

Generate Android App with Protection and Licensing

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The Generate Android App paper covers the entire process of generating an Android app without programming. That paper shows how DocProtect outputs the Android Project source files based on a selected document that contains the content of your application. Android Studio is used to generate an APK from that source folder.

If you haven't already read the Generate Android App paper, do so now. This paper is focused exclusively on adding protection and licensing features to the generated app. Licensing options are selected in DocProject before outputting the Android Project source folder. No programming is required.



Cloud License is an Internet based licensing system implemented by Safe Activation Service 3. Alternatively, the Cloud License Server product is hosted on a vendor's Linux or Windows based website.

Programmers can implement the Cloud License API directly from virtually any target OS or development environment. Alternatively, CloudRT is a drop in library file that simplifies the programming effort to a few function calls for popular environments including Android Studio.

DocProtect includes a royalty-free distribution license for CloudRT on Android. It outputs the necessary glue code required to implement the licensing options you select.

To protect and license your Android app, you will need a Safe Activation account or Cloud License Server installed on your own website. This paper describes the setup process in DocProtect and Safe Activation. The same concepts apply to Cloud License Server.

Product License in DocProtect

Present the Mobile dialog by clicking the **Mobile** button in the main DocProtect window. You will see options for different license types and features. Assume that you want a simple Product license that once activated with a Serial Number can be used thereafter without Internet access.

Set the Product radio button. If you use Safe Activation, enter the URL below. Enter your 8-digit Vendor ID proceeded with the DB number of your account and a dash. Enter a random 10-digit number in the Ticket Code field.

The screenshot shows a 'Mobile Setup' dialog box with the following fields and settings:

- Target:** Android (selected), iOS
- Company/Domain:** yourcompany.com
- Image for Icon:** /Users/harold/Documents/Development/Source/vault.jpg
- License:** None, Trial, Product (selected), Trial To Product, Subscription
- License Details:**
 - Server:** https://www.safeactivation.com/cloudlicense.php
 - Vendor:** 6-20080503
 - Expires In:** 10 (Minutes selected)
 - Never:** (selected)
 - Ticket Code:** 1234567890
 - Product Number:** 4
 - Check Suspend:** (unchecked)
 - Reset License:** (checked)
 - Activation Fields:** First Name (unchecked), Last Name (unchecked), Company (checked), Email (checked), Phone (unchecked)
- Output Folder:** /Users/harold/Documents/Development/Output

Enter the Product Number from the Product List page on Safe Activation once you setup the server data as described in the section below.

<http://www.safeactivation.com/cloudlicense.php>

If you use Cloud License Server on your own website, put 0 in the Vendor ID field. The Server URL will look something like this:

<http://yourdomain.com/cls/cls.php>

For this example, assume that you want to collect the Company name and Email address in addition to the Serial Number during the activation process. Set those two checkboxes.

When generating an Android Project that includes licensing features, DocProtect presents a help screen that outlines the setup process for Safe Activation.

Product License in Server

These steps demonstrate how to setup the server so it can support the Product license built into your Android app.

- Create a custom form that accepts Request Number, Serial Number, Company and Email.
- Name a Serial Number group and generate a batch of Serial Numbers assigned to that group.
- Create a Product Page linked to that form and group of Serial Numbers.
- Set the Enable Activation and Serial Number Required checkbox.
- Set the Enable License Block and Enable License Unblock checkboxes.
- In the Activation Calculation field, type $B*B+T+U$.
- Type the same Ticket Code value used in DocProtect.

- Type CloudLicense=Product in the Notes field and click the Save Data button at the bottom of the page.

Test Product License

Build, download and install your protected Android app. When you run the app, an Activation screen is presented. Enter a Serial Number from Safe Activation and other requested data to complete the activation process.

When giving a Serial Number to a customer, set the Used checkbox next to it and click Save Data. This ensures that same Serial Number is not given to another customer.

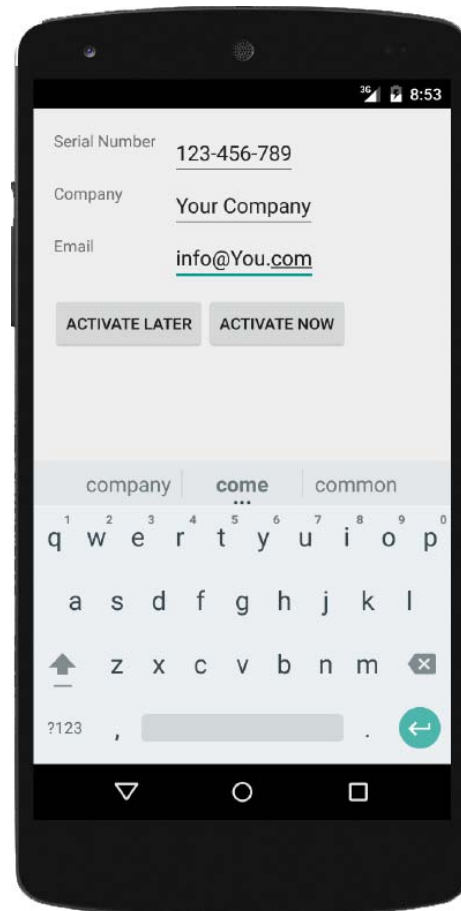
With an automated order process, the Used checkbox is automatically set. Notice how a customer record is created in Safe Activation after your application is successful activated.

If the user clicks the **Activate Later** button, they are returned to the Welcome screen that shows your splash image, a **License** button and a **Start** button. The user can also return to the Welcome screen while using your application. To do this, click on the **Exit** button at the top right corner.

The **License** button presents the License Options screen. If the application has not been activated, click the **Activate** button to present the Activation screen again.

If already activated, the License Options screen presents other options like Release or Restore depending on the state of the license.

The **Start** button on the Welcome screen presents your application or instructs the user to activate it.



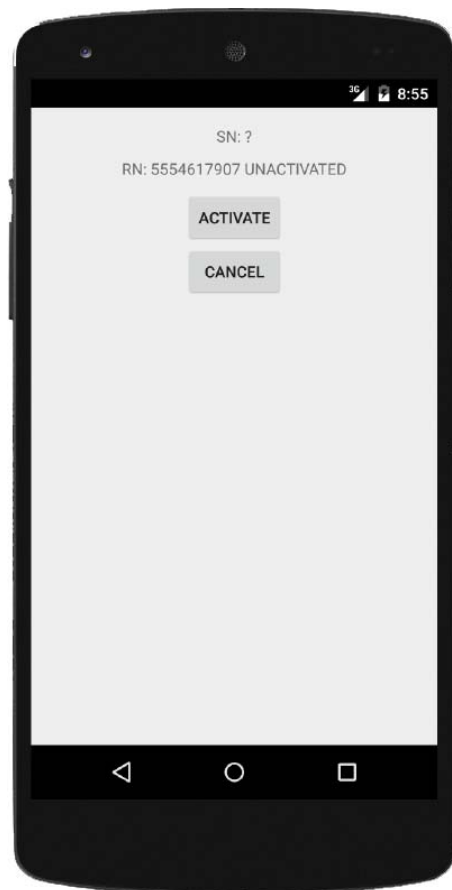
Suspend and Reset

The Product license described thus far only requires Internet access for initial activation. Once activated, no Internet access is required. Since mobile devices almost always have Internet access, you may want to enable the Suspend and Reset features.

The Suspend feature allows a vendor to suspend a license after it has been activated. The suspend doesn't occur immediately, but instead the protected app occasionally communicates with the server to see if the Suspend checkbox has been set next to its Serial Number.

The Reset feature implements a cooperative effort between the vendor and user to reset the license so a fresh activation can occur. It could be used if something became corrupted within the license or during the development process to return a license back to its original unactivated state.

The vendor sets the Reset checkbox on the server next to the Serial Number to enable a reset. The user clicks the **License** button on the Welcome screen, then clicks the **Reset** button. Once the reset is successful, the checkbox is automatically cleared.



Periodic Server Communication

If the Suspend feature or some type of time-limited license is enabled, the generated Android code includes a timer that allows the application to periodically communicate with the server. To minimize Internet bandwidth used by the device and server load caused by many communicating devices, the frequency of communication is adjusted based on license parameters.

For example, a suspended Product license may not take affect for a day or longer. For a shorter time-limited license, suspend occurs in hours or minutes.

Trial License

To create a time-limited license, set the Trial radio button, enter a unit of time in the Expires In field and set the Minutes, Hours or Days radio button. This license type can be used for free evaluations or a Beta period for a new app.

To determine when a Trial has expired, CloudRT built into the application can use a combination of the local device clock and occasional communication with the server. This blended approach prevents a user from simply changing their device clock to permanently extend the Trial period, yet allows use of the application without immediate Internet access.

Trial To Product License

This license type allows a user to initially activate a time-limited license using their email address. The user receives an Activation Code by email to activate the Trial. This process ensures that a valid email address was entered when requesting the Trial. The user can later activate a full product using a purchased Serial Number. Read the Cloud License User Guide for a full discussion of how this license type works.

Subscription License

Activation of this license type is similar to a Product license, except the Subscriber checkbox is initially set on all Serial Numbers given to users. To cancel a subscription, the vendor can clear the Subscriber checkbox next to that Serial Number on the server.

In addition to delivering the Serial Number by email after accepting payment, periodic subscription payments can be processed. The subscription can also be cancelled through a fully automated process.

Summary

The Mobile dialog in DocProtect allows common license types and features to be applied to an Android application without programming. It does not fully exploit all the capabilities of CloudRT or the Cloud License API.

If you are a programmer, you can add your own customizations to the generated Android Project source folder. If so, you may want to read the Cloud License User Guide or purchase the CloudRT product for additional programming information to reduce your development effort.