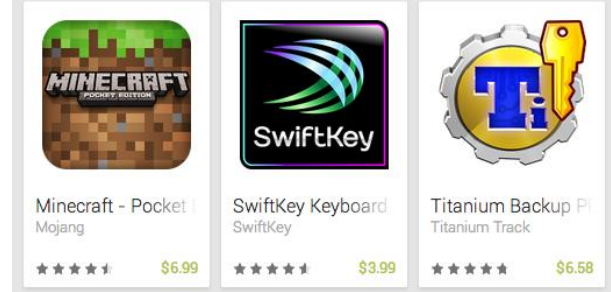
User pays upfront

Typical price is less than \$5

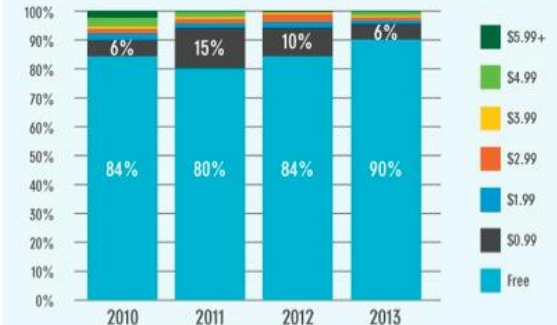
Most apps are free

The percentage of paid apps is shrinking every year

## Top Paid in Android Apps



## Increasingly the Price of Apps is Free



Source: Flurry Analytics and the Apple App Store.

Data is for iOS apps using Flurry Analytics in April of each year, and is weighted by monthly average users.

# Ad Monetization



Types:

Banner

Interstitial

Process:

Register account

Download ad SDK

Implement code



# In-App Billing



Primary monetization mechanism today

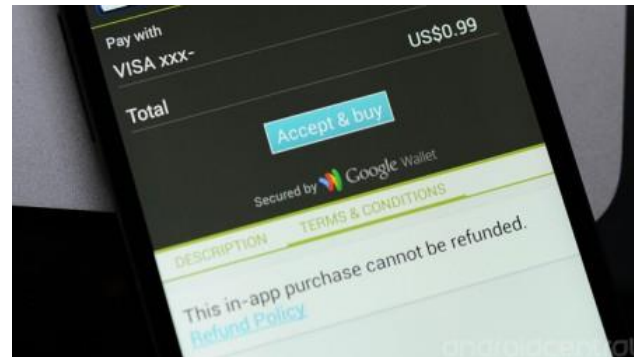
Freemium model:

- Free basic version

- Use in-app billing for added bonuses

  - "Premium" features

  - In games, pass levels



# Alternative app stores



[Amazon](#)

[GetJar](#)

[SlideME](#)

[F-Droid](#)

# Reference



<https://developer.android.com/studio/publish/>

<https://developer.android.com/studio/publish/app-signing>

## Reading Assignment

### **Security tips**

<https://developer.android.com/training/articles/security-tips>

[\(question will come from this page\)](#)