Integration Console

Getting Started

Keybox Management

version 0.8
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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.

This document does not offer guidance for managing device certificates. The functionality and workflow will be added later.

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.
2

Access to Widevine Integration Console
https://integration.widevine.com

Have Access?
Yes → Request Access
Contact widevine-omm@google.com

No →

Register New Device

View Device Record

Yes →

Edit Device Record

Approved by Widevine

Yes → Save Device Record

No → Download Keybox

Approved by Widevine

No → Generate Keybox

Approved by Widevine

Approved by Widevine
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 corporate/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:

   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](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.

The workflow for managing device records and requesting Keyboxes has changed recently, as noted on the Integration console. Please review the next sections carefully.

---

**Device Management Announcement**

Hello Partner,

We are in the process of updating the device integration workflow which covers device registration and keybox delivery.

Starting 11/4/2018, there is an approval process which will impact the following:

1. All device registrations (new entries)
2. Any device update (update record)
3. All keybox requests
   - Device ID files are no longer required.
   - Only specify the number of keyboxes requested.

All submissions will be pending approval from the Widevine team. Upon status change, the organization member making the request will receive an email notification.

Best,
The Widevine team

---
There are 3 actions that can be performed via **Management:**
- Create Device
- Update an existing Device record
- Generate Keyboxes for an existing Device.

**CREATE DEVICE**

This action creates a new Device record.

Create a new Device record when:
- Adding a new unique device based upon the chipset (SoC), launch year, and device type.
  - All fields must be populated and accurate.
  - Note that per new Approvals process, Widevine team will review all new device records. See [workflow diagram](#).
Step 1: Create add device details and hit Submit

Create Device

[Form Fields: Name, Make, Model, SOC, Security Level, Type, Platform, Launch Year]

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.*

**Add Device - Pending**

- The requestor will receive an automated email confirming that the device creation request has been received and the record is waiting to be reviewed by the Widevine team.
- The review criteria is described [here](#).
- The Integration Console user interface reflects the latest addition as pending, as shown in the following screenshot.

<table>
<thead>
<tr>
<th>System ID</th>
<th>Device Name</th>
<th>Make</th>
<th>Model</th>
<th>Security Level</th>
<th>State</th>
<th>Prov Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ADD PENDING</td>
</tr>
</tbody>
</table>

**Add Device - Approved**

- The requestor will receive an automated email confirming that the device creation request has been approved and the record has been created.
- The Integration Console user interface will now display the new device record.

**Add Device - Rejected**

- The requestor will receive an automated email confirming that the device creation request has been rejected with the reason for rejection.
- The requestor can then make changes, according to the comments made in the rejection message and create a new device record.
- The new record will be reviewed based on the same review criteria described [here](#).
- The rejected device record will **not** be seen in the Integration console user interface.
Create Device - Approvals Workflow summary
The following diagram provides a one-glance summary of the Approvals workflow for device creation.

1. Log on to Integration Console
2. Register New Device
3. Approved by Widevine
   - Yes: Continue to Generate Keybox or Edit Device
   - No: See Rejection Reason

UPDATE DEVICE
This option is used to update the information within a device record.
Note:
- The Update option is only visible when a device row is selected.
- A device record may be modified as long as it is not in a RELEASED state.
- Note that per new Approvals process, Widevine team will review all new device records. See workflow diagram.

**Step 1: Select the device record by clicking on the device row**
Highlighted row is selected. Device “Edit” option will now appear in the menu (Next to Add). Click on Edit.

**Step 2: Update information and hit Submit**
- Update the information within the device record, for example, update the Device State to RELEASED.
- Make sure to update all necessary fields before changing the device status to RELEASED, as no changes can be made after this status change is made.
Step 3: Device Update Pending

- The requestor will receive an automated email confirming that the device update request has been received and the record is waiting to be reviewed by the Widevine team.
- The review criteria is described [here](#).
- The Integration console user interface will reflect the pending device update entry as shown below.

![Device Update Pending](image)

**Step 4: A] Device Update Approved**

- The requestor will receive an automated email confirming that the device update request has been approved and the record has been updated.
- The Integration Console user interface will now display the device record with the updated values.

**Step 4: BJ Device Update Rejected**
- The requestor will receive an automated email confirming that the device update request has been rejected with the reason for rejection.
- The requestor can then make changes, according to the comments made in the rejection message and update the existing device record.
- This will trigger a new review request. It will be reviewed based on the same review criteria described [here](#).
- The rejected request for device update will **not** be seen in the Integration console user interface.

**Update Device - Approvals Workflow summary**
The following diagram provides a one-glance summary of the Approvals workflow for device record update process.
GENERATE KEYBOXES

This option is used to generate keyboxes for an existing device record. The device record can be IN_TESTING or RELEASED status.

Note:
- The Generate Keybox option is only visible when a device row is selected.
- The requestor needs to provide device IDs as input for keybox generation.
- In addition to the device ID file upload workflow, there is a new way to generate device IDs, as described below. Partner may choose to use either option, depending on the requirement.

Step 1: Select device record, open Generate Keyboxes form
Highlighted row is selected. “Generate Keyboxes” option will now appear in the menu (Next to Add). Click on the “Generate Keyboxes” option to open the form.

![Generate Keyboxes Form](image)

Step 2: Option A - Using device ID upload file
To submit a keybox generation request:
- You must attach the Device ID file to the request. It must meet the requirements as listed in Appendix below.
- The file should not be encrypted.
Step 2: Option B - Specify device ID pattern
This option does not require users to upload a device ID file. Instead, it allows users to specify the following parameters and dynamically creates device IDs for keybox generation:

- **Prefix**
  - Prefix string for device IDs
  - Any alphanumeric text
  - User is responsible to maintain uniqueness of prefix

- **Starting index**
  - Any number, default 0

- **Count**
  - Number of keyboxes to be generated
  - Increments from starting index

![Generate Keyboxes](image)

Step 3: Submit request for approval
- Use Option A or B to provide device IDs.
- Upon submitting the keybox request, the requestor will receive an automated email confirming that the keybox request has been received and the record is waiting to be reviewed by the Widevine team.
- The review criteria is described [here](#).
- The Integration console user interface will reflect the pending keybox approval as shown below.
If keybox request is approved

- The requestor will receive an automated email confirming that the keybox request has been approved.
- The Integration Console user interface will now display keybox generation status. Once the request has been processed, the keybox file will be available for download.

If keybox request is rejected

- The requestor will receive an automated email confirming that the keybox request has been rejected with the reason for rejection.
- The requestor can then make changes, according to the comments made in the rejection message create a new keybox request.
- This will trigger a new review request. It will be reviewed based on the same review criteria described [here](#).
- The rejected keybox request will not be seen in the Integration console user interface.

Generate Keyboxes - Approvals Workflow summary

The following diagram provides a one-glance summary of the Approvals workflow for keybox generation process.
Approval Guidelines
The guidelines for approving device creation, update and keybox requests are as follows.

- New Device Entry
  - All fields must be populated and accurate

- Device Record Update
  - Updated fields must be logical
    - E.g. Change make+model
    - E.g. Update device status to RELEASED

- Keybox Request
  - Keybox count is within reason
    - Not excessive (e.g. 200M keyboxes, 10 keyboxes)

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.
### Device Details

#### Device Info

<table>
<thead>
<tr>
<th>System ID: n/a</th>
<th>Name:</th>
<th>Make:</th>
<th>Model:</th>
<th>Security Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Type: Platform:</td>
<td>SDC:</td>
<td>Model Year: 0</td>
<td>Cipher: AES</td>
<td>CRC: ADDCRC</td>
</tr>
</tbody>
</table>

#### Keyboxes

<table>
<thead>
<tr>
<th>Request ID</th>
<th>Contact Email</th>
<th>Status</th>
<th>Num Keyboxes Generated</th>
<th>Last Update</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td></td>
<td>Jun 1, 2015 2:44:59 PM</td>
<td>DOWNLOAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td></td>
<td>Jun 1, 2015 1:44:26 PM</td>
<td>DOWNLOAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td></td>
<td>Jun 1, 2015 1:43:55 PM</td>
<td>DOWNLOAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td></td>
<td>Jun 1, 2015 1:33:35 PM</td>
<td>DOWNLOAD</td>
</tr>
</tbody>
</table>

### 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](mailto:contact@example.com) and provide this error string to help resolve your issue.

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

<table>
<thead>
<tr>
<th>System ID:</th>
<th>Name:</th>
<th>Make:</th>
<th>Model:</th>
<th>Security Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LEVEL_1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device Type:</th>
<th>Platform:</th>
<th>SOC:</th>
<th>Model Year:</th>
<th>Cipher:</th>
<th>CRC:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Keyboxes

<table>
<thead>
<tr>
<th>Request ID</th>
<th>Contact Email</th>
<th>Status</th>
<th>Num Keyboxes Generated</th>
<th>Last Update</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td>3</td>
<td>Jun 13, 2016 4:18:31 PM</td>
<td>DOWNLOAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STATUS_ERROR</td>
<td></td>
<td>Jun 13, 2016 3:09:22 PM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STATUS_COMPLETED</td>
<td>3</td>
<td>Jun 10, 2016 2:18:41 PM</td>
<td>DOWNLOAD</td>
</tr>
</tbody>
</table>

- **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.
  - This enable the device and keyboxes in our production service.
  - 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.

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.

GPG VERSION REQUIREMENT:
Widevine requires the GPG Keychain version to be 1.4.* or lower. Please make sure to download the right version in order ensure compatibility.

For Windows, the older versions can be found here - https://files.gpg4win.org/

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.
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:

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
<?xml version="1.0"?>
<Widevine>
  <NumberOfKeyboxes>2</NumberOfKeyboxes>
  <Keybox DeviceID="XYZBD1234808KVJH008324">
    <Key>76871bcafd833332cf040c03c5421ca</Key>
    <ID>0db0958013e763621e389638759264916a6b63c3e271c2115f30b3496857de0c893e84dd712f6b944216afd271384761d7ddcf045b782763621e389638754720835e583c0a64d4</ID>
    <Magic>6b626f78</Magic>
    <CRC>3ed12b9d</CRC>
  </Keybox>
  <Keybox DeviceID="XYZ_BD1234_808KVJH008325">
    <Key>87123bcafd833332cf040c03c5421db</Key>
    <ID>aa80801ace39b4cef6d527364ed9ce79c0fa38d41871c7b81dc399dc0c7885a4a8eaf82a6973808ea694cef6d527364ed9c5c0926370325e30a368b8e07d2384b724812e75463892</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

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<tr>
<td>0.1</td>
<td>6/1/2016</td>
<td>Initial draft</td>
<td>Tejal Gupte</td>
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<tr>
<td>0.2</td>
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<tr>
<td>0.3</td>
<td>7/6/2016</td>
<td>Removed CRC generation code sample</td>
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<td>Clarified device id file generation requirements</td>
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<td>Device ID file must be in ASCII encoding set</td>
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<td>0.7</td>
<td>11/5/2018</td>
<td>Updated for new approval process for add device, edit device, generate keybox</td>
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