Integration Console

Getting Started
Keybox Management

version 0.5

Contents

Welcome

Welcome to the Widevine Integration platform portal for Device Management. This document will be your guide to using our web-based user interface to manage devices and keyboxes.

IMPORTANT: If you currently work with the Android team directly and have an assigned Android TAM, please use partner.android.com to manage your Android devices.

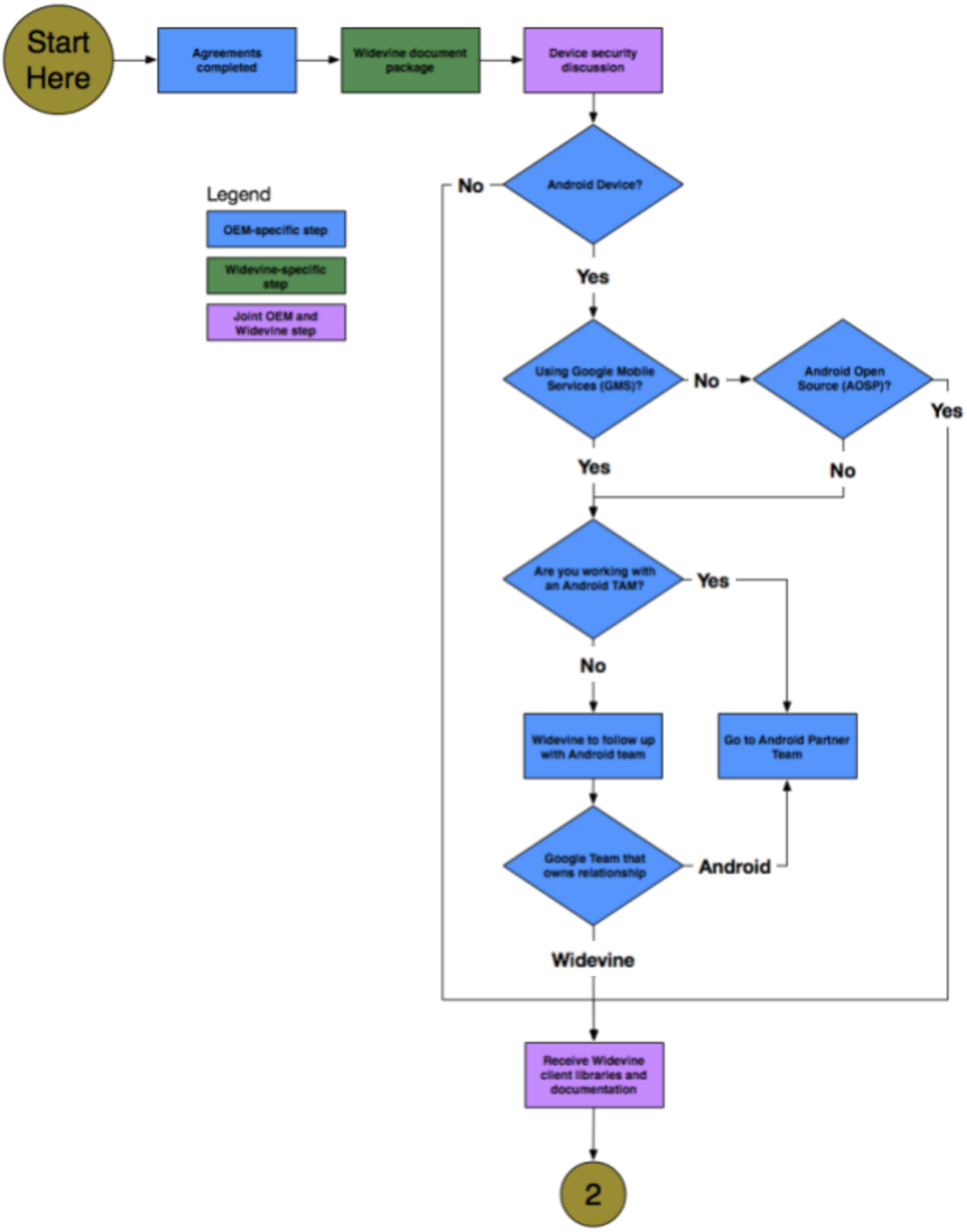
Use the flowchart in the following pages to see what the typical flow is for device integration for your specific platform.

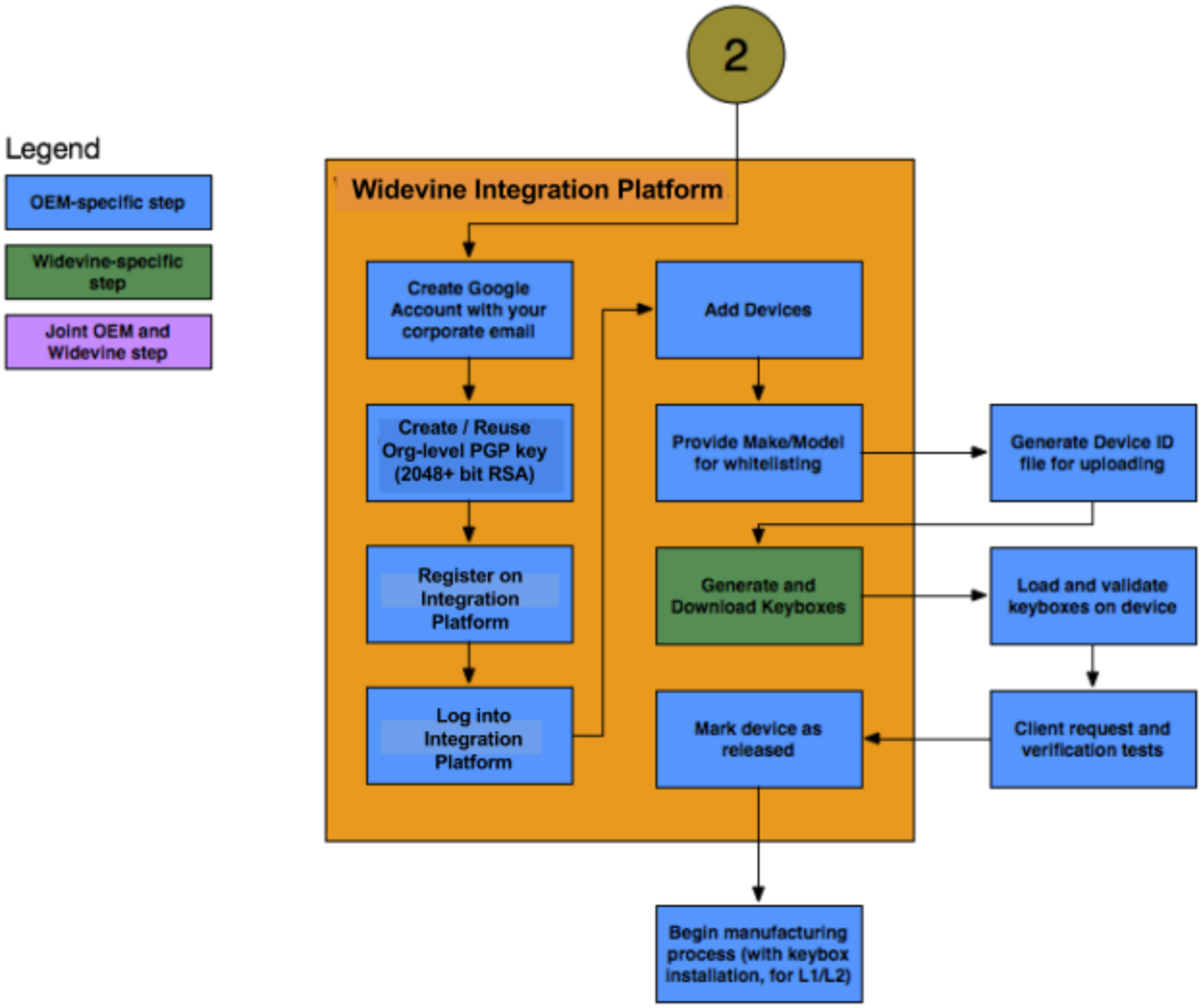
A general guide to the device integration workflow is available here.

Contact us

If you need additional help or clarification, please contact us on widevine.com.

- Choose ***I'm a hardware manufacturer***.
- Select ***Other inquiries***.


Start Here
Agreements completed
Widevine document package
Device security discussion
Android Device?
No
Yes
Legend
OEM-specific step
Widevine-specific step
Joint OEM and Widevine step
Using Google Mobile Services (GMS)?
No
Android Open Source (AOSP)?
Yes
Yes
No
Are you working with an Android TAM?
Yes
No
Widevine to follow up with Android team
Go to Android Partner Team
Google Team that owns relationship
Android
Widevine
Receive Widevine client libraries and documentation
2


2
Legend
OEM-specific step
Widevine-specific step
Joint OEM and Widevine step
Widevine Integration Platform
Create Google Account with your corporate email
Create / Reuse Org-level PGP key (2048+ bit RSA)
Register on Integration Platform
Log into Integration Platform
Add Devices
Provide Make/Model for whitelisting
Generate and Download Keyboxes
Mark device as released
Generate Device ID file for uploading
Load and validate keyboxes on device
Client request and verification tests
Begin manufacturing process (with keybox installation, for L1/L2)

Getting Started

Before you can begin using the Integration Platform, you will need to create and register an account. Once we have approved your new account, you will then be able to log into the portal.

Create a Google Account

Requirements

1. This must be created with a company email address.
2. This cannot be a shared email address, such as *widevine-keys@mycompany.com*, but should be your individual email address, such as *firstname.lastname@mycompany.com*
3. This cannot be a non-company email address (such as a gmail, hotmail, or yahoo account)
4. It should also not be associated with an existing Google account. If it is, you can remove the association here: https://support.google.com/accounts/answer/76143?hl=en

If you do not have a Google account yet:

1. Visit https://accounts.google.com/SignUp
    a. If you do not wish to use a Gmail account, go here instead - https://accounts.google.com/signupwithoutgmail
        i. Select "I prefer to use my current email address".
        ii. Use a company email account or group alias.
2. Complete the sign-up form.
3. Confirm your email address. Until you confirm, you cannot continue.

Register your Google Account

Once you have created your Google Account, please contact us to register your account with Integration Platform.

- You must use the same email address you used for the Google Account above.
- You must attach the **public PGP key associated with your company in ASCII Armor (ASC) format**.
    - Our system requires this to be a **2048-bit RSA cipher key** (not DSA or Elgamal). See Appendix for more details.

IMPORTANT: This will be a shared PGP key for every user in your organization (company). Widevine will only store a single PGP key for each organization (company).

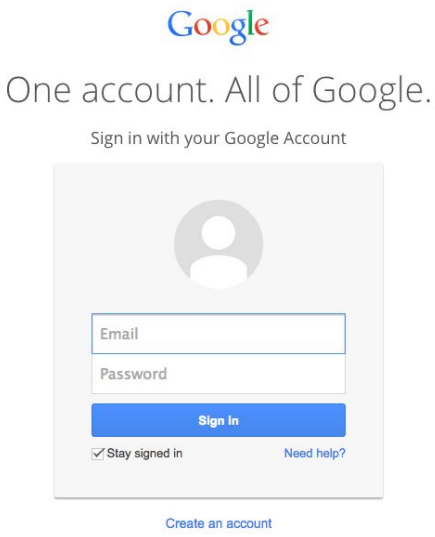
Please allow up to 5 business days for the approval and registration process to complete.

Log into Integration Platform

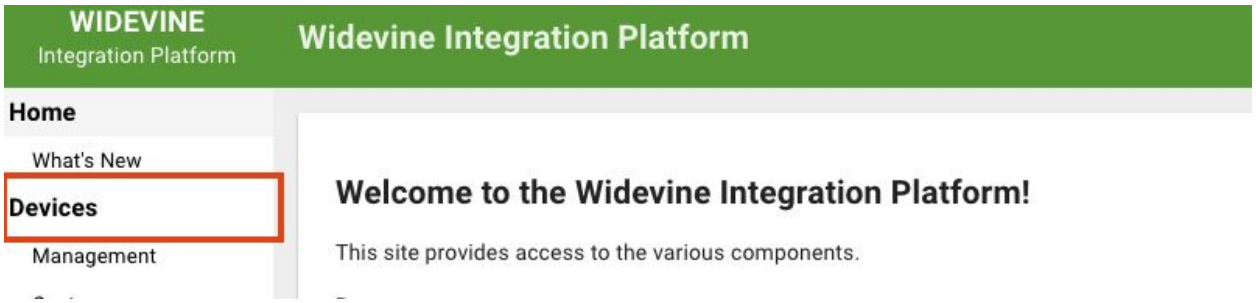
Visit our portal at:

https://integration.widevine.com

If this is your first time using Google services, you will be asked to log in using your Google Account.

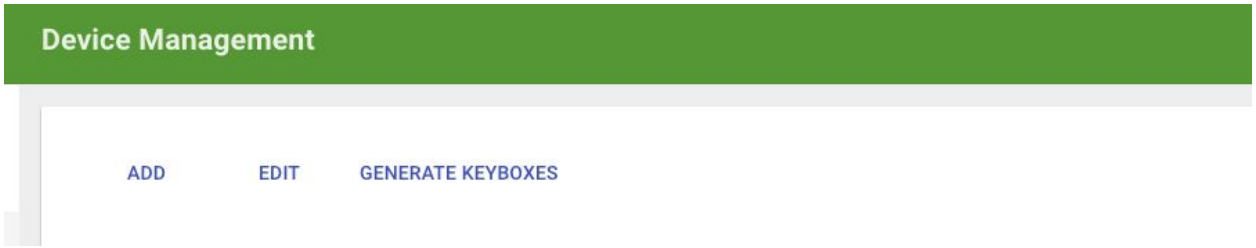


After you have logged in, you will be able to view the **Devices** control in the left-side panel.



Using the Integration Platform

The **Devices** section has the **Management** sub-section listed under it.

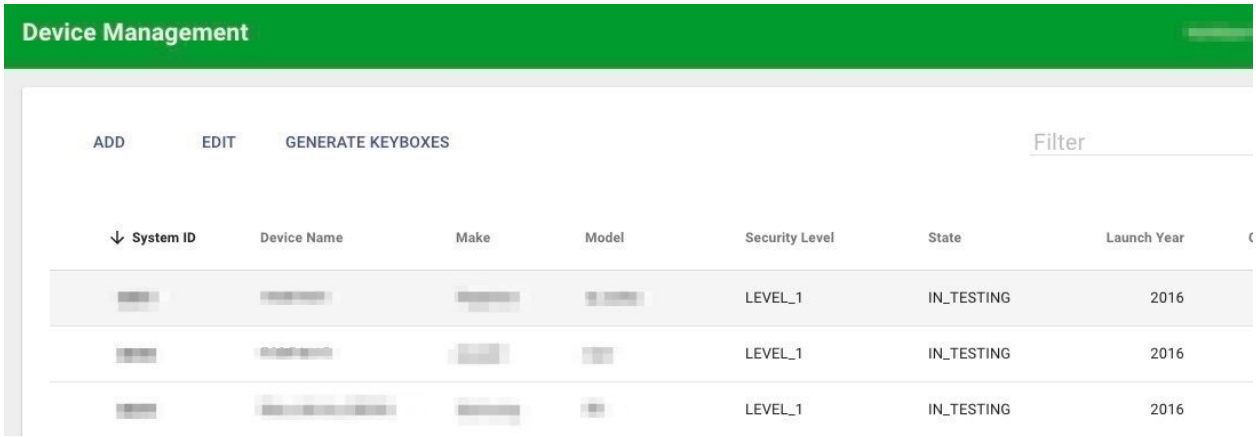


The **Management** section allows you to manage your devices that users (including yourself) in your company have created.

1. A device entry must be created first before keyboxes can be generated.
2. Keyboxes are generated for a specific device and must not be used with other devices.

There are 3 actions that can be performed via **Management**:

- Add a new Device
- Edit an existing Device record
- Generate Keyboxes for an existing Device.

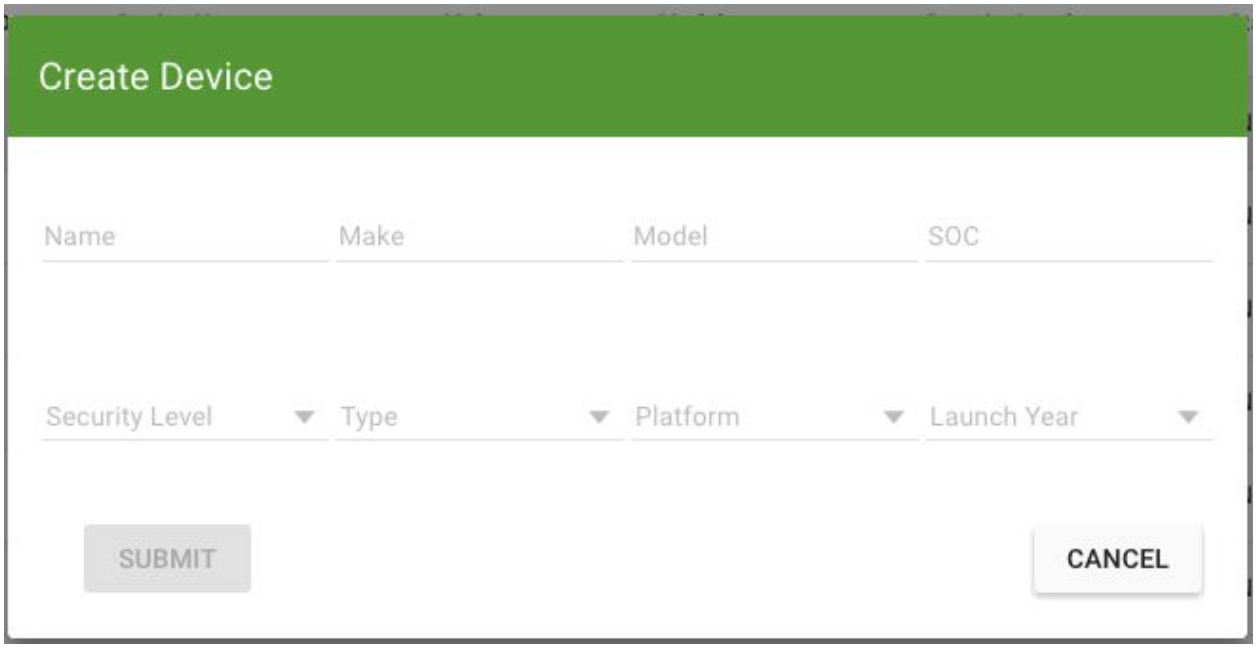


ADD DEVICE

This action creates a new Device record.

Add a new Device when:

- Adding a new unique device based upon the chipset (SoC), launch year, and device type.
    - Name, Make and Model fields are mandatory when adding a new device.
    - You may complete the other fields later by editing the device.



Description

- NAME
  Unique name for the device type. This field is for your own use. It cannot be empty, but it can be any unique string value.
- MAKE
  The manufacturer name for the device.
  For Android, this corresponds to `ro.product.manufacturer`.
- MODEL
  Model name for this device record.
  For Android, this value corresponds to `ro.product.model`.
- TYPE
  Type of device: SmartPhone, TV, BluRay, Tablet, Streaming, Gaming Console, STB (Set top Box), Software, SoC, PC, iOS
- LAUNCH YEAR

The calendar year when this device was or will be released to the public.

- SOC
  The chipset used in this device. Please use fill in both the chipset manufacturer and model number used.
- SECURITY LEVEL
  The device security level of the widevine implementation. Please refer to your integration details to determine this.
- DEVICE STATE
  This field is available only after creating a device record.

State if device record is in testing or in production.

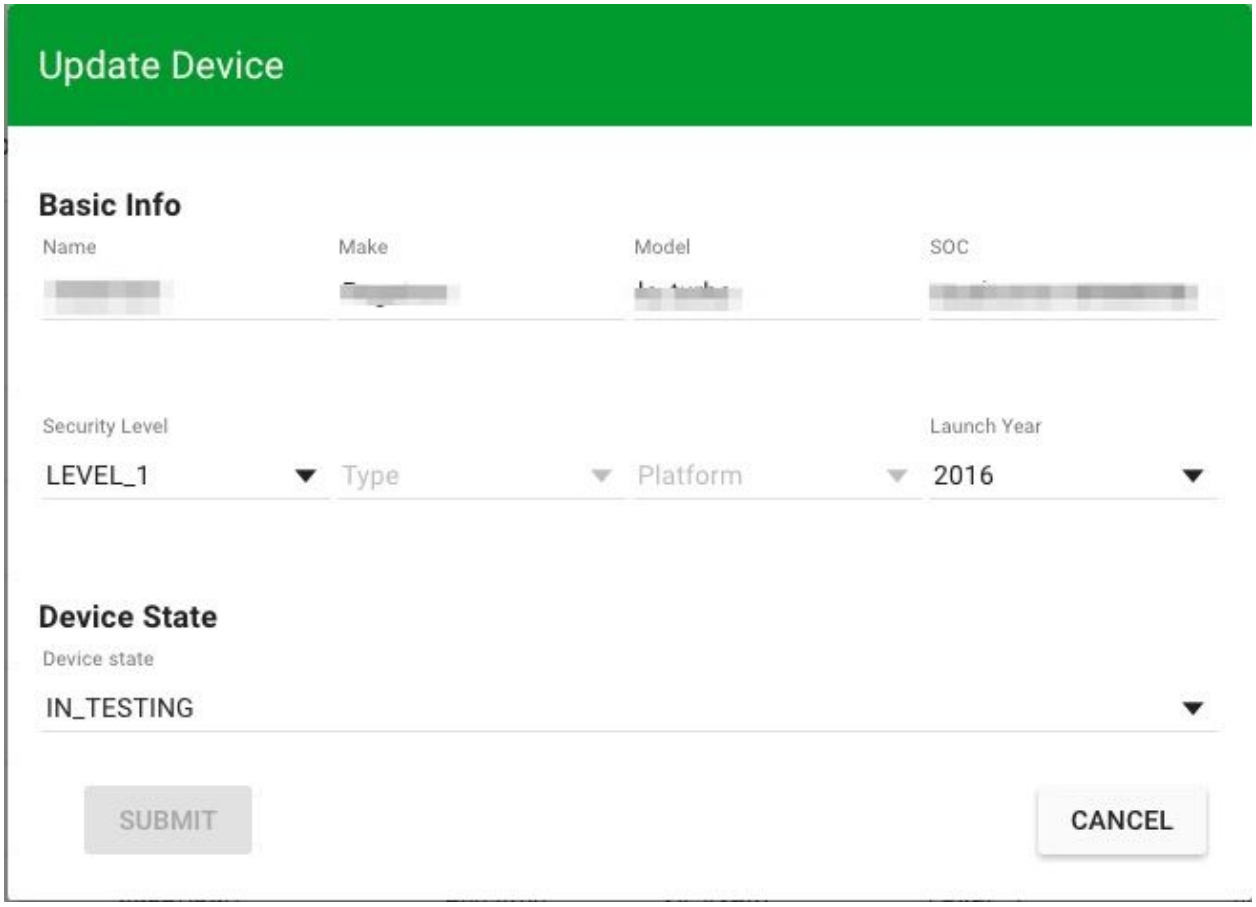
The allowed state types are:

- IN_TESTING
  - The device is under development and testing.
- RELEASED
  - The device has been launched commercially or publicly.
  - **Once a device is RELEASED, you may no longer change the state type**.
- DELETED.
  - The device has been disabled.
  - **Once a device is DELETED, you may no longer change the state type**.

EDIT DEVICE

NOTE: This option is only visible when a device row is selected.

Update the information within a device record.
A device record may be modified as long as it is not in a RELEASED state.



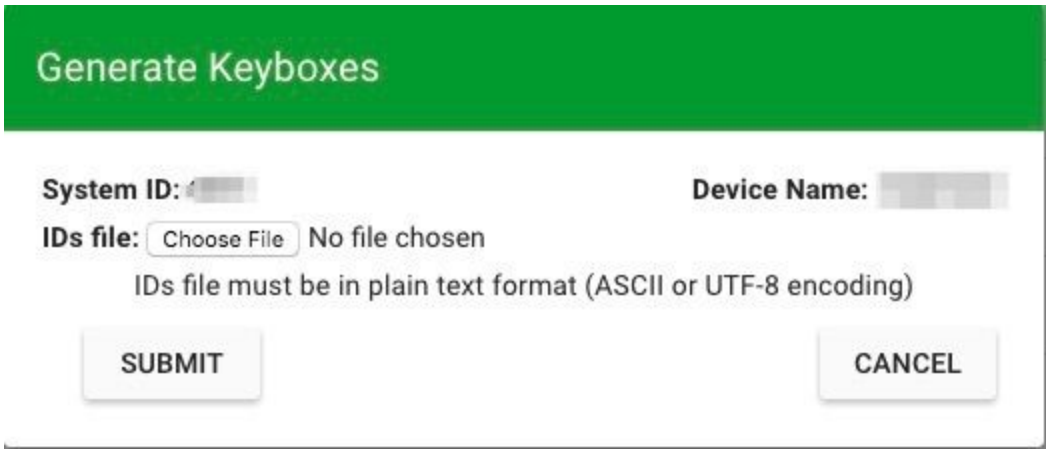
GENERATE KEYBOXES

NOTE: This option is only visible when a device row is selected.

Generate Keyboxes will submit a request for keyboxes for the selected device.

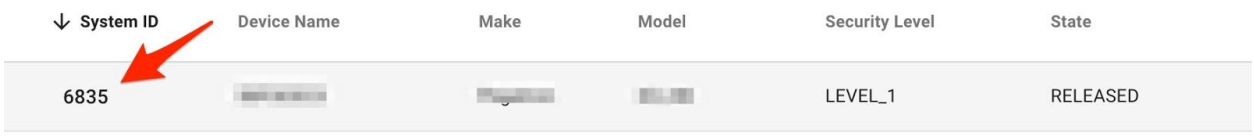
To submit a keybox generation request:

- You must attach the Device ID (IDS) file to the request. It must meet the requirements as listed in Appendix below.
- The file should not be encrypted.



DEVICE DETAILS

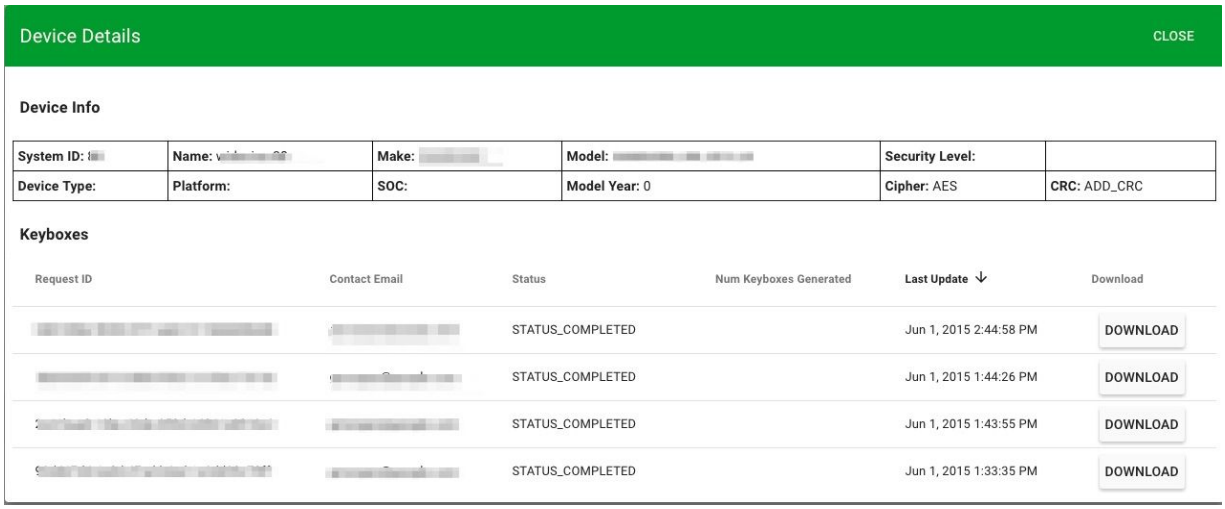
NOTE: Device details may be viewed by clicking on a System ID value.



Device details allows the user to:

- Check status of keybox request and generation.
- Download the keyboxes specific to this device.

This screenshot below displays the list of all keybox requests made for this particular device entry.

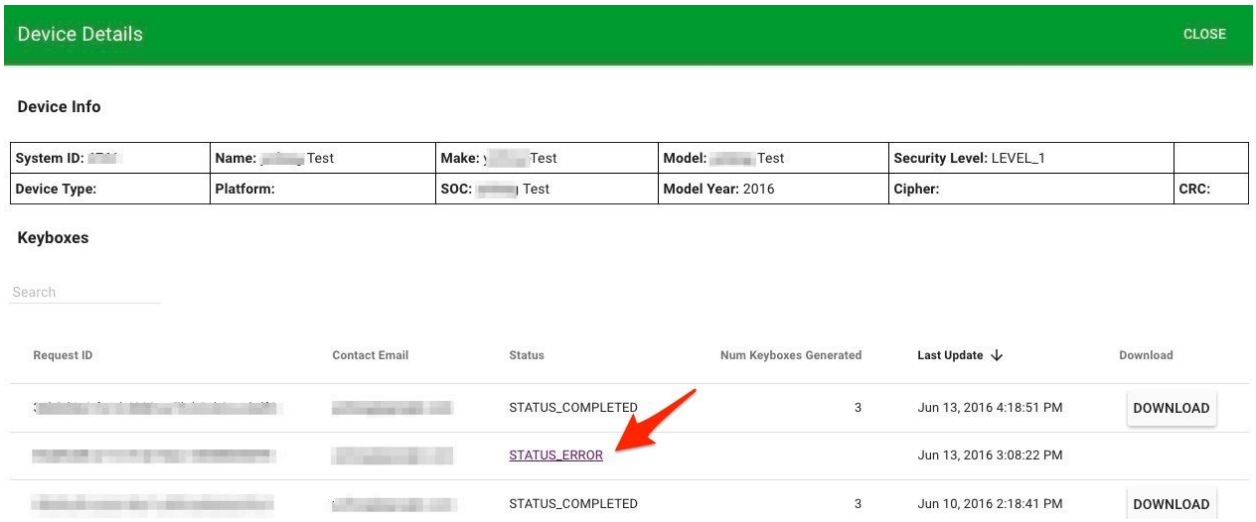


Description

- REQUEST ID
  Unique ID for a particular keybox request.
- CONTACT EMAIL
  The email address of user who made the request.
- STATUS
  Status of the keybox request. There are 4 valid values:
  1. **STATUS_ACCEPTED** - The keybox generation request has been accepted and placed into the processing queue.

2. **STATUS_KEYBOX_GENERATED** - The keybox has been generated, but has not completed the validation phase.
3. **STATUS_COMPLETED** - Keybox generation is complete and has passed all validation tests.
4. **STATUS_ERROR** - An error has occurred in the keybox generation.
    a. Click on STATUS_ERROR to view the error string.
    b. If necessary, contact us and provide this error string to help resolve your issue.

Note: Click on the status link to view additional details.



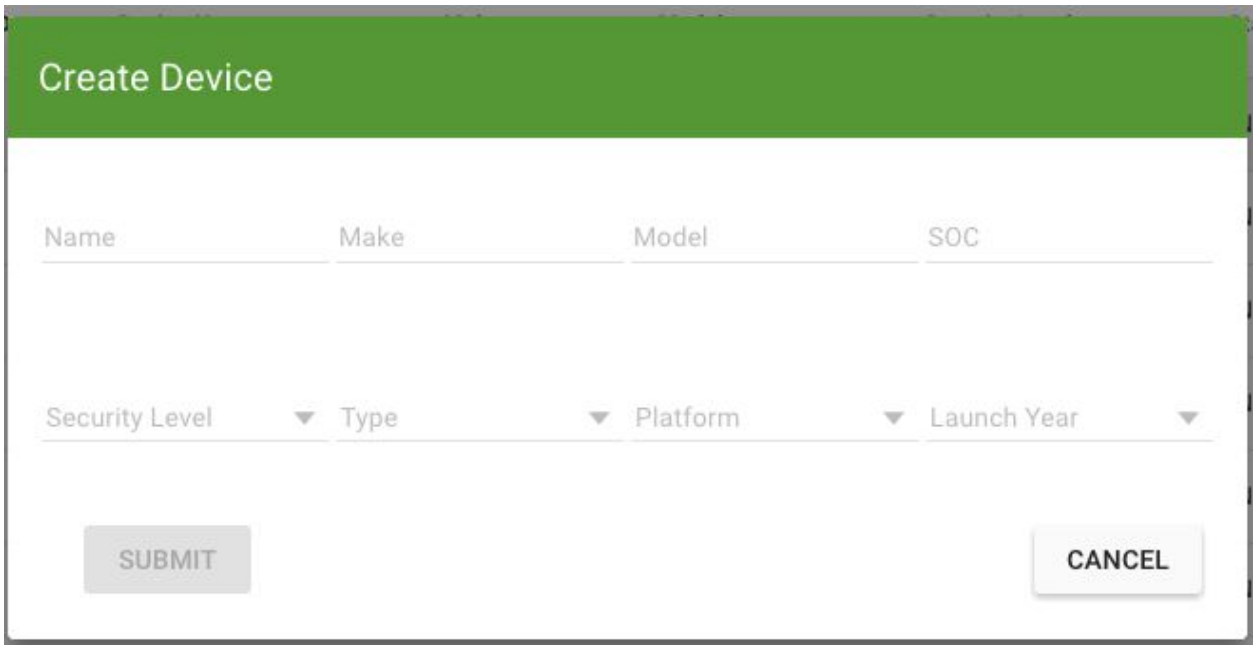
- LAST UPDATE (UTC)
  UTC time stamp of the last keybox generation status
- DOWNLOAD
  Download link (if available) of the requested keybox.
    - Only visible if the keybox has reached **STATUS_COMPLETED** status.
    - This file will be encrypted with the PGP key of the organization and can be decrypted by any user within that organization who has the corresponding PGP private key and passphrase.

Device and keybox workflows

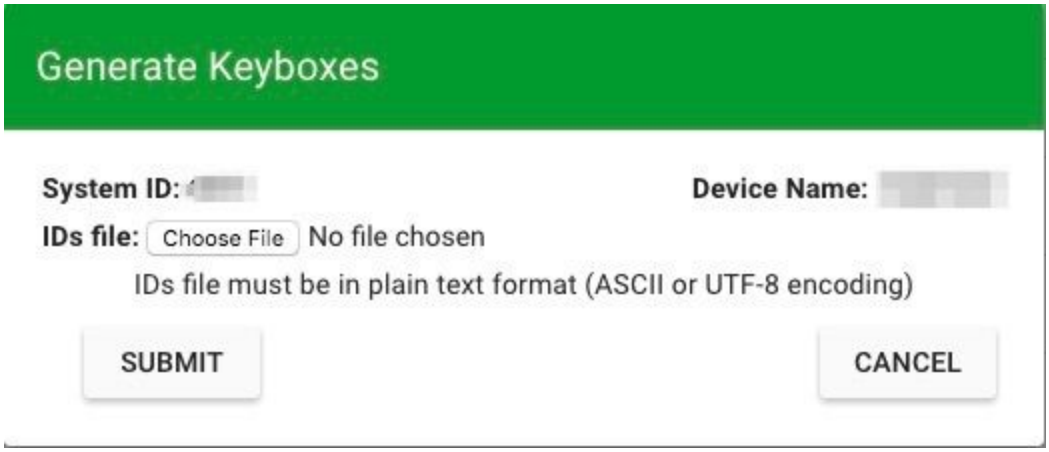
Adding new device

This is when you have a brand new device that is in the development phase and you need keyboxes for test and development. The device will only have access to the Widevine Cloud Test environment.

- Click on ADD button
- Fill in all the fields with as much detail as possible for the device.



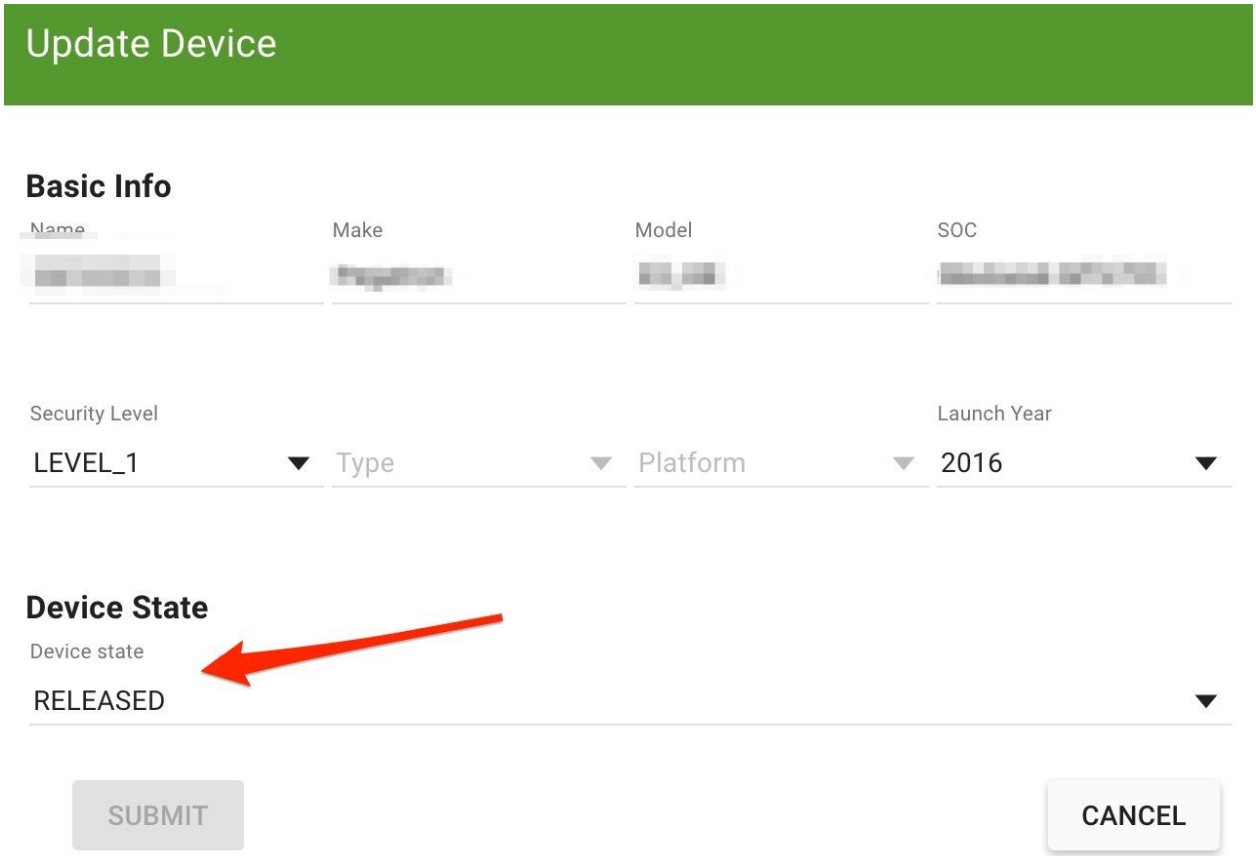
    - Click Submit.
    - Prepare the list of Device IDs in a file format as described in the Appendix.
    - Go back to the Device Management view and find the device row that was recently created.
    - Click on the device row to select.
    - Click on ***Generate Keyboxes***.



- Click Choose File and select the Device ID file to attach.
- Click Submit.
- After clicking Submit, the request will be placed for the device.
- To view your Keybox request:
    i. Go to Device Management view
    ii. Switch to Device details view by clicking on the System ID of that particular device.
    iii. Your keybox request will be displayed with the initial status of STATUS_ACCEPTED.
- Keybox generation will typically complete in 30 to 240 minutes.
    i. Please refresh the browser to get the latest status.
- Once status changes to STATUS_COMPLETED, click on the Download button to retrieve the keybox file.
    i. You will need your PGP private key and passphrase to decrypt the file.

Updating a device for production launch

This is when you have a device that has completed development and has been thoroughly tested. Now you are ready to release the device into full production and want to enable the device to have access to our production cloud license servers. This is what we call putting the device into a RELEASED state.

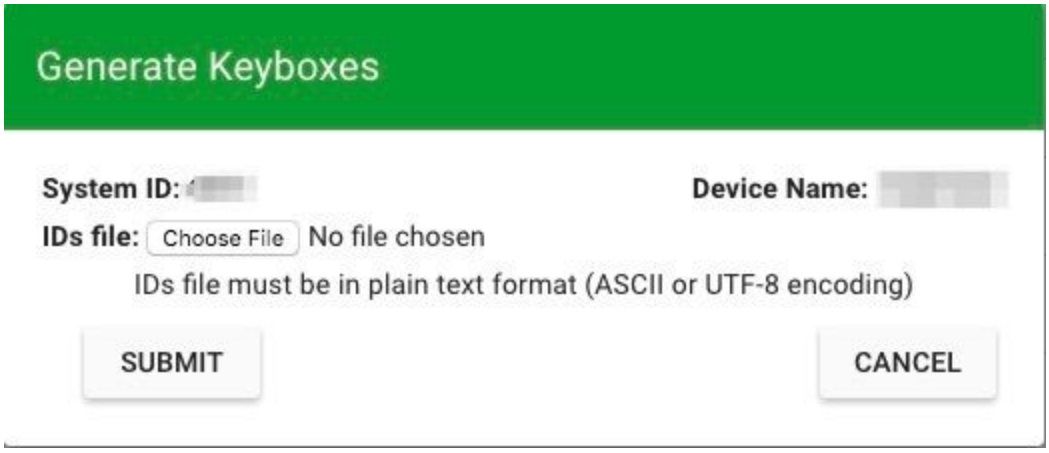


- Go to Device Management view.
- Find the device in the list that is ready for production.
- Click to select the device row.
- Click Edit to verify all the Device details are correct.
- Once you place the device in the RELEASED state, you will NOT be able to make any changes to the device record any longer.
- Under Device State, select RELEASED.
    i. This enable the device and keyboxes in our production service.
    ii. This will usually take about 4 hours to replicate to all of our production servers.
- Click Submit to save the changes.

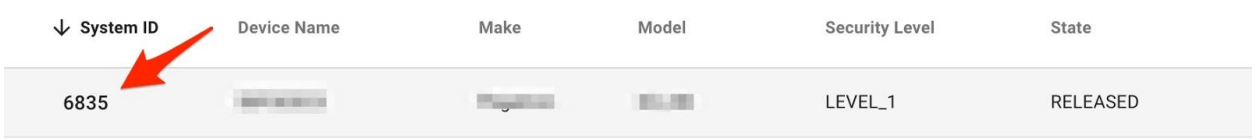
Existing device that needs keyboxes

You have a device (IN_TESTING or RELEASED) that need additional keyboxes.

- Go to Device Management view.
- Click on the device row to select.
- Click on Generate Keyboxes.
- Click Choose File and select the Device ID file to attach.



- Click Submit.
- After clicking Submit, the request will be placed for the device.
- To view your Keybox request:
    - Go to Device Management view
    - Switch to Device details view by clicking on the System ID of that particular device.
    - Your keybox request will be displayed with the initial status of STATUS_ACCEPTED.
- Keybox generation will typically complete in 30 to 240 minutes.
    - Please refresh the browser to get the latest status.
- Once status changes to STATUS_COMPLETED, click on the Download button to retrieve the keybox file.
    - You will need your PGP private key and passphrase to decrypt the file.



Appendix

Using PGP/GPG keys

Widevine requires every device manufacturer to supply a single public PGP/GPG key to be used to secure keybox transfers.

- Only a SINGLE PGP key may be used per organization (company).
  - The email associated with this PGP key must be from a company email address.
  - Widevine will set up this user-provided PGP key during the first time registration of an organization (company).
- All users from the same organization need access to use this PGP key.
- Every user must have the private PGP key and passphrase.

Given the above requirements, our recommendations are:

- To create a group company email address for all users.
- Generate a PGP key pair using the group email address.
  - Share the PGP key pair information among all company users.
- Provide this public PGP key to Widevine.

An example shared company email address could be - widevine-keys@mycompany.com

Note that this email address is different from the email address you submit your registration request from.

To create a PGP/GPG key using the GPG tools, run:

```
gpg --gen-key
```

Please choose option 1 - RSA and RSA. Our system ONLY supports RSA.

```
Please select what kind of key you want:
   (1) RSA and RSA (default)
   (2) DSA and Elgamal
   (3) DSA (sign only)
   (4) RSA (sign only)
Your selection? 1
RSA keys may be between 1024 and 8192 bits long.
What keysize do you want? (2048)
Requested keysize is 2048 bits
Please specify how long the key should be valid.
```

```
         0 = key does not expire
      <n>  = key expires in n days
      <n>w = key expires in n weeks
      <n>m = key expires in n months
      <n>y = key expires in n years
Key is valid for?  (0)
Key does not expire at all
Is this correct? (y/N)  y
```

Once you have created your PGP/GPG keys, please export just the PUBLIC key in ASCII Armor format (please do not send us your secret key).

```
gpg --armor --export  email@domain.com
```

Again, this email address needs to be your shared company email address and not your individual company email address.

To read more about on PGP/GPG, please refer to the following website:

https://www.gnupg.org/gph/en/manual.html

Device ID files

In order to generate keyboxes, we require a list of unique Device IDs stored within a plain text file. This file is uploaded to our portal for processing. This appendix describes format of a Device ID and a Device ID file.

We recommend generating the Device ID file in a Linux-based environment.
For Windows, we recommend the use of the NotePad++ editor.
For Mac OS X, we recommend the use of TextMate for an editor.

File format settings

- Set encoding to ASCII.
- The end-of-line character must conform to Unix format.
    - Do not use a Windows or Mac EOL setting.

Each Device ID have the following properties:

1. Unique and cannot be duplicate of other Device IDs within the file
2. Must be between 1-32 characters in length
3. Only following characters allowed [a-z][A-Z][0-9][_][-][.]
4. No whitespaces allowed

Examples of valid Device IDs are:

```
12345678901234567890123456789012
Widevine_Test_Device_00000000001
Widevine-Test-Device-00000000002
ShortIdA
ShortIdB
```

Device ID files have the following requirements:

1. ASCII text file in unix format. If you are using Windows, use Notepad++ (http://notepad-plus-plus.org) to save the file in the proper line-ending format.
2. Filenames should only contain the following characters:
   `[a-z][A-Z][0-9][_][-][.]`
3. Character encoding must be in ASCII
4. Must only contain Device IDs. No comments, headers, or other information
5. One Device ID per line
6. No duplicate Device IDs within file
7. No blank lines
8. No white spaces

9. Not empty
10. File name is recommended to be named in a meaningful way (e.g. `Make_Model_Date_Quantity.txt`)

XML Keybox format

This appendix covers the format of the generated keybox file. The file is in XML format and can be easily parsed by standard tools. An example keybox file is shown below. Please note that the example below is formatted for clarity and newlines may not exist in actual delivered XML keyboxes.

```
<?xml version="1.0"?>
<Widevine>
   <NumberOfKeyboxes>2</NumberOfKeyboxes>
   <Keybox DeviceID="XYZBD1234808KVJH008324">
      <Key>76871bcafd8333332cf040c03c5421ca</Key>
      <ID>0db0958013e7636212e389638759264916a663c3e271c2115f30b3496857de
      0c893e84dd712f6b944216afd271384761d7ddcf045b7827636212e389638754720
      835e583c0a64d4</ID>
      <Magic>6b626f78</Magic>
      <CRC>3ed12b9d</CRC>
   </Keybox>
   <Keybox DeviceID="XYZ_BD1234_808KVJH008325">
      <Key>87123bcafd8333332cf040c03c5421db</Key>
      <ID>aa80801ace39b4cef6d527364ed9ce79c0fa38d41871c7b81dc399dc0c7885a
      4a8eaf82a6973808ea694cef6d527364ed9c5c0926370325e30a368b8e07d2384b7
      24812e75463892</ID>
      <Magic>6b626f78</Magic>
      <CRC>3ed12b9d</CRC>
   </Keybox>
</Widevine>
```

XML element descriptions:

- NumberOfKeyboxes - The number of `<Keybox>` records in the file
- DeviceID - Maximum of 32 bytes. This is the original Device ID value that was given to Google Widevine to create the keybox.
- Magic - Only exists if CRC exists. This is always the 4 byte hex sequence ‘kbox’.
- CRC - This is a 32-bit checksum used to verify the integrity of the keybox. This is highly recommended that you validate the keyboxes received based on this value.

Revision History

Version	Date	Description	By
0.1	6/1/2016	Initial draft	Tejal Gupte
0.2	6/23/2016	Revisions	Tejal Gupte Alex Lee
0.3	7/6/2016	Removed CRC generation code sample Clarified device id file generation requirements	Tejal Gupte Alex Lee
0.4	7/8/2016	Device ID file must be in ASCII encoding set	Alex Lee
0.5	3/1/2017	Text formatting updates	Alex Lee