Agora Video SDK README

The AgoraIO Video SDK supports iOS, Android, MacOS and Windows platform on Unity. For WebGL support, please ask our staff for the Community Beta. This document shows how you configure and run your Unity Application with the SDK using the included demo.

Prerequisites

- Unity Editor (2017 LTS or above)
- A developer account with Agora.io

Getting Started

Although you may start the integration with your existing project, in this short tutorial we will just use the demo project included in the SDK.

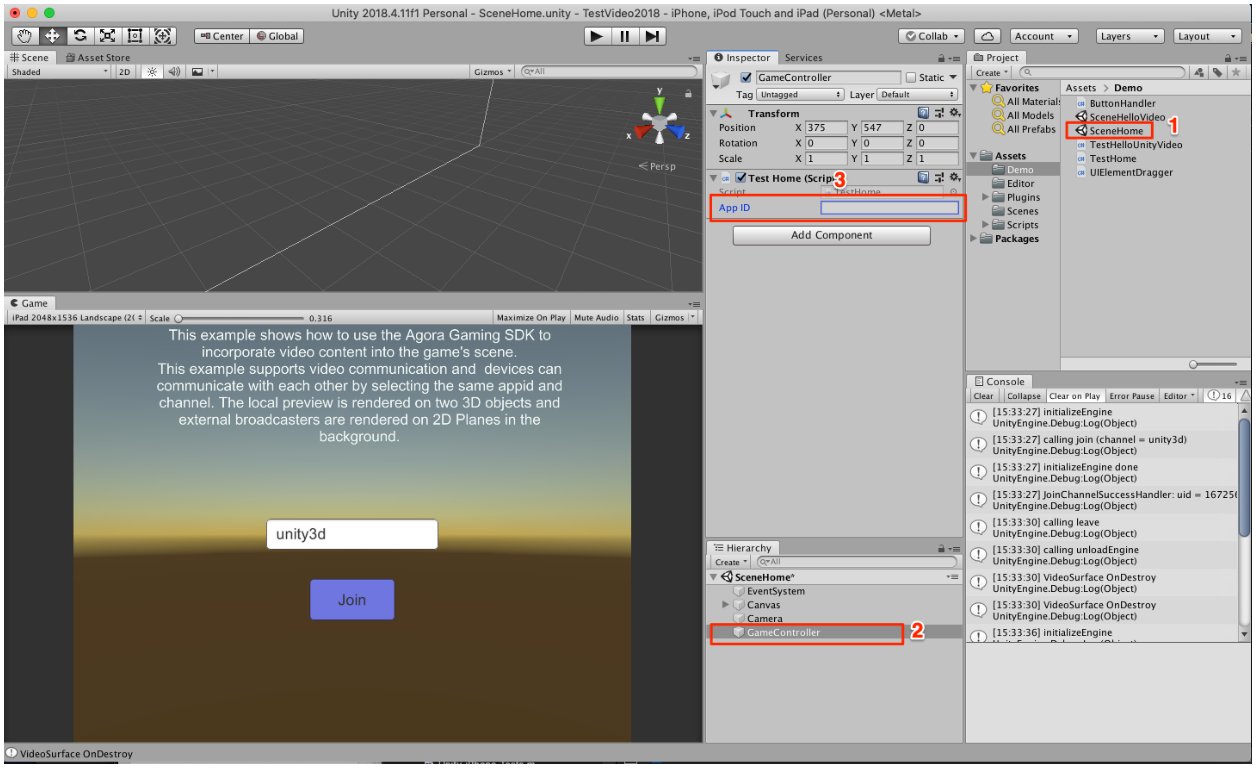
Open a new Unity project and navigate to Unity Asset Store and search for “Agora Video SDK”. Download and import the assets. Please scroll to the last section about upgrading if you are replacing the SDK on top of the old one.

Add Your AppID

Before you can build and run the project, you will need to add your AppID to the configuration. Go to your developer account’s project console, create a new AppId or copy the Appd from an existing project. Perform the following steps:

1. Open the Assets/Demo/SceneHome scene,
2. Select the `GameController` from the Unity Editor’s Hierarchy panel.
3. The `GameController` game object has a property `App ID`, this is where you will add your Agora App ID.

See the following screen capture:



Unity 2018.4.11f1 Personal - SceneHome.unity - TestVideo2018 - iPhone, iPod Touch and iPad (Personal) <Metal>

GameController
Tag Untagged Layer Default

Transform			
Position	X 375	Y 547	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

Test Home (Script)
Script TestHome
App ID

Assets > Demo: ButtonHandler, SceneHelloVideo, SceneHome, TestHelloUnityVideo, TestHome, UIElementDragger

Hierarchy: SceneHome*, EventSystem, Canvas, Camera, GameController

This example shows how to use the Agora Gaming SDK to incorporate video content into the game's scene.
This example supports video communication and devices can communicate with each other by selecting the same appid and channel. The local preview is rendered on two 3D objects and external broadcasters are rendered on 2D Planes in the background.

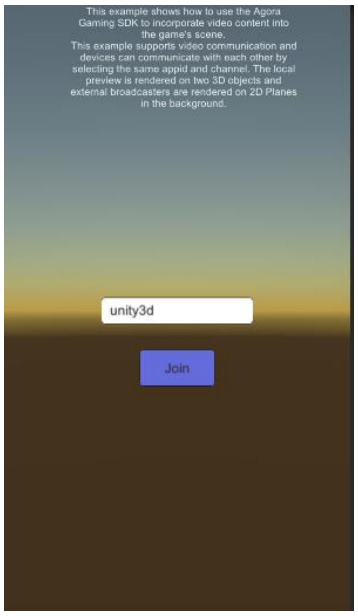
unity3d

Join

```
[15:33:27] initializeEngine
UnityEngine.Debug:Log(Object)
[15:33:27] calling join (channel = unity3d)
UnityEngine.Debug:Log(Object)
[15:33:27] initializeEngine done
UnityEngine.Debug:Log(Object)
[15:33:27] JoinChannelSuccessHandler: uid = 167256
UnityEngine.Debug:Log(Object)
[15:33:30] calling leave
UnityEngine.Debug:Log(Object)
[15:33:30] calling unloadEngine
UnityEngine.Debug:Log(Object)
[15:33:30] VideoSurface OnDestroy
UnityEngine.Debug:Log(Object)
[15:33:30] VideoSurface OnDestroy
UnityEngine.Debug:Log(Object)
[15:33:36] initializeEngine
```

VideoSurface OnDestroy

At this step, you should be able to test the demo App within the Unity Editor. Input your desired channel name to the input field and click Join. You will be taken to the next scene and see a Quad and a Cube showing the local camera stream.



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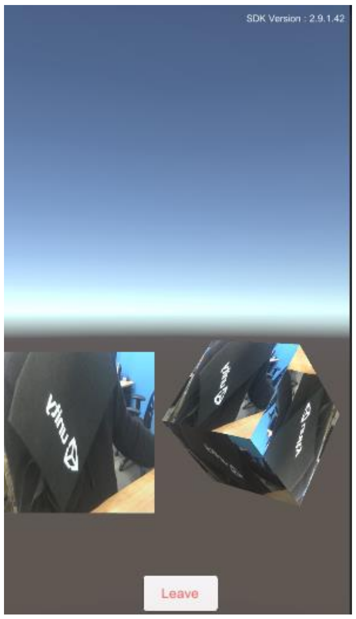
unity3d

Join



SDK Version : 2.9.1.42

Leave

Player Settings for Building the Sample Application

Common Setting

Open the **Build Settings** and drag SceneHome and SceneHelloVideo scenes from the assets list into the “Scenes in Build” list.

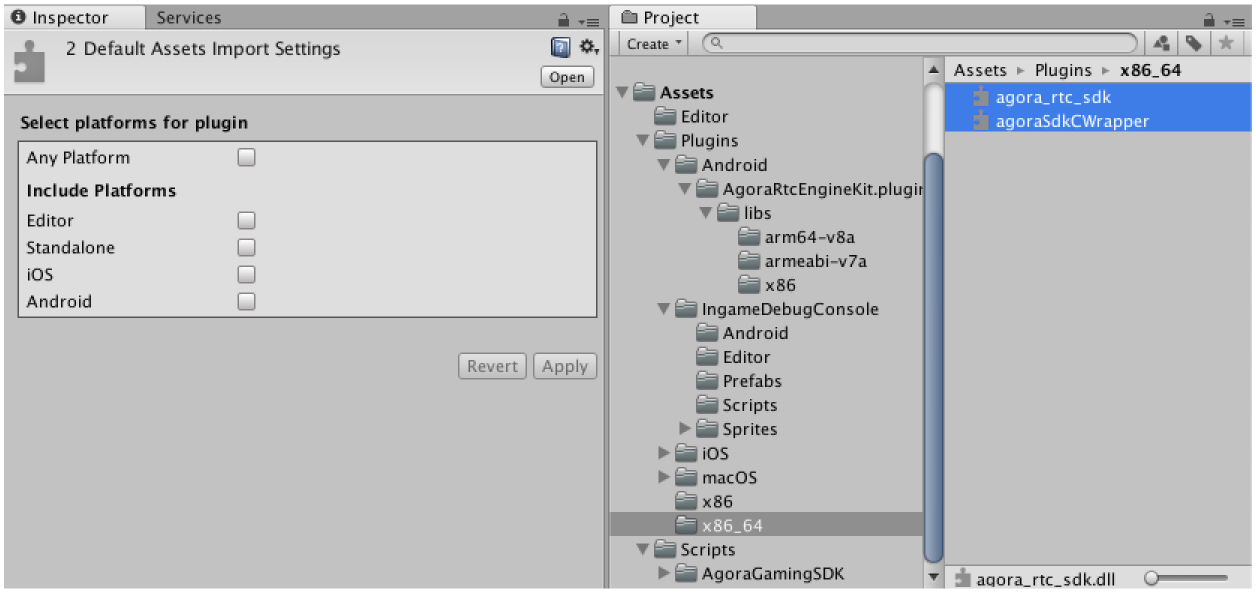
Setting Plugin Identities

Normally the library identities have been setup with the bundled SDK plugins. In case of manual override needed, follow the following steps:

For 64-bit **Windows** builds, go into Assets->Plugins->x86_64 folder, select “Editor” and “Standalone” and then click Apply.

To ensure that the build plugin libraries don’t collide, disable the identities of the files in the x86 folder.

Do the opposite for 32-bit Windows.



2 Default Assets Import Settings

Select platforms for plugin

Any Platform ☐

Include Platforms

Editor ☐

Standalone ☐

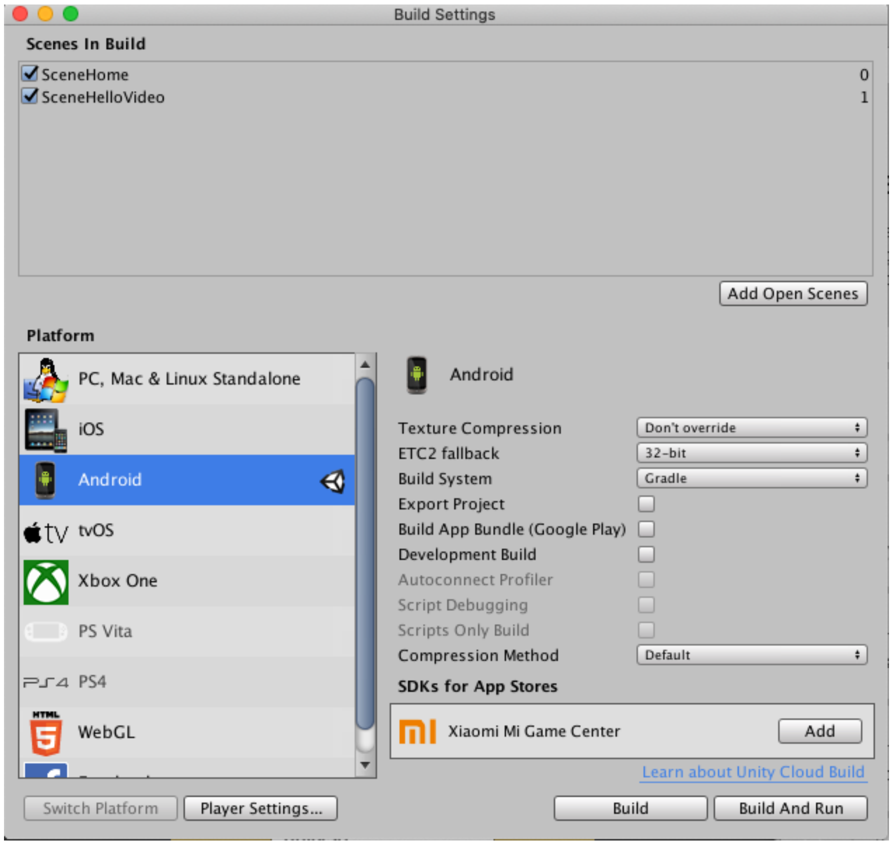
iOS ☐

Android ☐

For **MacOS**, make sure Any CPU is selected. It is not automatically done for Unity version 2020.2 and up especially. See details in the MacOS Build section below.

Android Build

Select **Android** from the platform list and click Switch Platform.



Build Settings

Scenes In Build

✓ SceneHome	0
✓ SceneHelloVideo	1

Platform: Android

Texture Compression	Don't override
ETC2 fallback	32-bit
Build System	Gradle
Export Project	☐
Build App Bundle (Google Play)	☐
Development Build	☐
Autoconnect Profiler	☐
Script Debugging	☐
Scripts Only Build	☐
Compression Method	Default

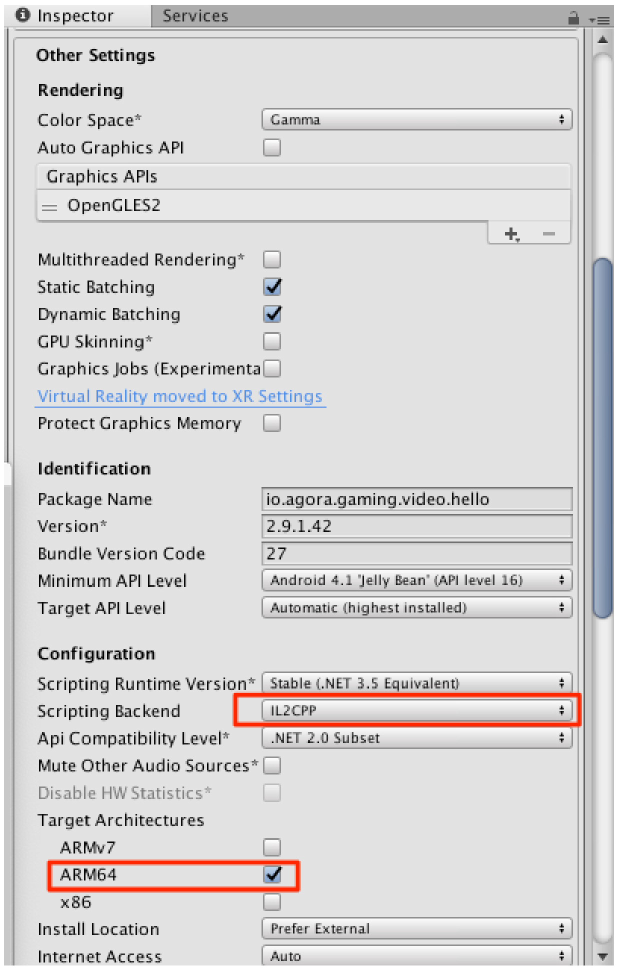
SDKs for App Stores: Xiaomi Mi Game Center

Android Build

Once Unity finishes the setup process, open the Player Settings and set a unique package name, e.g., io.agora.gaming.video.hello.

In order to comply with Google's 64 bit App requirement, make sure the following setting is selected:

1. Change the Scripting backend to IL2CPP.
2. Select ARM64 for the Target Architecture.



Inspector | Services

Other Settings

Rendering

Color Space*	Gamma
Auto Graphics API	☐

Graphics APIs
OpenGLES2

Multithreaded Rendering*	☐
Static Batching	✓
Dynamic Batching	✓
GPU Skinning*	☐
Graphics Jobs (Experimenta	☐

Virtual Reality moved to XR Settings

Protect Graphics Memory	☐

Identification

Package Name	io.agora.gaming.video.hello
Version*	2.9.1.42
Bundle Version Code	27
Minimum API Level	Android 4.1 'Jelly Bean' (API level 16)
Target API Level	Automatic (highest installed)

Configuration

Scripting Runtime Version*	Stable (.NET 3.5 Equivalent)
Scripting Backend	IL2CPP
Api Compatibility Level*	.NET 2.0 Subset
Mute Other Audio Sources*	☐
Disable HW Statistics*	☐
Target Architectures	
ARMv7	☐
ARM64	✓
x86	☐
Install Location	Prefer External
Internet Access	Auto

Android Build Settings

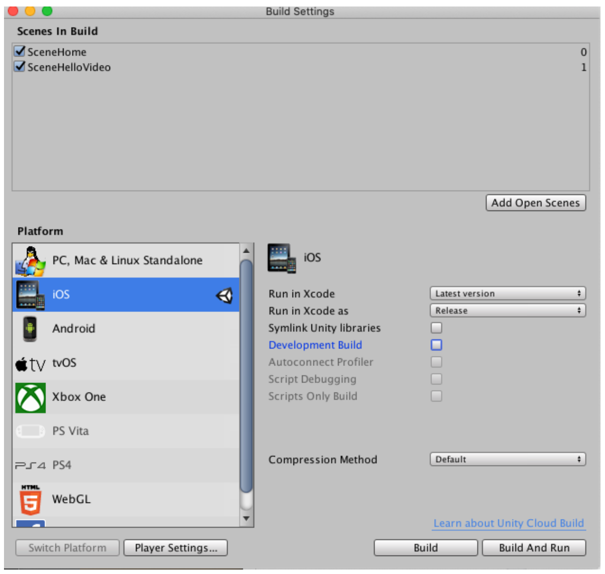
Leave other settings as is. For AR/VR enabled Applications, please refer to the separate README file.

<u>iOS Build</u>

Select **iOS** from the platform list and click Switch Platform.

The default build setting should work for most cases. The only custom settings are:

1. Change the Bundle Identifier to your own Bundle identifier so XCode can properly codesign the application.
2. Ensure the microphone permission has a description to allow the user to know why the microphone is being accessed by the application
3. Ensure the camera permission has a description to allow the user to know why the camera is being accessed by the application



Build Settings

Scenes In Build

☑ SceneHome 0
☑ SceneHelloVideo 1

Add Open Scenes

Platform

PC, Mac & Linux Standalone
iOS
Android
tvOS
Xbox One
PS Vita
PS4
WebGL

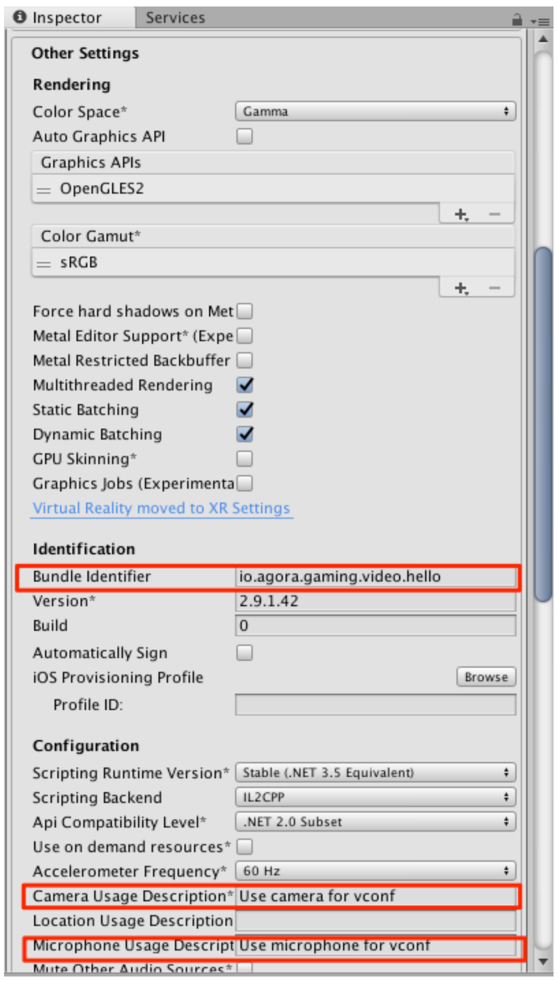
iOS

Run in Xcode: Latest version
Run in Xcode as: Release
Symlink Unity libraries: ☐
Development Build: ☐
Autoconnect Profiler: ☐
Script Debugging: ☐
Scripts Only Build: ☐

Compression Method: Default

Learn about Unity Cloud Build

Switch Platform | Player Settings... | Build | Build And Run



Inspector | Services

Other Settings

Rendering

Color Space*: Gamma
Auto Graphics API: ☐
Graphics APIs
OpenGLES2
Color Gamut*
sRGB
Force hard shadows on Met: ☐
Metal Editor Support* (Expe: ☐
Metal Restricted Backbuffer: ☐
Multithreaded Rendering: ✓
Static Batching: ✓
Dynamic Batching: ✓
GPU Skinning*: ☐
Graphics Jobs (Experimenta: ☐
Virtual Reality moved to XR Settings

Identification

Bundle Identifier: io.agora.gaming.video.hello
Version*: 2.9.1.42
Build: 0
Automatically Sign: ☐
iOS Provisioning Profile: Browse
Profile ID:

Configuration

Scripting Runtime Version*: Stable (.NET 3.5 Equivalent)
Scripting Backend: IL2CPP
Api Compatibility Level*: .NET 2.0 Subset
Use on demand resources*: ☐
Accelerometer Frequency*: 60 Hz
Camera Usage Description*: Use camera for vconf
Location Usage Description:
Microphone Usage Descript: Use microphone for vconf
Mute Other Audio Sources*: ☐

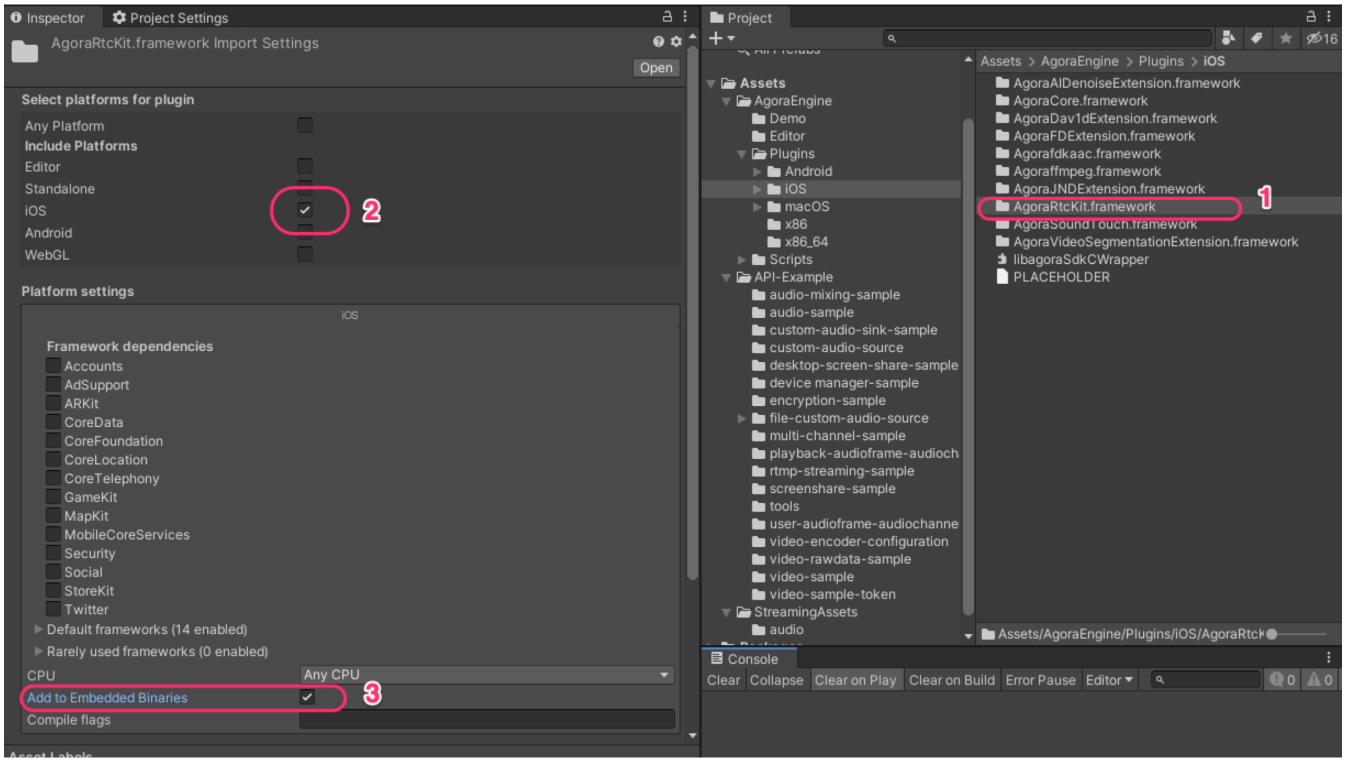
iOS Build Settings

Embedding Frameworks

Starting with SDK version 3.0.1, the iOS plugin frameworks are dynamically loaded and need to be embedded into the libraries. The Post Processing build script BL_BuildPostProcess.cs should have taken care of this. If your iOS build runs perfectly, then no need to read on for the following help text.

Just in case of anything missed on building your own projects, please be sure that all the iOS Frameworks and library are put into Embedded section for XCode:

Make sure you do for all the items in the iOS folder:



Select platforms for plugin

Any Platform	☐
Include Platforms	
Editor	☐
Standalone	☐
iOS	✓
Android	☐
WebGL	☐

Platform settings

iOS

Framework dependencies

- ☐ Accounts
- ☐ AdSupport
- ☐ ARKit
- ☐ CoreData
- ☐ CoreFoundation
- ☐ CoreLocation
- ☐ CoreTelephony
- ☐ GameKit
- ☐ MapKit
- ☐ MobileCoreServices
- ☐ Security
- ☐ Social
- ☐ StoreKit
- ☐ Twitter

▸ Default frameworks (14 enabled)

▸ Rarely used frameworks (0 enabled)

CPU	Any CPU
Add to Embedded Binaries	✓
Compile flags	

Assets > AgoraEngine > Plugins > iOS

- AgoraAIDenoiseExtension.framework
- AgoraCore.framework
- AgoraDav1dExtension.framework
- AgoraFDExtension.framework
- Agorafdkaac.framework
- Agoraffmpeg.framework
- AgoraJNDExtension.framework
- AgoraRtcKit.framework
- AgoraSoundTouch.framework
- AgoraVideoSegmentationExtension.framework
- libagoraSdkCWrapper
- PLACEHOLDER

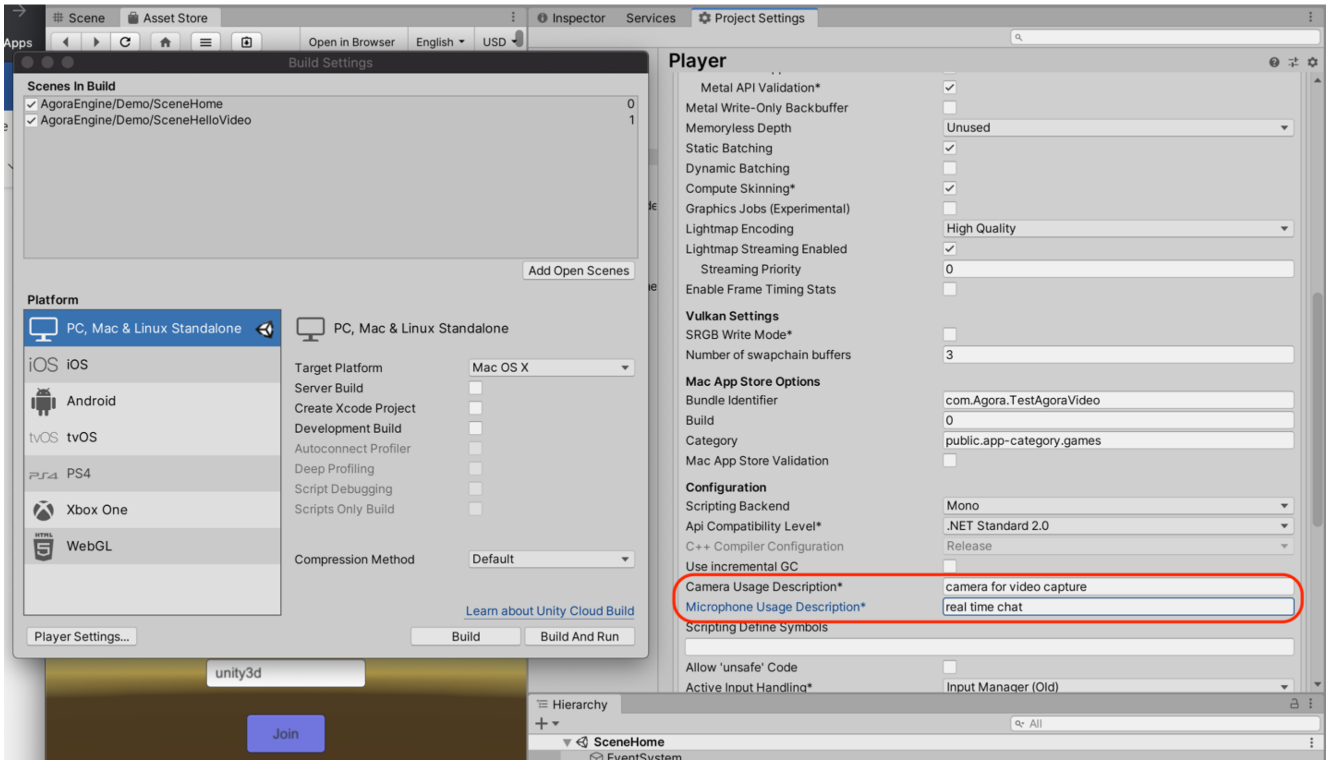
Assets/AgoraEngine/Plugins/iOS/AgoraRtcK

- Assets
  - AgoraEngine
    - Demo
    - Editor
    - Plugins
      - Android
      - iOS
      - macOS
      - x86
      - x86_64
    - Scripts
  - API-Example
    - audio-mixing-sample
    - audio-sample
    - custom-audio-sink-sample
    - custom-audio-source
    - desktop-screen-share-sample
    - device manager-sample
    - encryption-sample
    - file-custom-audio-source
    - multi-channel-sample
    - playback-audioframe-audioch
    - rtmp-streaming-sample
    - screenshare-sample
    - tools
    - user-audioframe-audiochanne
    - video-encoder-configuration
    - video-rawdata-sample
    - video-sample
    - video-sample-token
  - StreamingAssets
    - audio

Unity Editor Embedded Binary setting (Unity 2019 and up)

MacOS Build

Select **“PC, Mac & Linux Standalone”** from the platform list and click Switch Platform. Then Select “**Mac OS X**” for the Target Platform. Besides regular App Store required information, it is **very important** to fill in the **Camera and Microphone** usage description. Without this your app may crash on MacOS Catalina or greater for privacy restriction reasons.



Scenes In Build
✓ AgoraEngine/Demo/SceneHome 0
✓ AgoraEngine/Demo/SceneHelloVideo 1

Platform
PC, Mac & Linux Standalone
iOS
Android
tvOS
PS4
Xbox One
WebGL

PC, Mac & Linux Standalone

Target Platform	Mac OS X
Server Build	
Create Xcode Project	
Development Build	
Autoconnect Profiler	
Deep Profiling	
Script Debugging	
Scripts Only Build	
Compression Method	Default

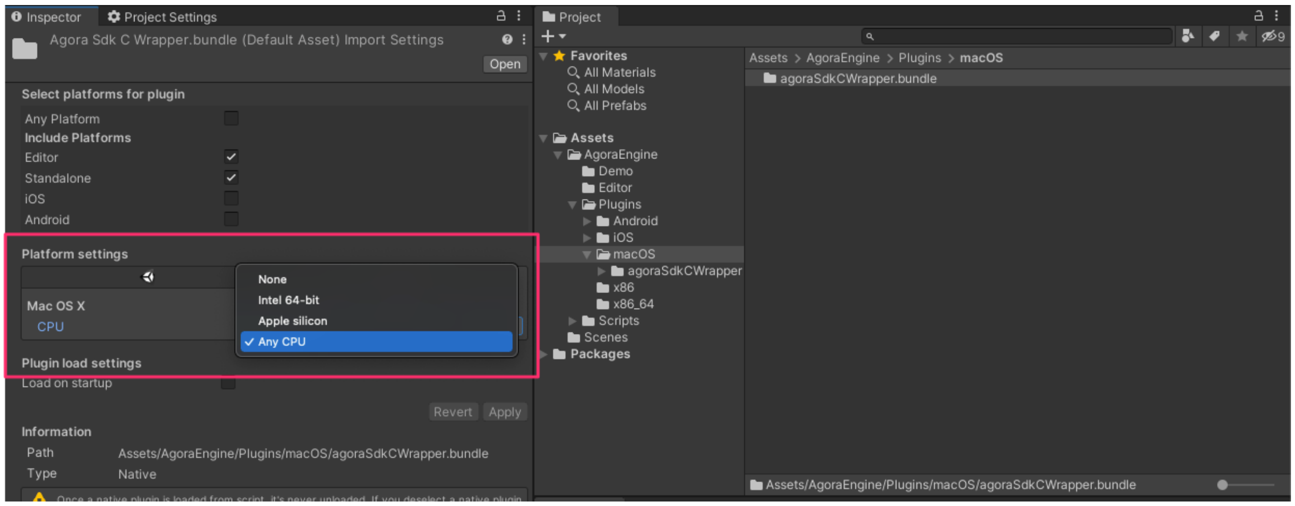
Player

Metal API Validation*	✓
Metal Write-Only Backbuffer	
Memoryless Depth	Unused
Static Batching	✓
Dynamic Batching	
Compute Skinning*	✓
Graphics Jobs (Experimental)	
Lightmap Encoding	High Quality
Lightmap Streaming Enabled	✓
Streaming Priority	0
Enable Frame Timing Stats	
Vulkan Settings	
SRGB Write Mode*	
Number of swapchain buffers	3
Mac App Store Options	
Bundle Identifier	com.Agora.TestAgoraVideo
Build	0
Category	public.app-category.games
Mac App Store Validation	
Configuration	
Scripting Backend	Mono
Api Compatibility Level*	.NET Standard 2.0
C++ Compiler Configuration	Release
Use incremental GC	
Camera Usage Description*	camera for video capture
Microphone Usage Description*	real time chat
Scripting Define Symbols	
Allow 'unsafe' Code	
Active Input Handling*	Input Manager (Old)

SceneHome
EventSystem

MacOS Build Settings

Starting from Unity Editor 2020.2 and MacOS Big Sur, Apple made M1 CPU is added in the Architecture options. Make sure you configure **agoraSdkCWrapper.bundle** module to match the target in Build Settings. See follow screenshots:



Agora Sdk C Wrapper.bundle (Default Asset) Import Settings

Select platforms for plugin

Any Platform ☐

Include Platforms

Editor ✓

Standalone ✓

iOS ☐

Android ☐

Platform settings

Mac OS X

CPU

None

Intel 64-bit

Apple silicon

✓ Any CPU

Plugin load settings

Load on startup ☐

Information

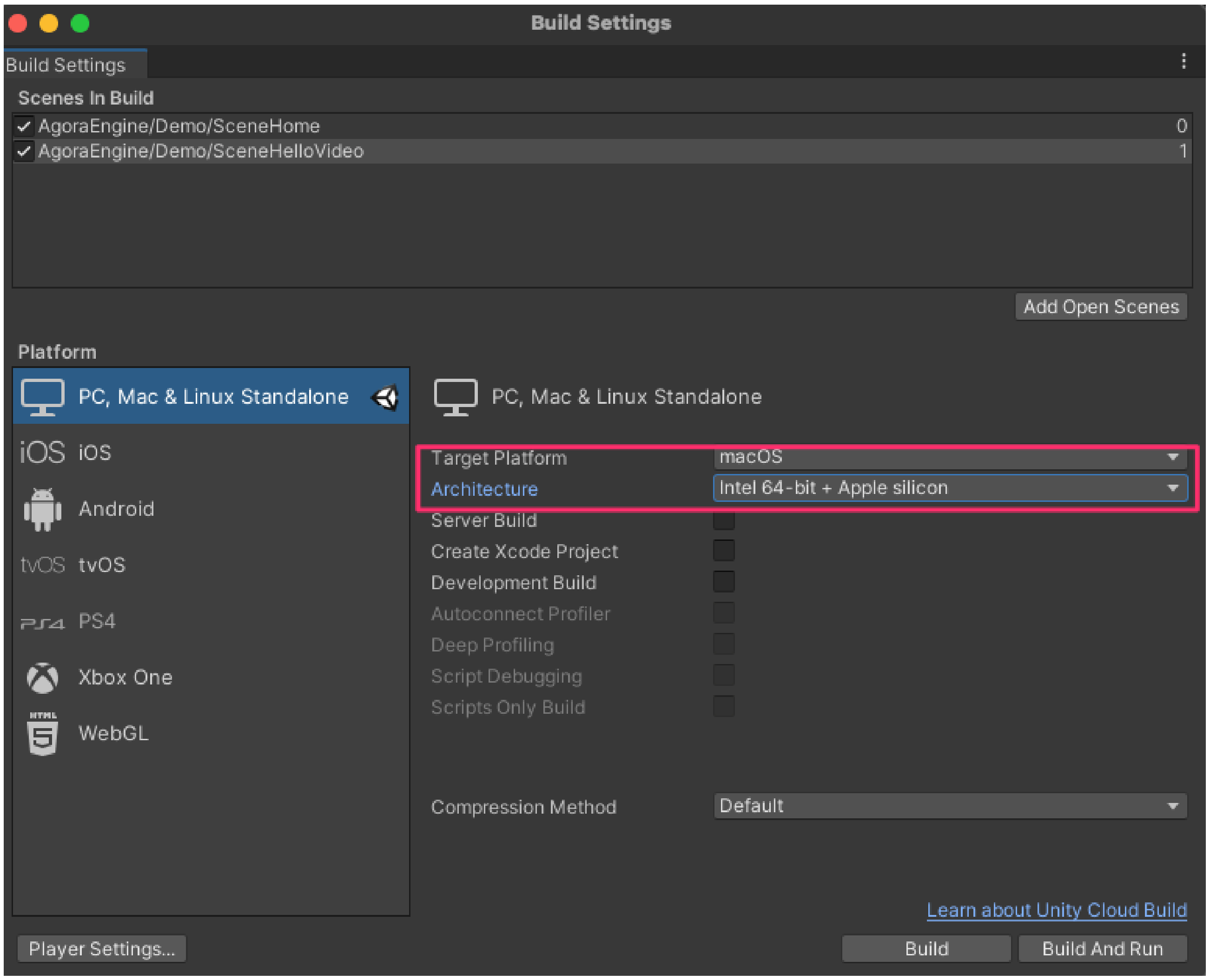
Path	Assets/AgoraEngine/Plugins/macOS/agoraSdkCWrapper.bundle
Type	Native

Once a native plugin is loaded from script, it's never unloaded. If you deselect a native plugin

Assets > AgoraEngine > Plugins > macOS

agoraSdkCWrapper.bundle

Assets/AgoraEngine/Plugins/macOS/agoraSdkCWrapper.bundle



AgoraEngine/Demo/SceneHome 0
AgoraEngine/Demo/SceneHelloVideo 1

Target Platform: macOS
Architecture: Intel 64-bit + Apple silicon
Server Build
Create Xcode Project
Development Build
Autoconnect Profiler
Deep Profiling
Script Debugging
Scripts Only Build
Compression Method: Default

Codesigning for Notarization

For Notarization validation, Agora library frameworks need to be code-signed with the main build executable together. The SDK provided helper scripts to get your signing step more convenient. See instructions below.

Codesign instruction after mac build

use scripts provided in Unity SDK project folder: **Assets/AgoraEngine/Scripts/AgoraTools**
Assume the project folder is ${project_path}, your build is output to ${build_folder}, your app is TestMAC.app

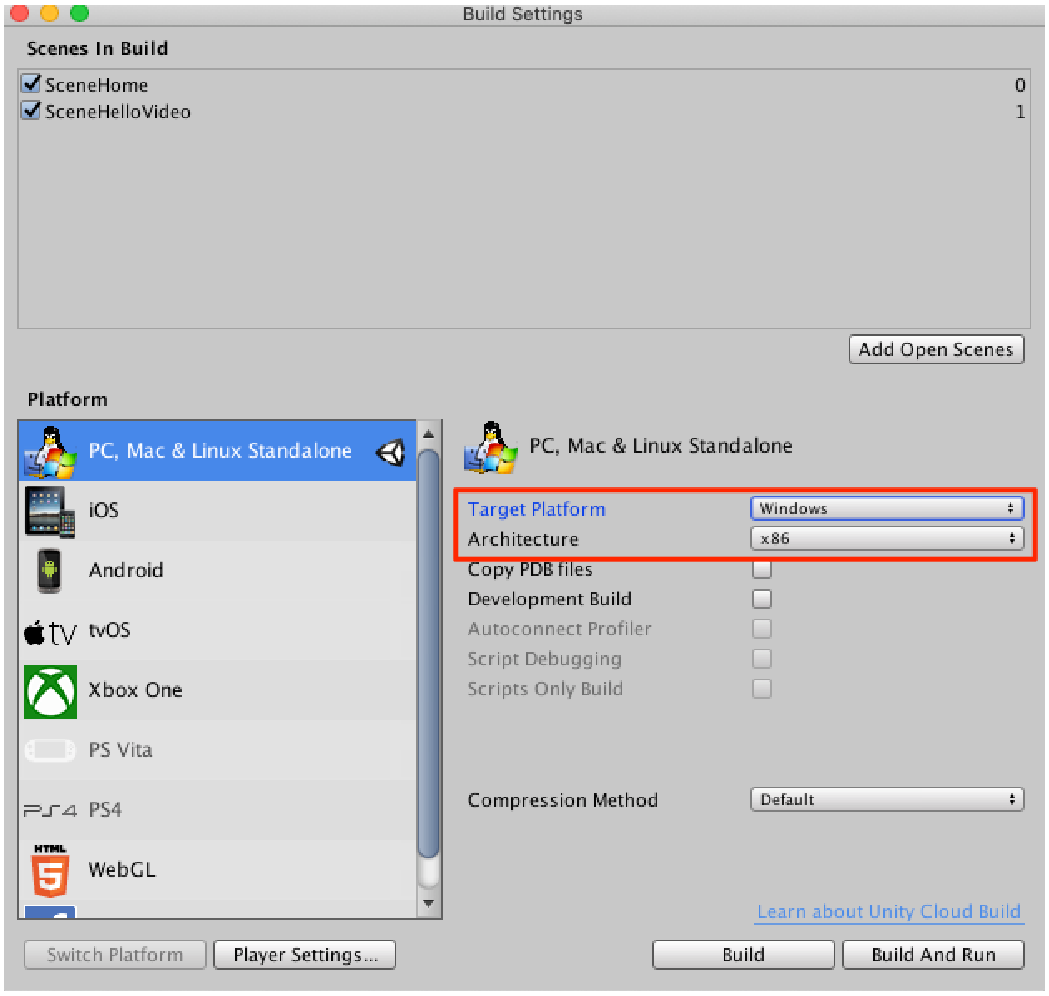
Steps:

1. cd ${build_folder}
2. ${project_path}/Assets/AgoraEngine/Scripts/AgoraTools/prep_codesign.sh TestMAC.app
3. find the signature on the Mac with this command /usr/bin/security find-identity -v -p codesigning （there is a hint from the script also）
4. (export SIGNATURE="<your signature>"; ${project_path}/Assets/AgoraEngine/Scripts/AgoraTools/signcode.sh TestMAC.app)
5. Verify that the result is

```
TestMac.app: valid on disk
TestMac.app: satisfies its Designated Requirement
```

Windows Build

Select **"PC, Mac & Linux Standalone"** from the platform list and click Switch Platform. Then Select "**Windows**" for the Target Platform. Also choose x86 for 32 bit or x86_64 for 64 bit architecture according to your Application target.



Build Settings

Scenes In Build

- ✓ SceneHome 0
- ✓ SceneHelloVideo 1

PC, Mac & Linux Standalone

Target Platform	Windows
Architecture	x86
Copy PDB files	☐
Development Build	☐
Autoconnect Profiler	☐
Script Debugging	☐
Scripts Only Build	☐
Compression Method	Default

Windows Build

Remember to set the appropriate Plugin library identities as described in the earlier section of this README file.

Upgrading SDK

From versions prior to 2.9.1:

- Remove files according to this SDK directory tree: https://bit.ly/3eO16Jy
- Clean up Unity Asset cache (explained later)

From version 2.9.x to 3.x.x:

- Remove the entire file tree under Assets/AgoraEngine
- Importing the new SDK

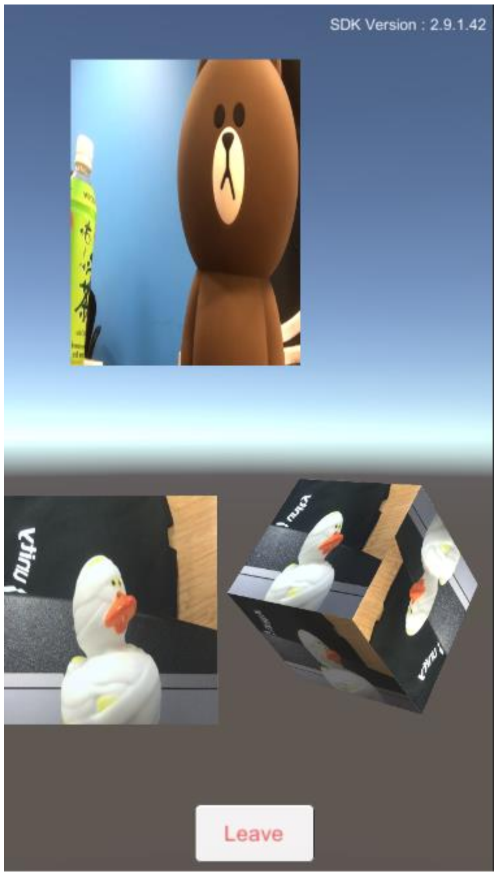
How to **Clean up old Unity Asset Cache**

- Refer to this documentation link to find the location of the cache folder: https://docs.unity3d.com/Manual/AssetPackages.html
- Note that the Asset Store fold may have a version attached to it. For example, this is the current location of the cache to the Agora Video SDK on MacOS:

~/Library/Unity/Asset Store-5.x/Agoraio/ScriptingVideo

Testing

After the configuration has been set up according to the above rules, you should be able to build to the target platform. The following is the sample demo running on device. The remote player will show up in the RawImage generated by code in the upper screen area. User may drag the image around to change its position when more players join the video chat channel.



Some Trouble Shooting FAQs

Q: There are only white cube and box on the demo screen after I join the channel.
A: There may be definite reasons for this. First recommendation is implementing the OnError and OnWarning callbacks to check on what errors are occuring. (Added in the Demo starting from v3.2.1.71). Here are the common causes:

1. You registered an AppId with Certificate enabled, but you didn't include a secure token in your JoinChannel call. => You should use an AppId without Certificate if you are new to the SDK. Create a new AppId with Certificate after you tested the POC and feel comfortable to enforce token security.

2. The Application did not acquire the required OS level permission for Camera. => Make sure you set those up in the PlayerSettings and Manifest if for Android.
3. The agoraCWrapper library didn't get loaded on run-time (usually happens on Standalone, not Editor). Make sure you have the correct Platform Settings flag selected. See examples in MacOS section for building the App above.

Q: Do you support WebGL?
A: No, not in this version. But it is on the roadmap.

Q: App crashed! Why?
A: 99% is that the privacy policy is violated on the running OS. Take MacOS for example, you must declare the description of the camera usage in the Player Settings. Sometimes, your standalone App couldn't get the permission even you had set it in the Unity Player Settings. You must find ways to make sure that is taken care of at the OS setting level. There are solutions on the Internet you can find. You may also come to the Slack groups to look for help (see the links in Resources below).

Q: Create engine gets error with return code -7, why?
A: It is likely that your previous run of the code did not clean up properly when program terminates. Make sure you unload the engine by calling IRTCEngine.Destroy() inside OnApplicationQuit(). Exit Unity Editor and run again.

More FAQs: https://docs.agora.io/en/Video/faq?platform=Unity

Other Resources

- GitHub demos: https://github.com/AgoraIO/Agora-Unity-Quickstart
- The complete API documentation is available in the Document Center.
- For technical support, submit a ticket using the Agora Dashboard or
- Join our slack community: https://bit.ly/39j4I5h
- Help each other at https://agoraiodev.slack.com/messages/unity-help-me
- Developer relations team: devrel@agora.io
- Release note: https://docs.agora.io/en/Interactive%20Broadcast/release_unity_video?platform=Unity