

TVU Anywhere SDK Integration Guide - iOS Platform

Version 2.0
February 18, 2021

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

CONTENTS:

- Getting Started
  - Overview
  - App Key & Secret
  - Basic Live Topology and Flow
  - Integrate the SDK into your app
    - Project setting
    - Download and import the SDK
    - Add system library dependencies
    - Initialize SDK
- Essential Guides
  - Use Standard Live UI
  - Add or Remove Token Pair
- Advanced Guides
  - Listen for callback events
  - Customize Preview UI and Live Control
    - 1.Customize Preview UI
    - 2.Customize Live Control
  - Call TVU Voice
    - 1.Import WebRTC.framework
    - 2.TVU Voice API Index
    - 3.TVU Voice Note
- API Index
  - Enum
  - Delegate
  - Singleton
  - Life cycle
  - Video capture
  - Render
  - Video output
  - Log level
  - Live
  - Token
  - Environment
  - VoIP
- Note
  - 1.Change service environment
  - 2. Support landscape layout
  - 3. Upload to itunes connect error

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Changes

Getting Started

Overview

Welcome to the TVU Anywhere SDK for iOS!

This SDK is designed to provide you with a simple guide for integrating TVU Anywhere functionality into your iOS application. TVU Anywhere is a powerful, high-quality, low-latency and robust live video transmission solution that is designed to be used with the TVU Receiver (decoder). It is ideal for many live video applications including professional / citizen journalism, remote monitoring / preview and more. Via the TVU Receiver, it is also possible to utilize TVU Anywhere live streams with other solutions in the TVU eco system including:

- TVU Grid (Point-to-point and point-to-multipoint IP delivery)
- TVU Producer (Cloud based live production)
- TVU MediaMind (Automated, AI based metadata creation and search tool)
- TVU Command Center (Cloud based control and monitoring)

It is also possible to control general smart device camera operation (such as photo, video, flash operation, switch camera, etc.)

App Key & Secret

Before integrating the SDK, you will need to apply for an app key and secret for authentication. Please contact the TVU Networks support team for assistance.

Basic Live Topology and Flow

After integration with the SDK, it will be necessary to pair your devices with a TVU Receiver in order to decode your live transmission. This is done using the Token function which is described later in this document.

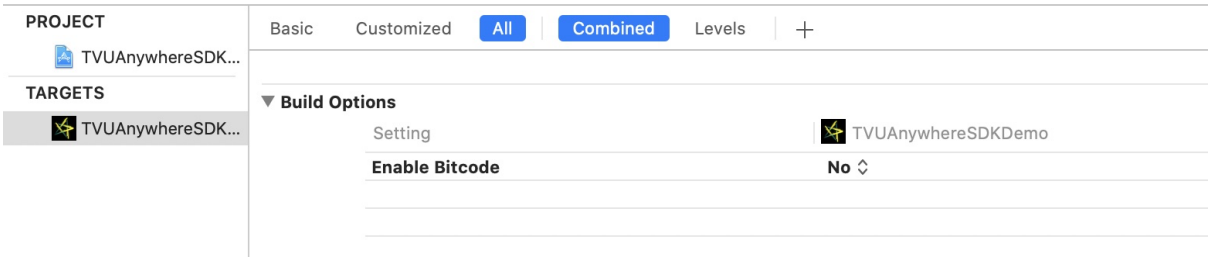
Integrate the SDK into your app

This SDK assumes that you have some experience in the development of iOS Apps.

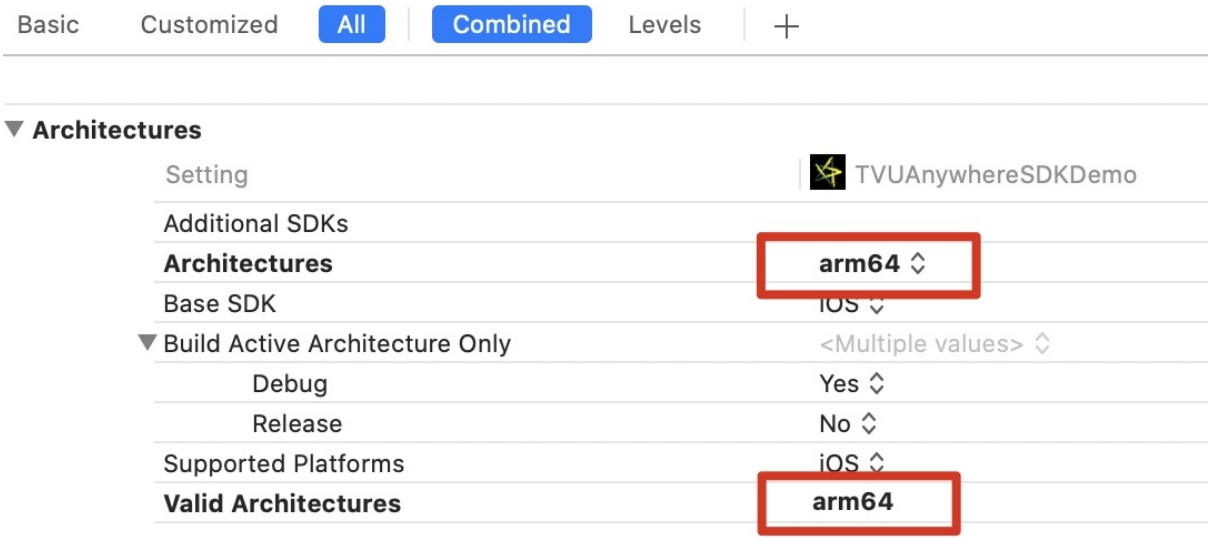
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Project setting

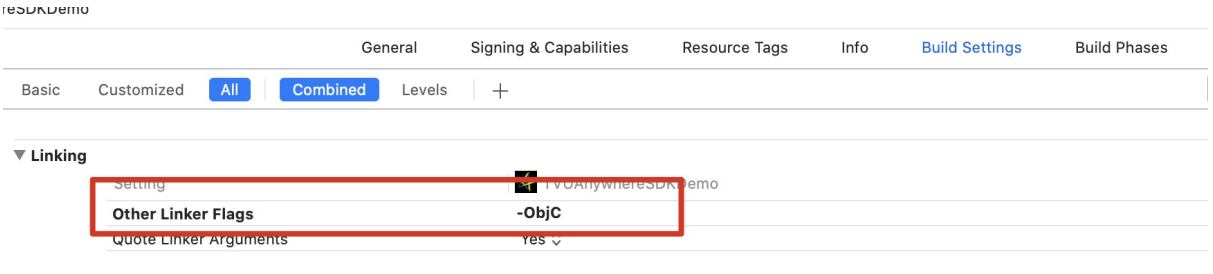
1. Be sure to configure the bitcode as follows, The SDK does not support **Bitcode**:



2. Set **Architectures** as follows, the SDK only supports **arm64** architectures:



3. Set **Other Linker Flags** to **-ObjC**:



Download and import the SDK

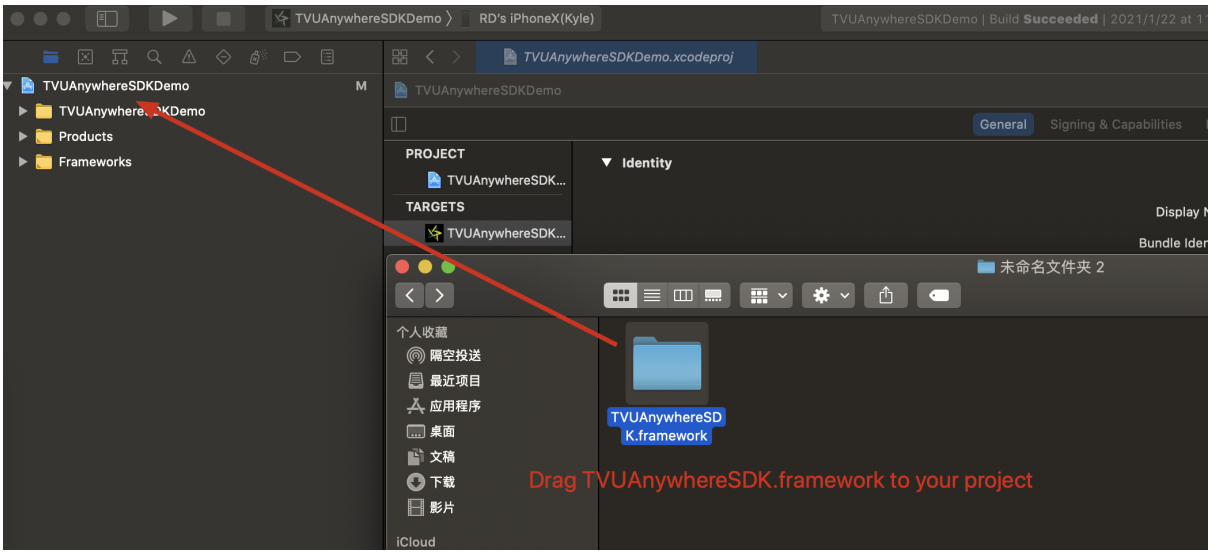
1. Download the SDK

   Please contact TVU Support to get the latest TVU Anywhere SDK.

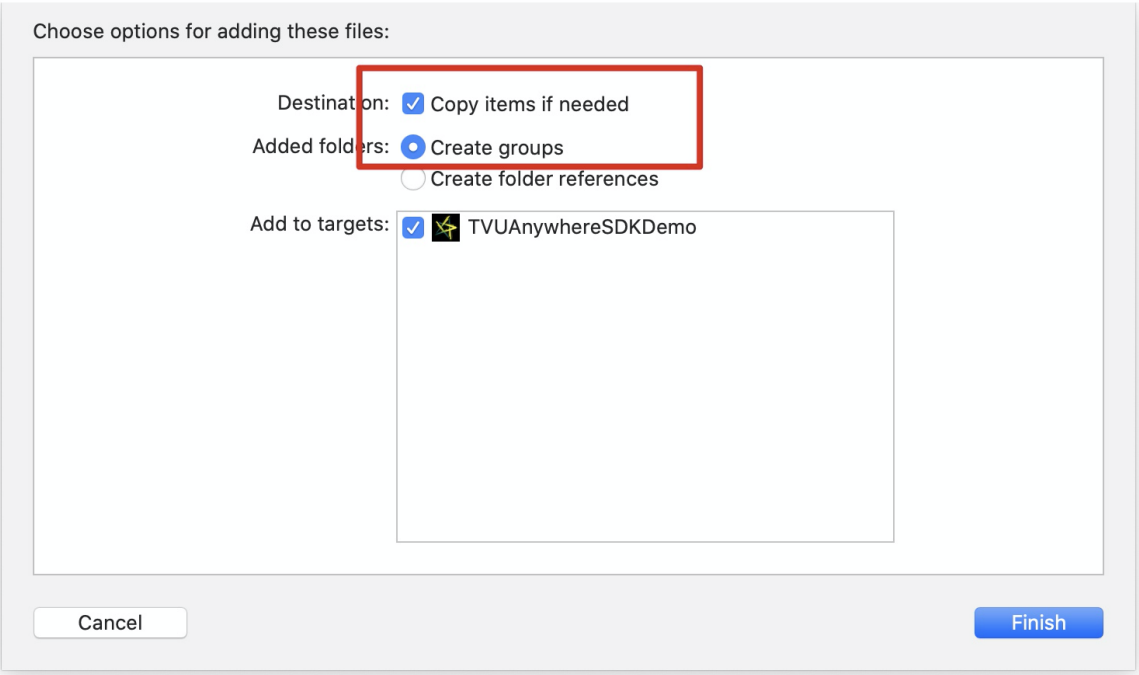
2. Import the SDK

   The downloaded SDK file contains the following file

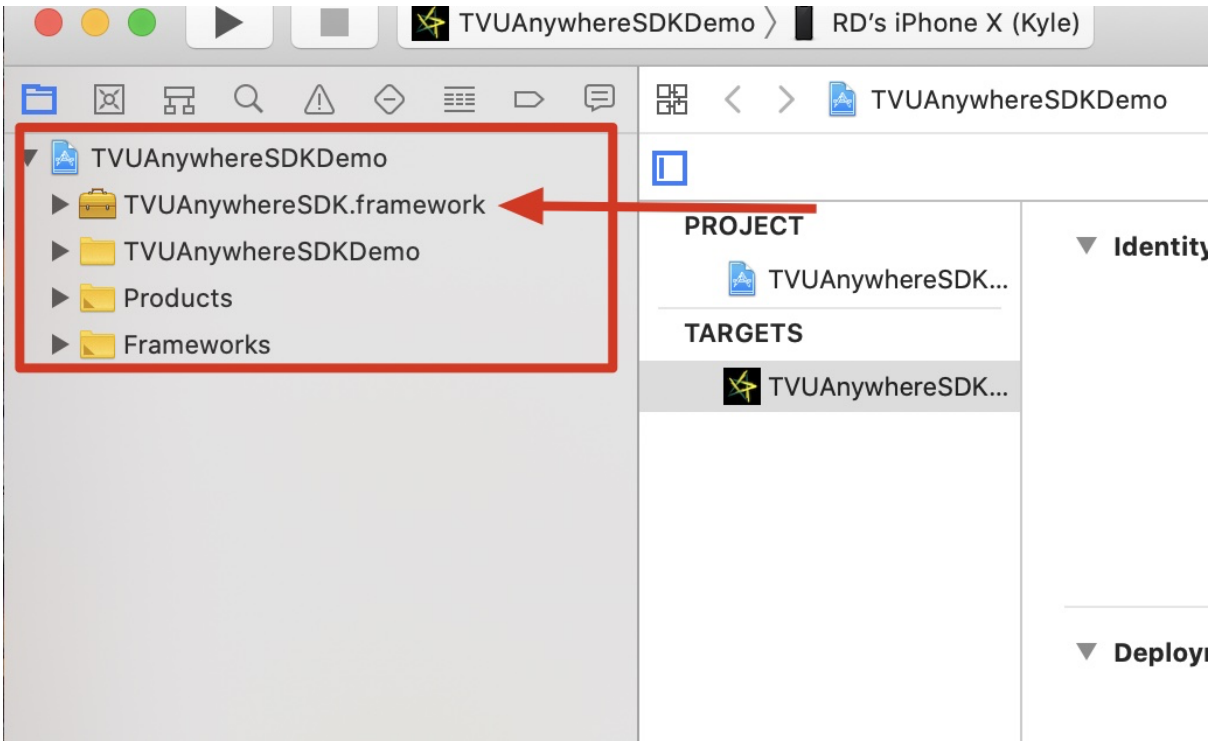
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT



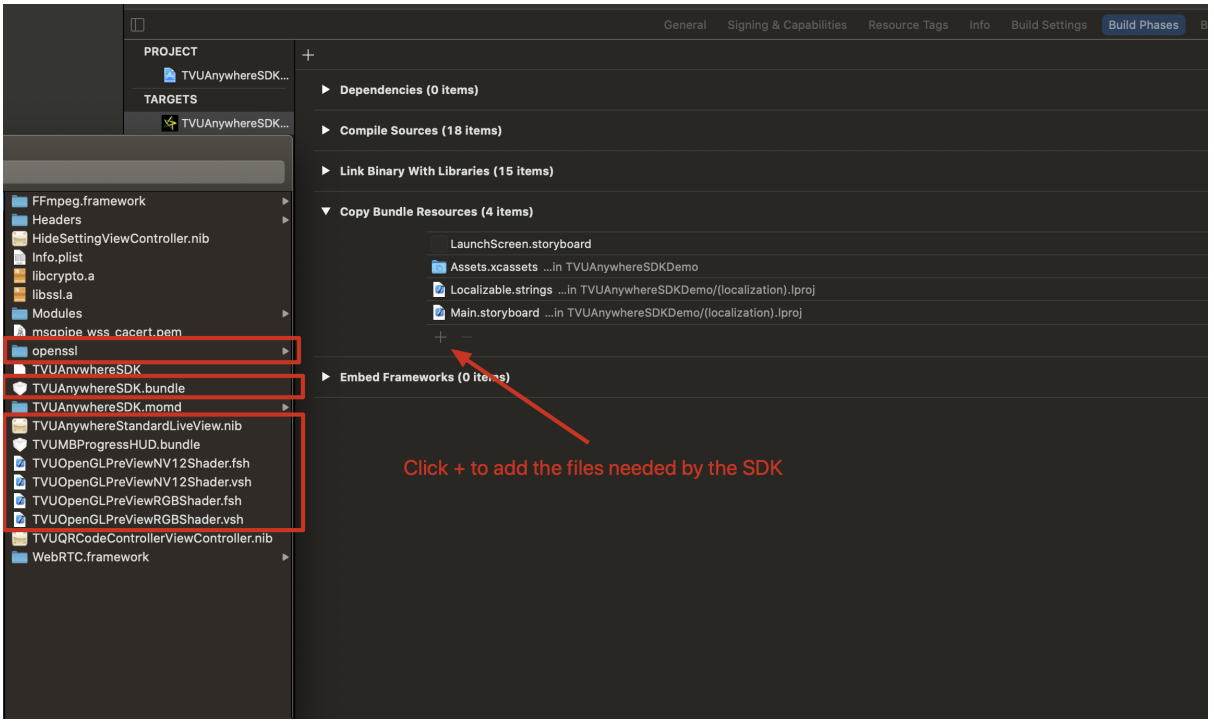
1) Drag TVUAnywhereSDK.framework to your project.



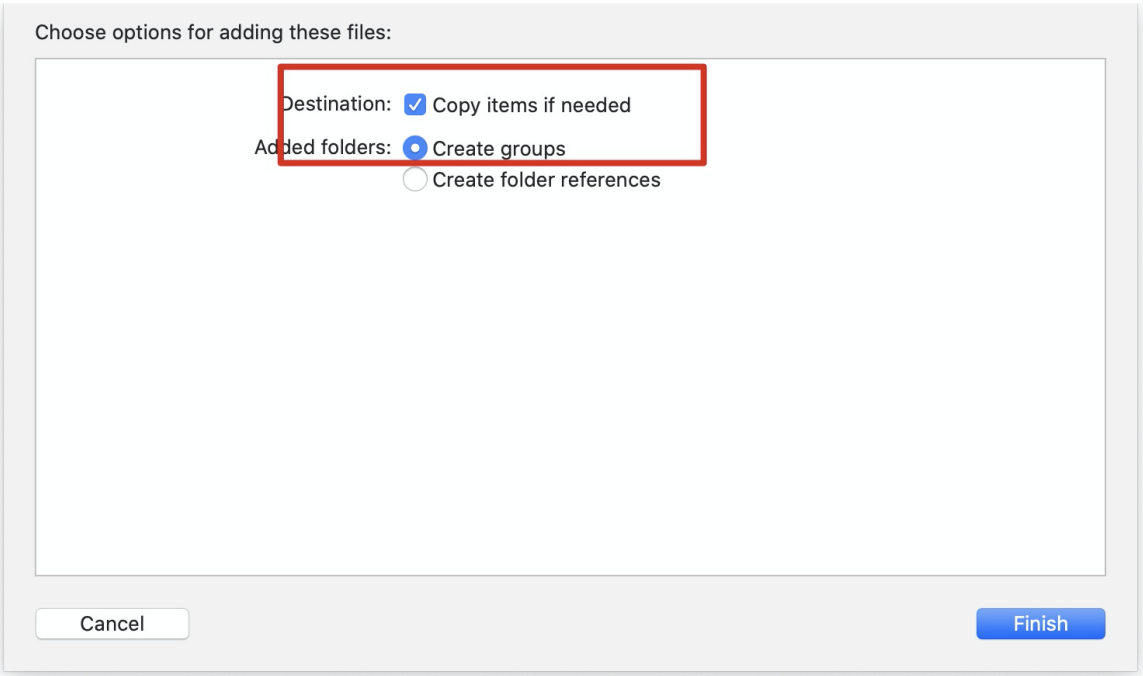
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

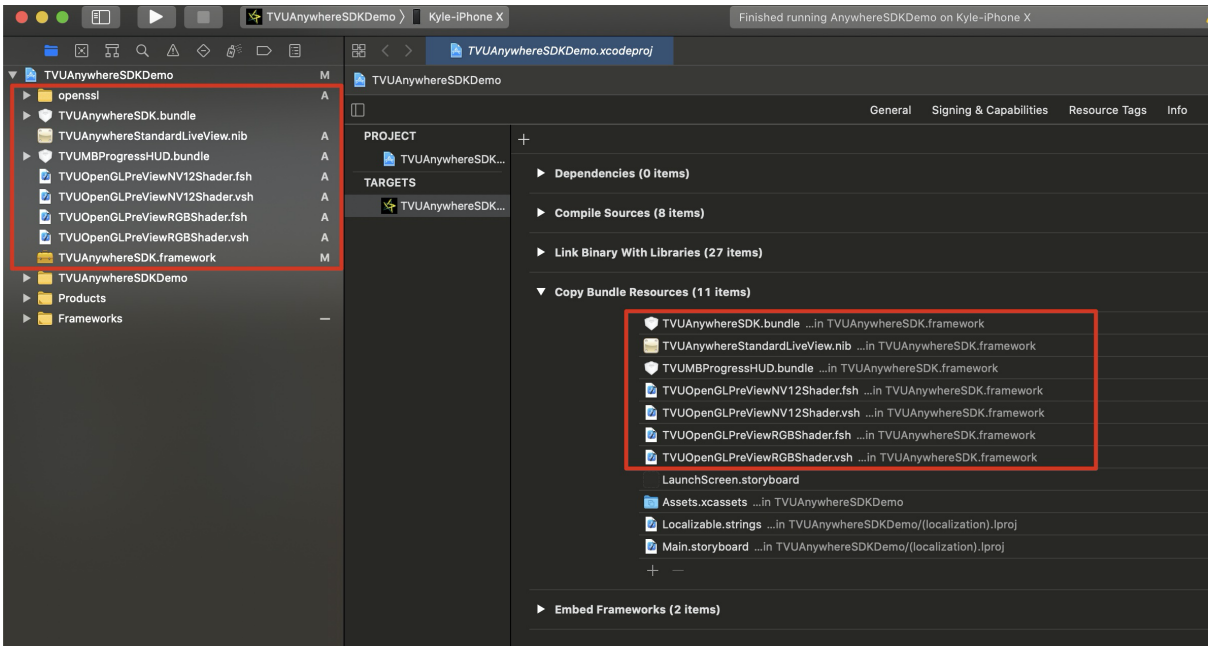


2) Drag the following files from TVUAnywhereSDK.framework into your project. target -> Build Phases -> Copy Bundle Resources



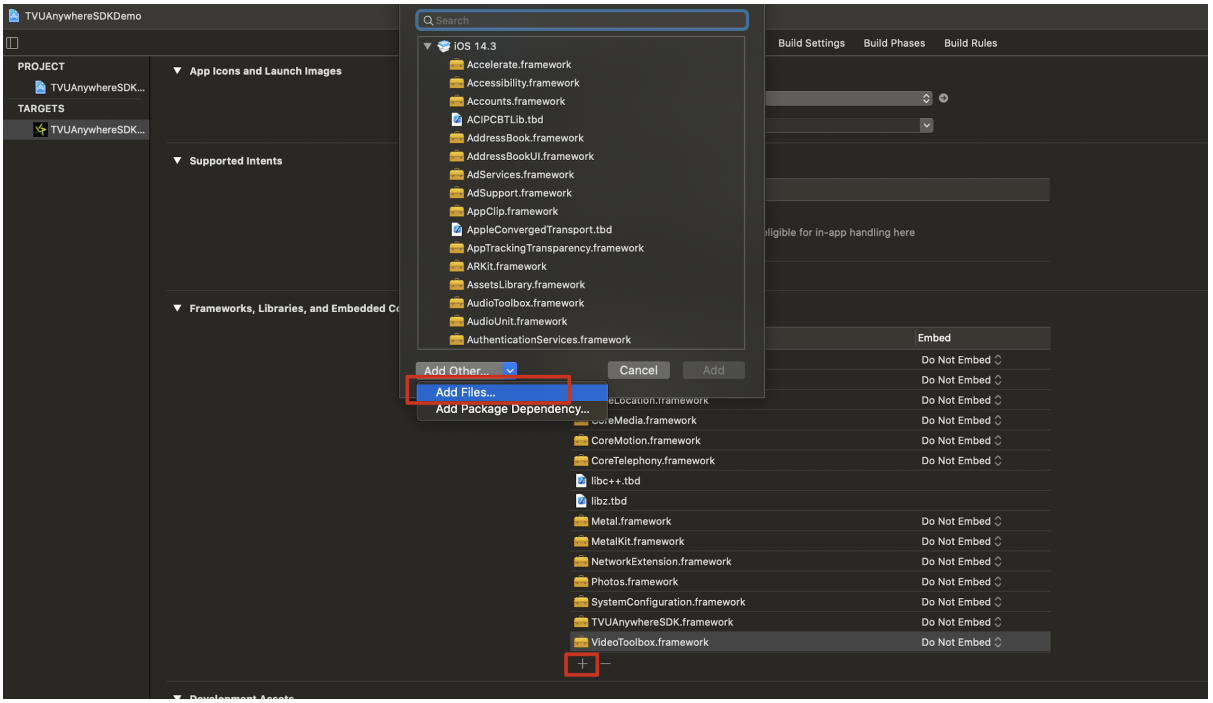
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

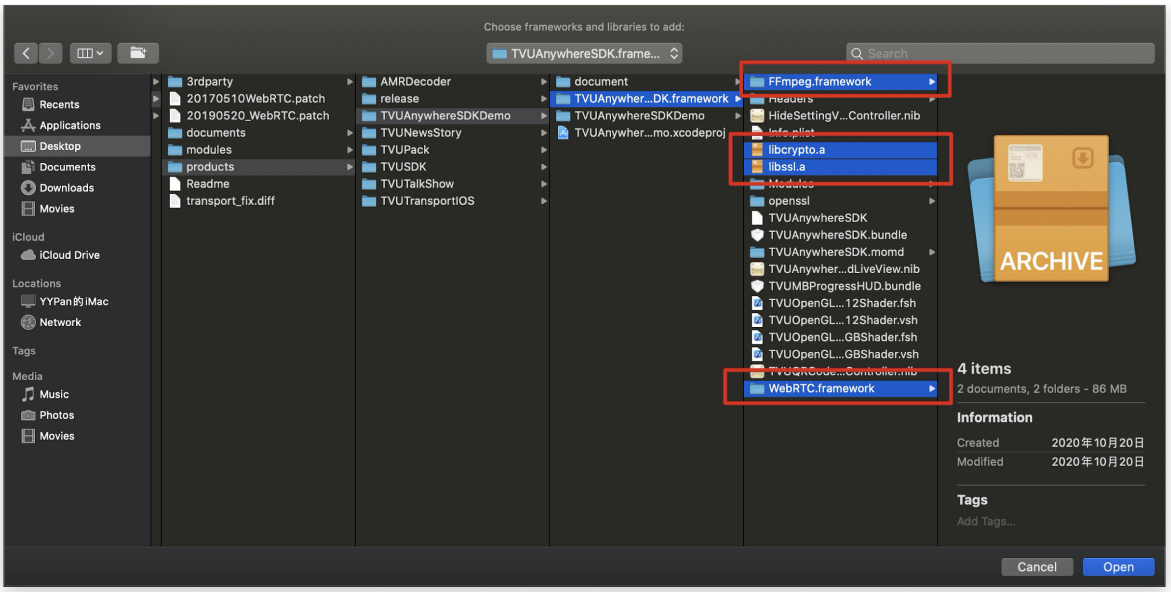




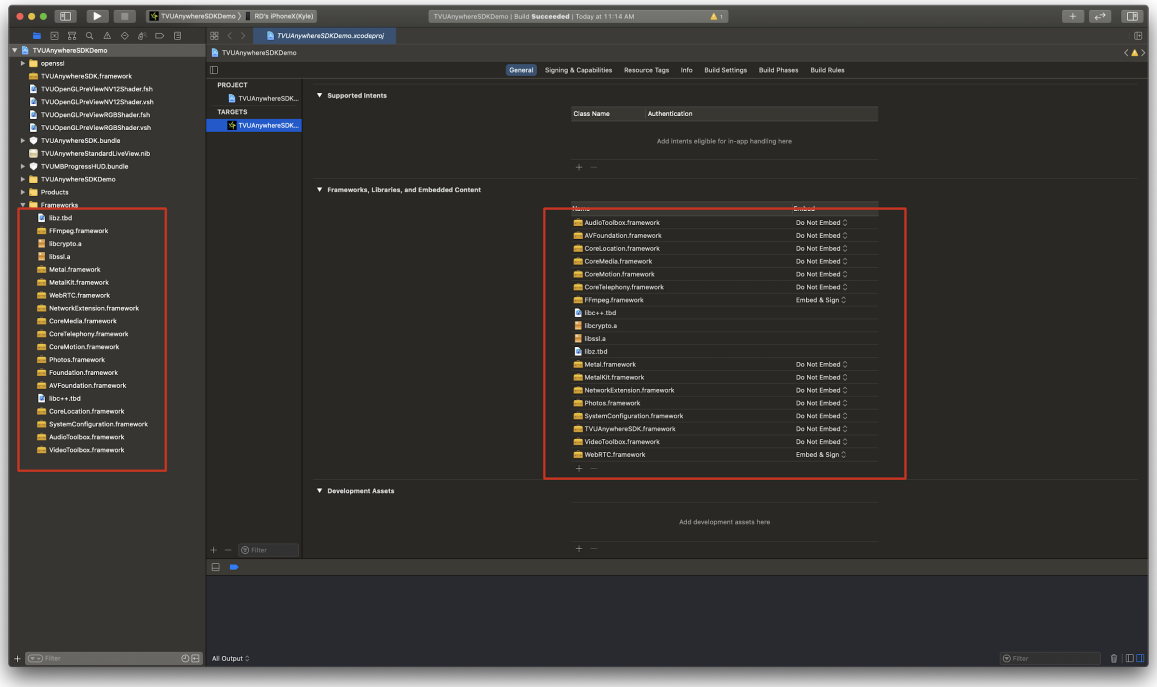
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

3. Add the WebRTC.framework,FFmpeg.framework to your project.
target -> General -> Frameworks,Libraries,and Embedded Content

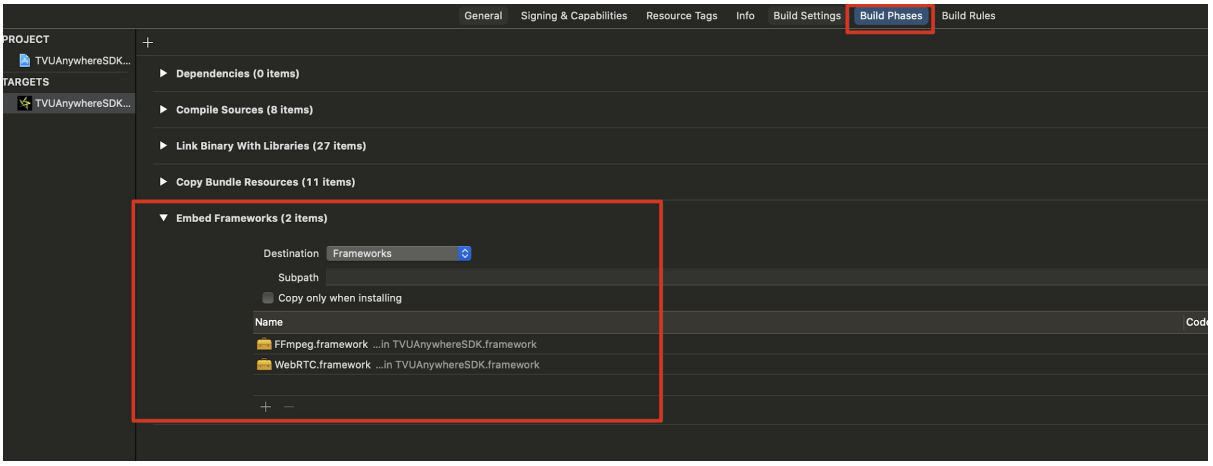




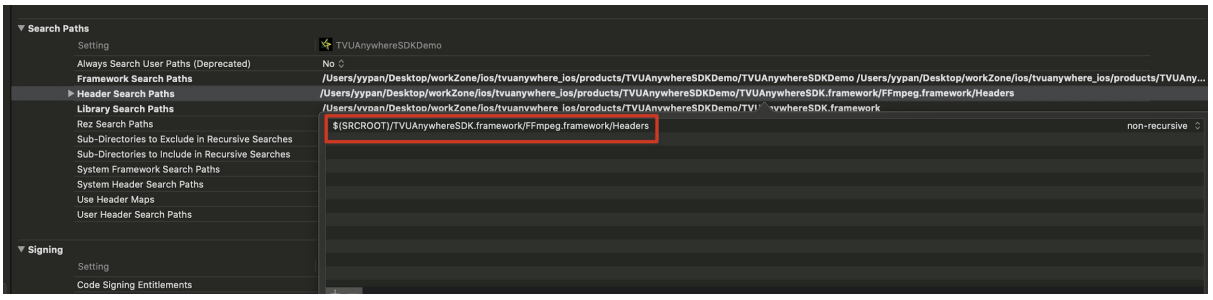
CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT



3) Add the WebRTC.framework,FFmpeg.framework in target->Build Phases->Embed Frameworks



4) Find the “build setting->Search Paths->Header Search” option.

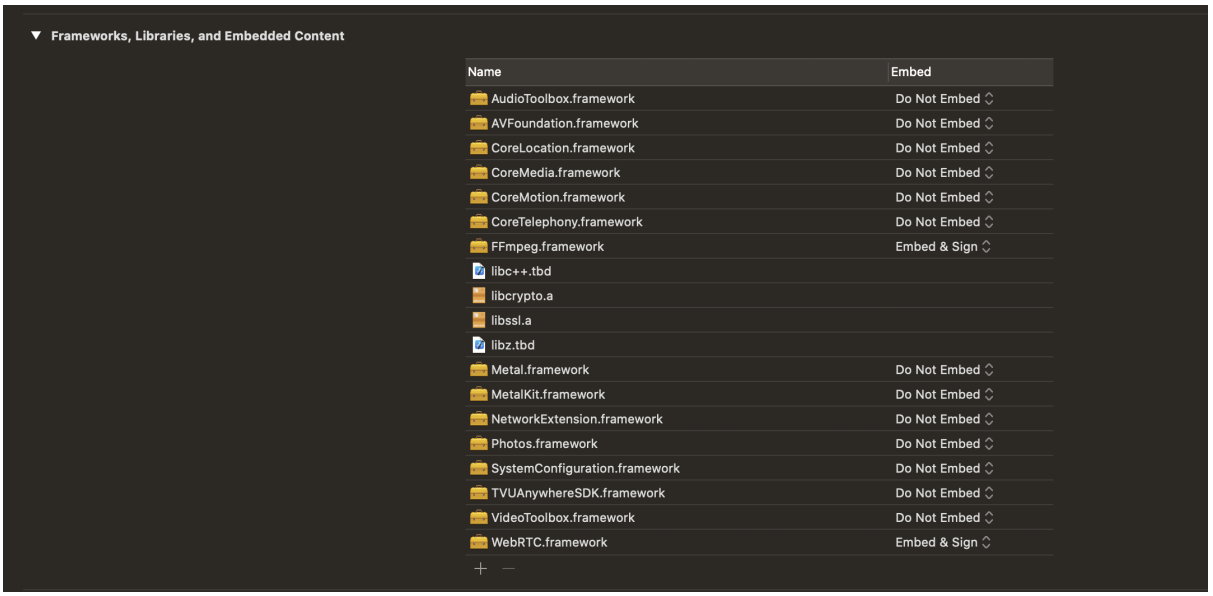


CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Add system library dependencies

In addition to importing TVUAnywhereSDK.framework, you will also need to add the following system dependency libraries.

- AudioToolbox.framework
- AVfoundation.framework
- CoreLocation.framework
- CoreMedia.framework
- CoreMotion.framwork
- CoreTelephony.framework
- NetworkExtension.framework
- Photos.framework
- SystemConfiguration.framework
- VideoToolbox.framework
- Metal.framework
- MetalKit.framework
- libc++.tbd
- libz.tbd



Initialize SDK

SDK Initialization is required before calling any other functions of the SDK. To initialize the SDK, create an instance by calling **[TVUAnywhereSDK manager]**. Optionally, you may also want to setup an SDK service environment.

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Note: Chinese customers may need to change the server environments to CN as shown in the following:

```
- (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary
*)launchOptions
{
    [[TVUAnywhereSDK manager] tvuApplicationDidFinishLaunchingWithOptions];
    [[TVUAnywhereSDK manager] tvuSetSDKEnvionoment:TVUAnywhereSDKEnvirnoment_CN];

    return YES;
}
```

Next, you should call the following initialization method in your `AppDelegate.m` file.

```
#import <TVUAnywhereSDK/TVUAnywhereSDK.h>
```

```
- (void)applicationDidEnterBackground:(UIApplication *)application
{
    [[TVUAnywhereSDK manager] tvuApplicationDidEnterBackground];
}

- (void)applicationWillEnterForeground:(UIApplication *)application
{
    [[TVUAnywhereSDK manager] tvuApplicationWillEnterForeground];
}

- (void)applicationWillTerminate:(UIApplication *)application
{
    [[TVUAnywhereSDK manager] tvuApplicationWillTerminate];
}

- (void)applicationWillResignActive:(UIApplication *)application
{
    [[TVUAnywhereSDK manager] tvuApplicationWillResignActive];
}

- (void)applicationDidBecomeActive:(UIApplication *)application
{
    [[TVUAnywhereSDK manager] tvuApplicationDidBecomeActive];
}
```

Then register the SDK with the App key, secret, username and password provided by TVU Networks (contact TVU Support for further details).

```
/*!
 @brief Register TVUAnywhereSDK.
 @param appKey appKey
 @param appSecret appSecret
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
@param userName userName
@param passWord passWord
*/
- (void)tvuRegistTVUAnywhereSDKWithAppKey:(NSString * _Nullable)appKey
                                appSecret:(NSString * _Nullable)appSecret
                                 userName:(NSString * _Nullable)userName
                                 passWord:(NSString * _Nullable)passWord;
```

Finally create a viewController for the TVU SDK live interface and call the following related initialization method.

```
- (void)viewDidLoad
{
    [super viewDidLoad];

    [TVUAnywhereSDK manager].delegate = self;
    [[TVUAnywhereSDK manager] tvuViewDidLoad:self.view useStandardLiveView:NO];
}

- (void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillAppear];
}

- (void)viewDidAppear:(BOOL)animated
{
    [super viewDidAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewDidAppear];
    [[TVUAnywhereSDK manager] tvuStartReciveMsgpipeMessage];
}

- (void)viewWillDisappear:(BOOL)animated
{
    [super viewWillDisappear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillDisappear];
}

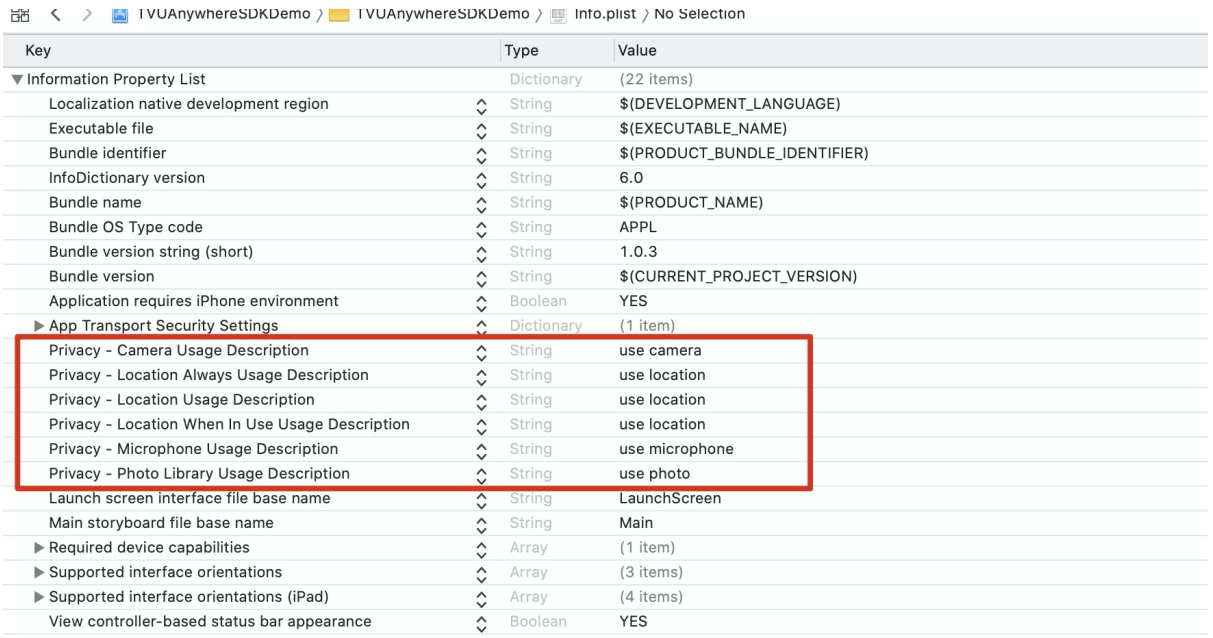
- (void)viewDidDisappear:(BOOL)animated
{
    [super viewDidDisappear:animated];
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
    [[TVUAnywhereSDK manager] tvuViewDidDisappear];
}
```

Note

Please grant the app the following permissions to access the camera , microphone, etc …



TVUAnywhereSDKDemo 〉 TVUAnywhereSDKDemo 〉 Info.plist 〉 No Selection

Key	Type	Value
▼ Information Property List	Dictionary	(22 items)
Localization native development region	String	$(DEVELOPMENT_LANGUAGE)
Executable file	String	$(EXECUTABLE_NAME)
Bundle identifier	String	$(PRODUCT_BUNDLE_IDENTIFIER)
InfoDictionary version	String	6.0
Bundle name	String	$(PRODUCT_NAME)
Bundle OS Type code	String	APPL
Bundle version string (short)	String	1.0.3
Bundle version	String	$(CURRENT_PROJECT_VERSION)
Application requires iPhone environment	Boolean	YES
▶ App Transport Security Settings	Dictionary	(1 item)
Privacy - Camera Usage Description	String	use camera
Privacy - Location Always Usage Description	String	use location
Privacy - Location Usage Description	String	use location
Privacy - Location When In Use Usage Description	String	use location
Privacy - Microphone Usage Description	String	use microphone
Privacy - Photo Library Usage Description	String	use photo
Launch screen interface file base name	String	LaunchScreen
Main storyboard file base name	String	Main
▶ Required device capabilities	Array	(1 item)
▶ Supported interface orientations	Array	(3 items)
▶ Supported interface orientations (iPad)	Array	(4 items)
View controller-based status bar appearance	Boolean	YES

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

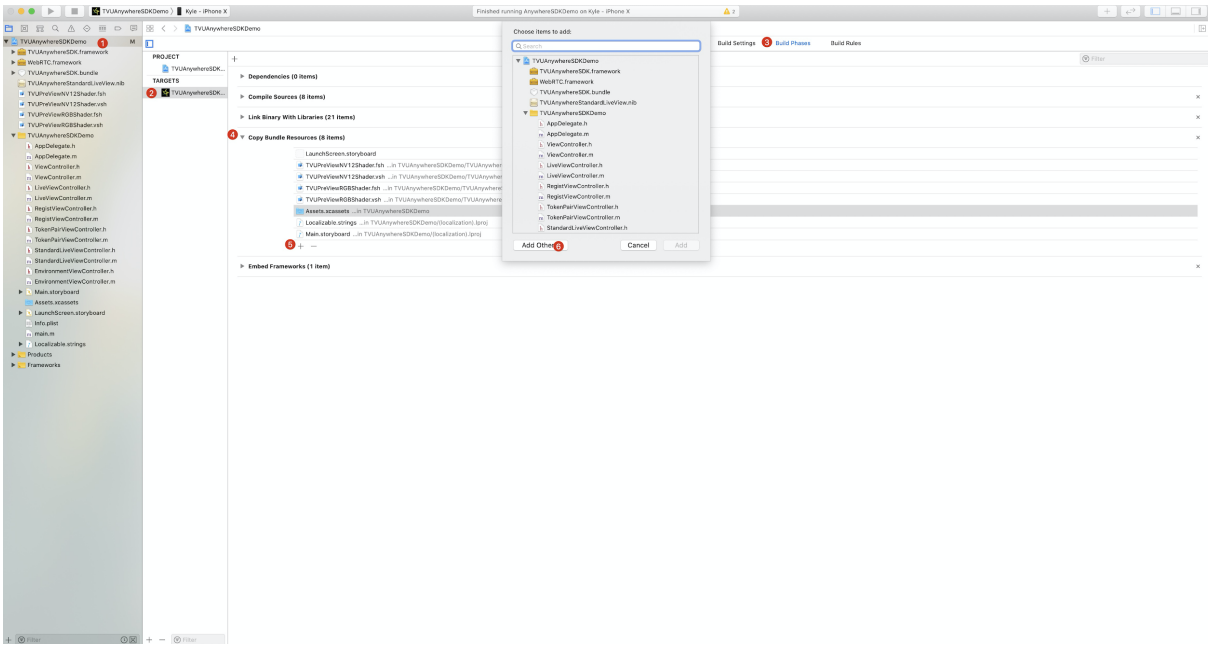
Essential Guides

Use Standard Live UI

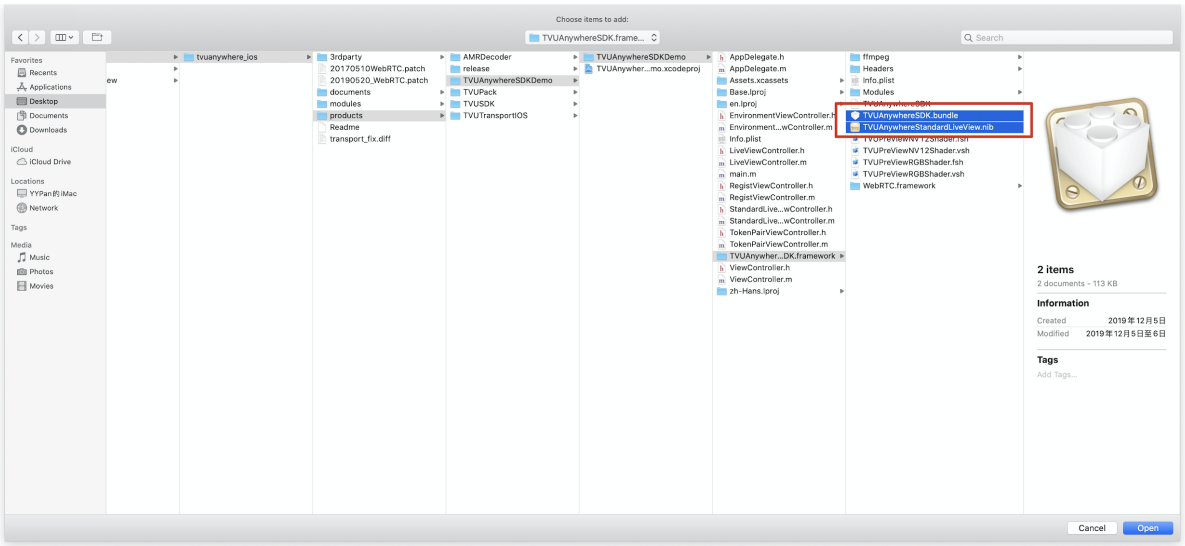
Within the TVUAnywhereSDK, there is a standard version of the live broadcast UI that you can call and add into your project, we recommend that you use this interface.

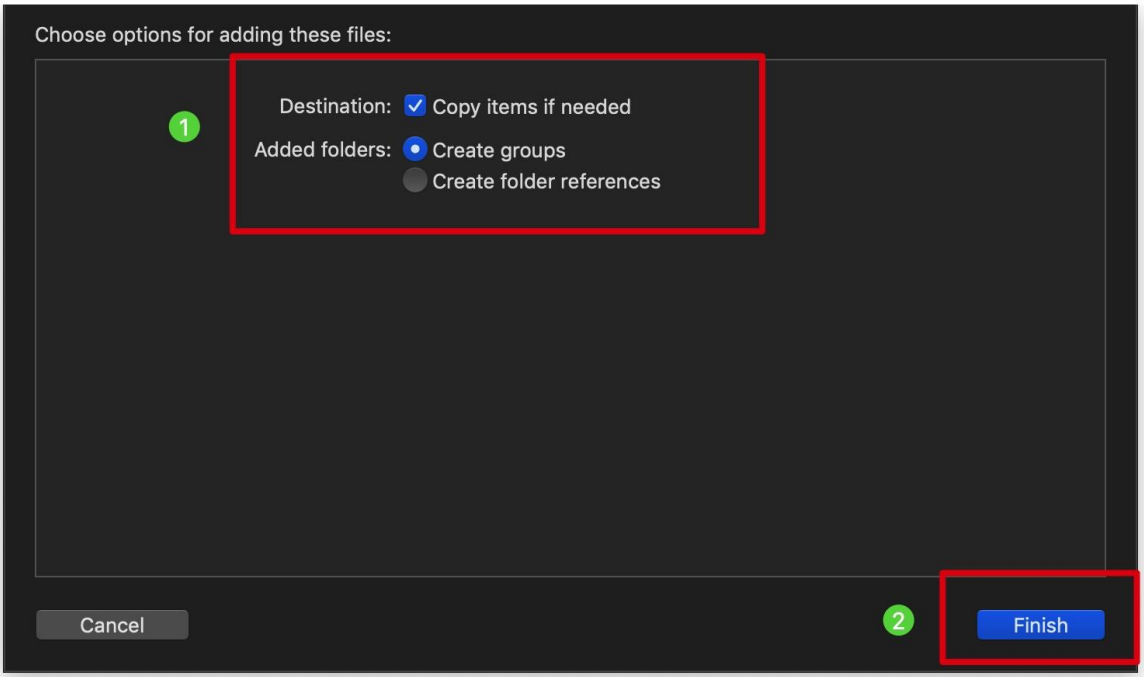


1. After you import the TVUAnywhereSDK.framework, add the related nib and Bundle files in the Bundle Resources of your project.



CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT





2.Create a **viewController** for the TVU SDK live interface.
3.Call **useStandardLiveView** in the viewDidLoad, and set **useStandardLiveView** to YES. This will let you use a standard TVU Anywhere live interface.

```
/*!
@brief View did load.
@param view add preview above this view
@param useStandardLiveView provide a set of standard live interface
*/
- (void)tvuViewDidLoad:(UIView *)view useStandardLiveView:(BOOL)useStandardLiveView;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

4.Example:

```
- (void)viewDidLoad
{
    [super viewDidLoad];

    [TVUAnywhereSDK manager].delegate = self;
    [[TVUAnywhereSDK manager] tvuViewDidLoad:self.view useStandardLiveView:YES];
}

- (void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillAppear];
}

- (void)viewDidAppear:(BOOL)animated
{
    [super viewDidAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewDidAppear];
    [[TVUAnywhereSDK manager] tvuStartReciveMsgpipeMessage];
}

- (void)viewWillDisappear:(BOOL)animated
{
    [super viewWillDisappear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillDisappear];
}

- (void)viewDidDisappear:(BOOL)animated
{
    [super viewDidDisappear:animated];

    [[TVUAnywhereSDK manager] tvuViewDidDisappear];
}
```

Note:

1. Do not set TVUAnywhereSDKDelegate when using the standard live interface.
2. Use the presentViewController method to access the live page.

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

3. To adapt to iOS 13, please set the controller's modalPresentationStyle to UIModalPresentationFullScreen.

Add or Remove Token Pair

Every TVU transmission and receiving device has a unique and automatically generated PairID.

Before going live, it is necessary to add a token pair with an active TVU Receiver for receiving and decoding your stream. The token is a temporary or permanent authorization for a given transmitter (e.g. TVU Anywhere device) to be used with a specific Receiver for decoding. In order to successfully pair a TVU Anywhere transmitter and a TVU Receiver, it is necessary for acceptance on both sides by authorized operators. If a token pair is removed, it is not possible to use TVU Anywhere with the selected Receiver any longer. Please contact TVU support to assist with setup of a TVU Receiver.

Note: Below all pair ID will use unified format. (for example:c9bf391a288f2c8b)

1. Add Token Pair

```
/*!
 @brief Add token pair.
 @param receivers an array of receivers
 @param handler
TVUAnywhereTokenPairState_Success/TVUAnywhereTokenPairState_Failure
 */
- (void)tvuAddTokenPairWithReceivers:(NSArray * _Nullable)receivers
                   completeHandler:(void (^ _Nullable)(TVUAnywhereTokenPairState
state))handler;

[[TVUAnywhereSDK manager] tvuAddTokenPairWithReceivers:@[@"1122334455667788",
@"2233445566778899"] completeHandler:^(TVUAnywhereTokenPairState state) {

}];
```

2. Remove Token Pair

```
/*!
 @brief Remove token pair.
 @param receivers an array of receivers
 @param handler
TVUAnywhereTokenPairState_Success/TVUAnywhereTokenPairState_Failure
 */
- (void)tvuRemoveTokenPairWithReceivers:(NSArray * _Nullable)receivers
                      completeHandler:(void (^ _Nullable)(TVUAnywhereTokenPairState
state))handler;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
[[TVUAnywhereSDK manager]
tvuRemoveTokenPairWithReceivers:@[@"1122334455667788", @"2233445566778899"]
completeHandler:^(TVUAnywhereTokenPairState state) {

}];
```

Advanced Guides

Listen for callback events

The **TVUAnywhereSDKDelegate** allows you to subscribe to callback events that provide status updates on the operations performed in your app that are related to the SDK. For example, you might want to be notified when live operation failed.

```
@protocol TVUAnywhereSDKDelegate <NSObject>

@optional

/*!
 @brief Torch mode changed.
 @param torchMode new value
 */
- (void)tvuAnywhereDeviceTorchModeHasChanged:(AVCaptureTorchMode)torchMode;

/*!
 @brief Start or stop live with error.
 @param state error state
 */
- (void)tvuAnywhereLiveErrorWithErrorState:(TVUAnywhereLiveErrorState)state;

/*!
 @brief Voip action.
 @param action voip action
 @param number call number
 */
- (void)tvuAnywhereVoipCallAction:(TVUAnywhereVoipAction)action
andCallNumber:(NSString * _Nullable)number;

@end
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Customize Preview UI and Live Control

1.Customize Preview UI

1.1.Create a **viewController** for the TVU SDK live interface.

1.2.Call **useStandardLiveView** in the viewDidLoad, and set **useStandardLiveView** to NO

```
/*!
 @brief View did load.
 @param view add preview above this view
 @param useStandardLiveView provide a set of standard live interface
 */
- (void)tvuViewDidLoad:(UIView *)view useStandardLiveView:(BOOL)useStandardLiveView;
```

example:

```
- (void)viewDidLoad
{
    [super viewDidLoad];

    [TVUAnywhereSDK manager].delegate = self;
    [[TVUAnywhereSDK manager] tvuViewDidLoad:self.view useStandardLiveView:NO];
}

- (void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillAppear];
}

- (void)viewDidAppear:(BOOL)animated
{
    [super viewDidAppear:animated];

    [[TVUAnywhereSDK manager] tvuViewDidAppear];
    [[TVUAnywhereSDK manager] tvuStartReciveMsgpipeMessage];
}

- (void)viewWillDisappear:(BOOL)animated
{
    [super viewWillDisappear:animated];

    [[TVUAnywhereSDK manager] tvuViewWillDisappear];
}
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
- (void)viewDidDisappear:(BOOL)animated
{
    [super viewDidDisappear:animated];

    [[TVUAnywhereSDK manager] tvuViewDidDisappear];
}
```

2.Customize Live Control

We already provide a standard interface to control start or stop live with a paired TVU Receiver. If you want to control live operation by yourself, we also provide a related API to start or stop live with a paired TVU Receiver.

Note: Below all pair ID will use unify format. (ex:c9bf391a288f2c8b)

2.1. Get TVUAnywhereSDK manager

```
/*!
 @brief Call the function to get the TVUAnywhereSDK client.
 */
+ (TVUAnywhereSDK *)manager;
```

2.2. Get receiver list (Paired Receiver list). You could choose one to start a live transmission with.

```
/*!
 @brief Get receiver list.
 @return An array of receivers currently online.
 */
- (NSMutableArray * _Nullable)tvuGetReceiverList;
```

2.3. Get receiver live status. The current Receiver could already be live.

```
/*!
 @brief Get live state.
 @return Current state.(TVUAnywhereState_Ready/TVUAnywhereState_Living)
 */
- (TVUAnywhereState)tvuGetAnywhereState;
```

2.4. Start or stop live by receiver name

```
/*!
 @brief Start live with receiver name.
 @param rName receiver name
 */
- (void)tvuStartLiveWithReceiverName:(NSString * _Nullable)rName;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
/*!
 @brief Stop live with receiver name.
 @param rName receiver name
 */
- (void)tvuStopLiveWithReceiverName:(NSString * _Nullable)rName;
```

2.5. Get live receiver name

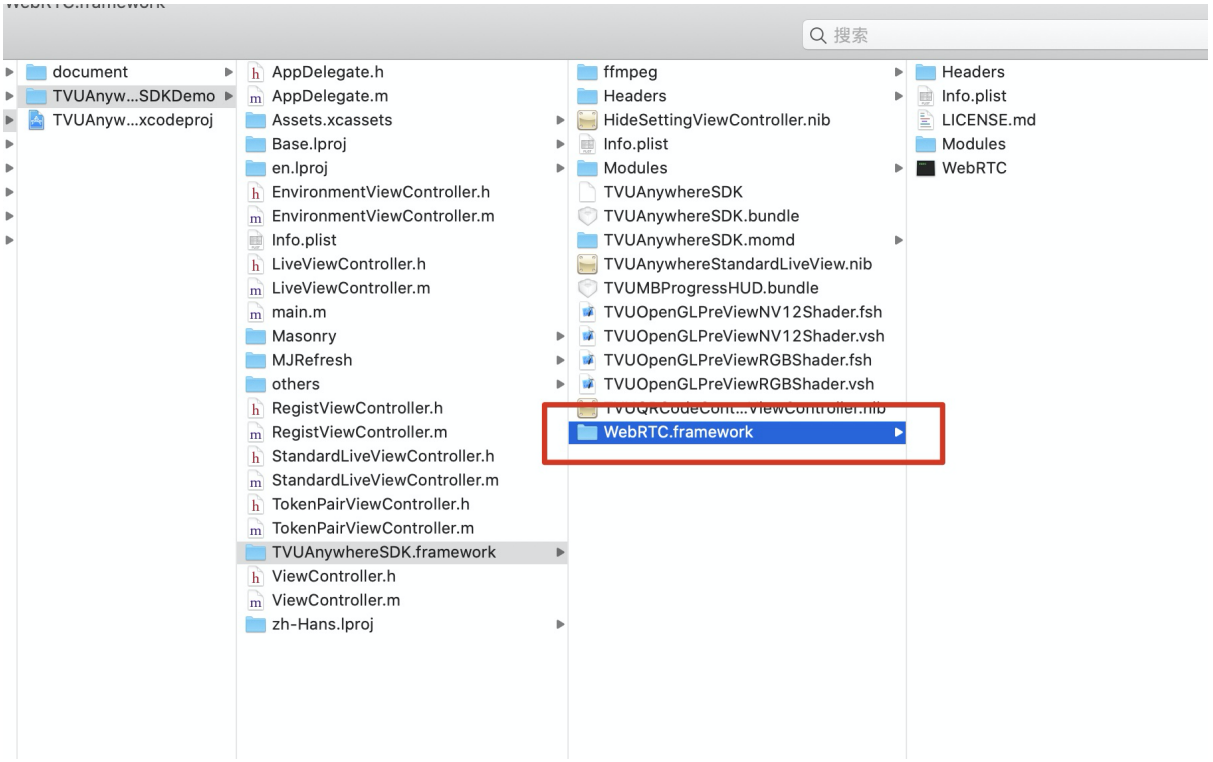
```
/*!
 @brief Get the name of the receiver currently being broadcasted.
 @return Living receiver.
 */
- (NSString * _Nullable)tvuGetLivingReceiverName;
```

Call TVU Voice

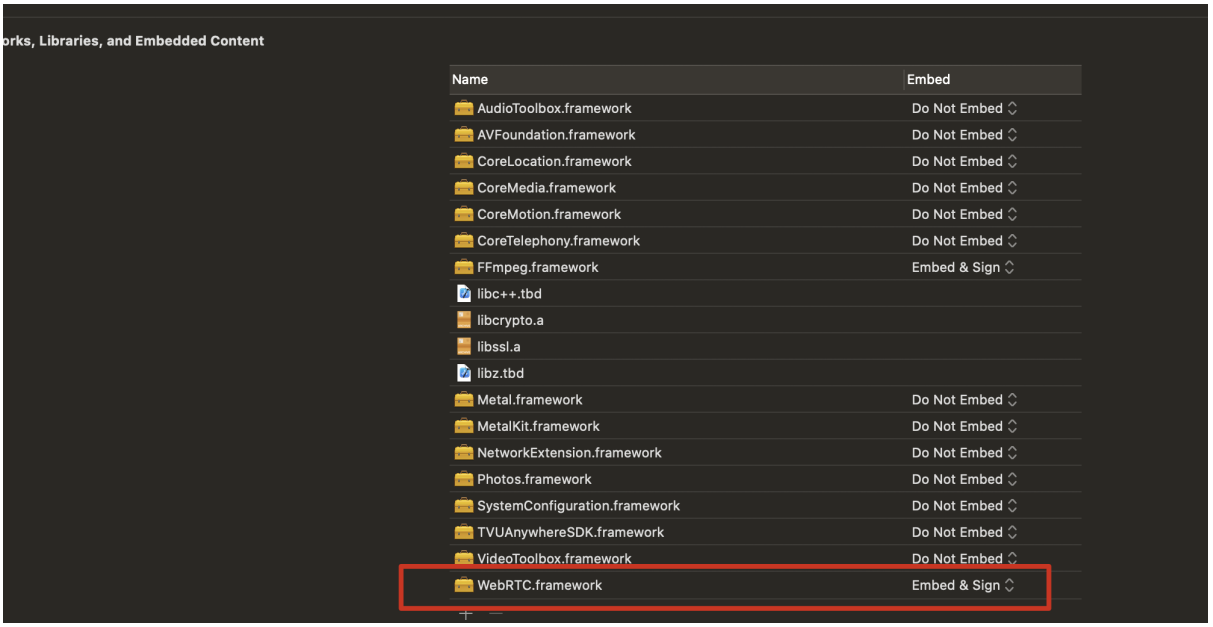
TVU Voice is a VoIP call feature developed by TVU. It enables a reliable VoIP call between TVU Anywhere device and a TVU Receiver. You can use the API to accept, reject, or hangup the TVU VoIP session.

1.Import WebRTC.framework

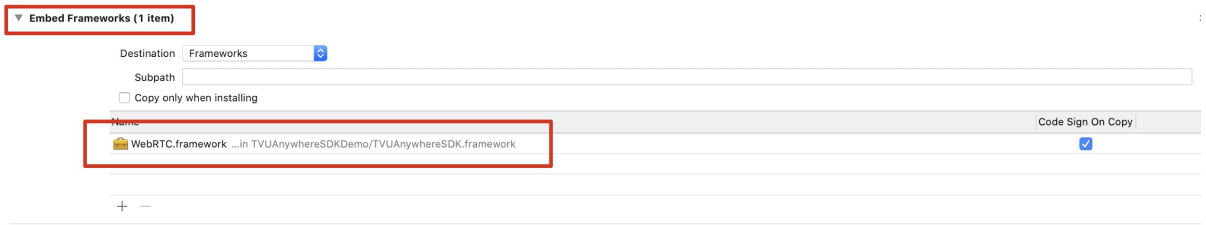
1.1.Drag WebRTC.framework to your project : targets -> General



CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT



1.2.Add WebRTC.framework in target->Build Phases->Embed Frameworks



2.TVU Voice API Index

```
/*!
 @brief Is voip calling.
 @return YES/NO
 */
- (BOOL)tvuIsVoipCalling;

/*!
 @brief Voip state.
 @return TVUAnywhereVoipState
 */
- (TVUAnywhereVoipState)tvuGetVoipState;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
/*!
 @brief Accept call.
 @param phone phone number
 */
- (void)tvuVoipAcceptCall:(NSString * _Nullable)phone;

/*!
 @brief Reject call.
 @param phone phone number
 */
- (void)tvuVoipRejectCall:(NSString * _Nullable)phone;

/*!
 @brief HangUp call.
 @param phone phone number
 */
- (void)tvuVoipHangupCall:(NSString * _Nullable)phone;
```

We also provide a delegate to listen for incoming calls and whether the user wants to accept the call or not.

```
/*!
 @brief Voip action.
 @param action voip action
 @param number call number
 */
- (void)tvuAnywhereVoipCallAction:(TVUAnywhereVoipAction)action
andCallNumber:(NSString * _Nullable)number;
```

3.TVU Voice Note

This function is available only in the live view, and can only accept TVU Voice calls initiated from the remote side, such as a TVU Receiver or Command Center.

In the following cases, the SDK will reject new TVU voice calls:

1) Not currently on the live view
2) TVU Voice is already connected with a different Receiver

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

API Index

Enum

```
typedef NS_ENUM(NSUInteger, TVUAnywhereSDKBackgroundMode) {
    TVUAnywhereSDKBackgroundMode_NoDefine = 0,  // background mode not specified
    TVUAnywhereSDKBackgroundMode_UnSupport,     // exit the app after entering the
background
    TVUAnywhereSDKBackgroundMode_Support,       // suspend the app after entering the
background
};

typedef NS_ENUM(NSUInteger, TVUAnywhereLiveErrorState) {
    TVUAnywhereLiveErrorState_None = 0,         // no error
    TVUAnywhereLiveErrorState_ROccupied,        // receiver occupied
    TVUAnywhereLiveErrorState_NTPError,         // NTP time out of sync
    TVUAnywhereLiveErrorState_RNameError,       // receiver name error
    TVUAnywhereLiveErrorState_PeerIdError,      // PeerId error
    TVUAnywhereLiveErrorState_TimeOut,          // time out
};

typedef NS_ENUM(NSUInteger, TVUAnywhereLogLevel) {
    TVUAnywhereLogLevel_FATAL = 0,  // fatal
    TVUAnywhereLogLevel_ERROR,      // error
    TVUAnywhereLogLevel_WARN,       // warn
    TVUAnywhereLogLevel_INFO,       // info
    TVUAnywhereLogLevel_DEBUG,      // debug
};

typedef NS_ENUM(NSUInteger, TVUAnywhereState) {
    TVUAnywhereState_Ready = 0, // standby
    TVUAnywhereState_Living,        // living
};

typedef NS_ENUM(NSUInteger, TVUAnywhereTokenPairState) {
    TVUAnywhereTokenPairState_Success = 0,
    TVUAnywhereTokenPairState_Failure,
};

typedef NS_ENUM(NSUInteger, TVUAnywhereSDKEnvirnoment) {
    TVUAnywhereSDKEnvirnoment_US = 0,
    TVUAnywhereSDKEnvirnoment_CN,
    TVUAnywhereSDKEnvirnoment_RD,
    TVUAnywhereSDKEnvirnoment_QA,
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
    TVUAnywhereSDKEnvirnoment_ALI,
    TVUAnywhereSDKEnvirnoment_CCTV,
    TVUAnywhereSDKEnvirnoment_BTV,
};

typedef NS_ENUM(NSUInteger, TVUAnywhereVoipAction) {
    TVUAnywhereVoipAction_InCall = 0,
    TVUAnywhereVoipAction_EndCall,
    TVUAnywhereVoipAction_CancelCall,
};

typedef NS_ENUM(NSUInteger, TVUAnywhereVoipState) {
    TVUAnywhereVoipState_Disconnect = 0,
    TVUAnywhereVoipState_Connecting,
    TVUAnywhereVoipState_Calling,
};

typedef NS_ENUM(NSUInteger, TVUAnywherePushStreamState) {
    TVUAnywherePushStreamState_Success = 0,
    TVUAnywherePushStreamState_Failure,
};
```

Delegate

```
@protocol TVUAnywhereSDKDelegate <NSObject>

@optional

/*!
 @brief Torch mode changed.
 @param torchMode new value
 */
- (void)tvuAnywhereDeviceTorchModeHasChanged:(AVCaptureTorchMode)torchMode;

/*!
 @brief Start or stop live with error.
 @param state error state
 */
- (void)tvuAnywhereLiveErrorWithErrorState:(TVUAnywhereLiveErrorState)state;

/*!
 @brief Voip action.
 @param action voip action
 @param number call number
 */
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
- (void)tvuAnywhereVoipCallAction:(TVUAnywhereVoipAction)action
andCallNumber:(NSString * _Nullable)number;

@end
```

Set delegate to monitor live error state.

You can get the result of turning live on or off in the proxy method. Remember to go back to the main thread.

```
- (void)tvuAnywhereLiveErrorWithErrorState:(TVUAnywhereLiveErrorState)state
{
    dispatch_async(dispatch_get_main_queue(), ^{
        switch (state) {
            case TVUAnywhereLiveErrorState_None:
                break;
            case TVUAnywhereLiveErrorState_ROccupied:
                break;
            case TVUAnywhereLiveErrorState_RNameError:
                break;
            case TVUAnywhereLiveErrorState_PeerIdError:
                break;
            case TVUAnywhereLiveErrorState_NTPError:
                break;
            case TVUAnywhereLiveErrorState_TimeOut:
                break;
            default:
                break;
        }
    });
}
```

Singleton

```
/*!
 @brief Call the function to get the TVUAnywhereSDK client.
 */
+ (TVUAnywhereSDK *)manager;
```

Life cycle

```
/*!
 @brief Application did finish launching with options.
 */
- (void)tvuApplicationDidFinishLaunchingWithOptions;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
/*!
 @brief Application will resign active.
 */
- (void)tvuApplicationWillResignActive;

/*!
 @brief Application did enter background.
 */
- (void)tvuApplicationDidEnterBackground;

/*!
 @brief Application will enter foreground.
 */
- (void)tvuApplicationWillEnterForeground;

/*!
 @brief Application did become active.
 */
- (void)tvuApplicationDidBecomeActive;

/*!
 @brief Application will terminate.
 */
- (void)tvuApplicationWillTerminate;

/*!
 @brief Register for remote notifications with token.
 @param application application
 @param deviceToken deviceToken
 */
- (void)tvuApplication:(UIApplication *)application
didRegisterForRemoteNotificationsWithDeviceToken:(NSData *)deviceToken;

/*!
 @brief Register for remote notifications with error.
 @param application application
 @param error error
 */
- (void)tvuApplication:(UIApplication *)application
didFailToRegisterForRemoteNotificationsWithError:(NSError *)error;

/*!
 @brief View did load.
 @param view add preview above this view
 @param useStandardLiveView provide a set of standard live interface
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
 */
- (void)tvuViewDidLoad:(UIView *)view useStandardLiveView:(BOOL)useStandardLiveView;

/*!
 @brief View will appear.
 */
- (void)tvuViewWillAppear;

/*!
 @brief View did appear.
 */
- (void)tvuViewDidAppear;

/*!
 @brief View will disappear.
 */
- (void)tvuViewWillDisappear;

/*!
 @brief View did disappear.
 */
- (void)tvuViewDidDisappear;

/*!
 @brief Set background mode.
 @param backgroundMode TVUAnywhereSDKBackgroundMode
 */
- (void)tvuSetBackgroundMode:(TVUAnywhereSDKBackgroundMode)backgroundMode;

/*!
 @brief After the interface is loaded, it is called.
 */
- (void)tvuStartReciveMsgpipeMessage;
```

Video capture

```
/*!
 @brief Init capture with front camera.
 @discussion If you want to init with the front camera, please call before the tvuViewDidLoad method.
 */
- (void)tvuInitVideoCaptureWithFrontCamera;

/*!
 @brief Whether flash is supported.
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
 */
- (BOOL)tvuIsSupportTorch;

/*!
 @brief Get torch mode(AVCaptureTorchModeOff\AVCaptureTorchModeOn).
 @return The torch mode of current device.
 */
- (AVCaptureTorchMode)tvuGetTorchMode;

/*!
 @brief Adjust torch mode.
 @param torchMode AVCaptureTorchModeOff\AVCaptureTorchModeOn
 */
- (void)tvuAdjustTorchMode:(AVCaptureTorchMode)torchMode;

/*!
 @brief Adjust capture session preset, only change the resolution of the camera acquisition,
independent of the final output resolution.
 @param preset new preset(AVCaptureSessionPreset1920x1080、
AVCaptureSessionPreset1280x720、AVCaptureSessionPreset640x480)
 */
- (void)tvuAdjustCaptureSessionPreset:(NSString *)preset;

/*!
 @brief Adjust frame rate, only change the frame rate of the camera acquisition, independent
of the final output frame rate.
 @param frameRate new frame rate
 @warning Cannot set frame rate between beginConfiguration and commitConfiguration.
Reason: Setting the frame rate will restart the camera.
 */
- (void)tvuAdjustCaptureFrameRate:(int)frameRate;

/*!
 @brief Switch camera(back\front).
 */
- (void)tvuSwitchCamera;

/*!
 @brief Adjust camera focus point.
 @param point new focus point
 */
- (void)tvuAdjustCameraFocusPoint:(CGPoint)point;

/*!
 @brief Get support frame rate.
 @return An array of frame rate supported by TVUAnywhereSDK.
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
 */
- (NSMutableArray *)tvuGetSupportFrameRate;

/*!
 @brief Get support resolutions.
 @return An array of resolution supported by TVUAnywhereSDK.
 */
- (NSMutableArray *)tvuGetSupportResolutions;

/*!
 @brief Get video capture width.
 @return Video capture width.
 */
- (int)tvuGetVideoCaptureWidth;

/*!
 @brief Get video capture height
 @return Video capture height.
 */
- (int)tvuGetVideoCaptureHeight;

/*!
 @brief Get video capture frame rate.
 @return video capture frame rate
 */
- (int)tvuGetVideoCaptureFrameRate;

/*!
 @brief If we turn off the camera，will use the default thumbnail
 */
- (void)tvuTurnOnOrOffCamera;
```

Render

```
/*!
 @brief Full screen or not.
 @return Is the rendering full of screen.
 */
- (BOOL)tvuIsRenderFullScreen;

/*!
 @brief Set full screen or not
 @param fullScreen YES/NO
 */
- (void)tvuSetRenderFullScreen:(BOOL)fullScreen;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
/*!
 @brief Get snap shot
 @param completion return an image
 */
- (void)tvuGetSnapShot:(void(^ _Nullable)(UIImage * _Nullable))completion;
```

Video output

```
/*!
 @brief Set the output resolution, the camera will automatically adjust,
        the collected sampleBuffer will be scaled to this resolution,
        this version only supports 640x480、1280x720、1920x1080.
 @param width output width
 @param height output height
 */
- (void)tvuSetVideoOutputWidth:(int)width height:(int)height;

/*!
 @brief Set the output frame rate, the camera will automatically adjust,
        when the camera cannot set the frame rate, it will adjust to the highest frame rate it can support,
        then make up frame to achieve the frame rate,this version only supports 25、30.
 @param frameRate frame rate(25/30)
 */
- (void)tvuSetVideoOutputFrameRate:(int)frameRate;

/*!
 @brief Get video out put width.
 @return Output width.
 */
- (int)tvuGetVideoOutputWidth;

/*!
 @brief Get video out put height.
 @return Output height.
 */
- (int)tvuGetVideoOutputHeight;

/*!
 @brief Get video out put frame rate.
 @return Output frame rate.
 */
- (int)tvuGetVideoOutputFrameRate;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Log level

```
/*!
 @brief Set log level(default is TVUAnywhereLogLevel_ERROR).
 @param level TVUAnywhereLogLevel
 */
- (void)tvuSetLogLevel:(TVUAnywhereLogLevel)level;

/*!
 @brief Get current log level.
 @return current log level.
 */
- (TVUAnywhereLogLevel)tvuGetLogLevel;

/*!
 @brief Save the log level locally, and read the saved level at the next startup.
 @return YES: success, NO: failure
 */
- (BOOL)tvuSaveLogLevel;
```

Live

```
/*!
 @brief Get peerId.
 @return peerId.
 */
- (NSString * _Nullable)tvuGetMyPeerId;

/*!
 @brief Get the name of the receiver currently being broadcasted.
 @return Living receiver.
 */
- (NSString * _Nullable)tvuGetLivingReceiverName;

/*!
 @brief Start live with receiver name.
 @param rName receiver name
 */
- (void)tvuStartLiveWithReceiverName:(NSString * _Nullable)rName;

/*!
 @brief Stop live with receiver name.
 @param rName receiver name
 */
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
- (void)tvuStopLiveWithReceiverName:(NSString * _Nullable)rName;

/*!
 @brief Get live state.
 @return Current state.(TVUAnywhereState_Ready/TVUAnywhereState_Living)
 */
- (TVUAnywhereState)tvuGetAnywhereState;

/*!
 @brief Get receiver list.
 @return An array of receivers currently online.
 */
- (NSMutableArray * _Nullable)tvuGetReceiverList;
```

Token

```
/*!
 @brief Register TVUAnywhereSDK.
 @param appKey appKey
 @param appSecret appSecret
 @param userName userName
 @param passWord passWord
 */
- (void)tvuRegistTVUAnywhereSDKWithAppKey:(NSString * _Nullable)appKey
                                appSecret:(NSString * _Nullable)appSecret
                                 userName:(NSString * _Nullable)userName
                                 passWord:(NSString * _Nullable)passWord;

/*!
 @brief Add token pair.
 @param receivers an array of receivers
 @param handler
TVUAnywhereTokenPairState_Success/TVUAnywhereTokenPairState_Failure
 */
- (void)tvuAddTokenPairWithReceivers:(NSArray * _Nullable)receivers
                     completeHandler:(void (^ _Nullable)(TVUAnywhereTokenPairState
state))handler;

/*!
 @brief Remove token pair.
 @param receivers an array of receivers
 @param handler
TVUAnywhereTokenPairState_Success/TVUAnywhereTokenPairState_Failure
 */
- (void)tvuRemoveTokenPairWithReceivers:(NSArray * _Nullable)receivers
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

```
                completeHandler:(void (^ _Nullable)(TVUAnywhereTokenPairState
state))handler;
```

Environment

```
/*!
 @brief Set envirnoment.
 @param envirnoment envirnoment you want to set
 */
- (void)tvuSetSDKEnvionoment:(TVUAnywhereSDKEnvirnoment)envirnoment;
```

VoIP

```
/*!
 @brief Is voip calling.
 @return YES/NO
 */
- (BOOL)tvuIsVoipCalling;

/*!
 @brief Voip state.
 @return TVUAnywhereVoipState
 */
- (TVUAnywhereVoipState)tvuGetVoipState;

/*!
 @brief Accept call.
 @param phone phone number
 */
- (void)tvuVoipAcceptCall:(NSString * _Nullable)phone;

/*!
 @brief Reject call.
 @param phone phone number
 */
- (void)tvuVoipRejectCall:(NSString * _Nullable)phone;

/*!
 @brief HangUp call.
 @param phone phone number
 */
- (void)tvuVoipHangupCall:(NSString * _Nullable)phone;
```

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT

Note

1.Change service environment

Default is **TVUAnywhereSDKEnvirnoment_US**. Please call the method to change service environment before your app init the SDK.

```
- (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary
*)launchOptions
{
    [[TVUAnywhereSDK manager] tvuApplicationDidFinishLaunchingWithOptions];
    [[TVUAnywhereSDK manager] tvuSetSDKEnvionoment:TVUAnywhereSDKEnvirnoment_CN];

    return YES;
}
```

2. Support landscape layout

If your app only supports vertical screen, please add [[UIApplication sharedApplication] setStatusBarOrientation:UIInterfaceOrientationPortrait] to the didFinishLaunchingWithOptions method in AppDelegate, and make sure it is in front of all the code. In order to prevent some layout confusion.

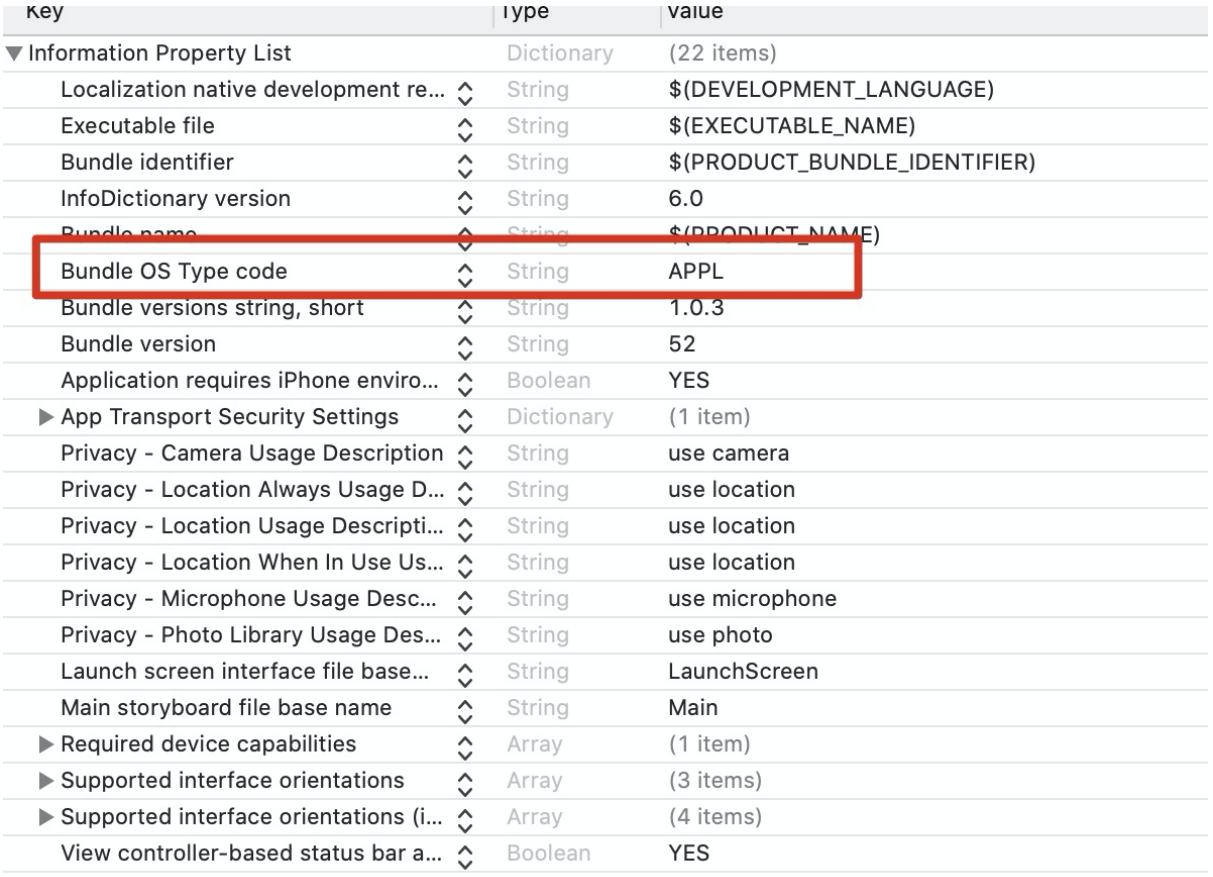
```
- (BOOL)application:(UIApplication *)application
didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
{
    [[UIApplication sharedApplication] setStatusBarOrientation:UIInterfaceOrientationPortrait];

    return YES;
}
```

3. Upload to itunes connect error

If there is an APPL error when your app is uploaded to iTunes connect, please modify the bundle OS type code to APPL in your project's plist file.

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT



Key	Type	Value
▼ Information Property List	Dictionary	(22 items)
Localization native development re...	String	$(DEVELOPMENT_LANGUAGE)
Executable file	String	$(EXECUTABLE_NAME)
Bundle identifier	String	$(PRODUCT_BUNDLE_IDENTIFIER)
InfoDictionary version	String	6.0
Bundle name	String	$(PRODUCT_NAME)
Bundle OS Type code	String	APPL
Bundle versions string, short	String	1.0.3
Bundle version	String	52
Application requires iPhone enviro...	Boolean	YES
▶ App Transport Security Settings	Dictionary	(1 item)
Privacy - Camera Usage Description	String	use camera
Privacy - Location Always Usage D...	String	use location
Privacy - Location Usage Descripti...	String	use location
Privacy - Location When In Use Us...	String	use location
Privacy - Microphone Usage Desc...	String	use microphone
Privacy - Photo Library Usage Des...	String	use photo
Launch screen interface file base...	String	LaunchScreen
Main storyboard file base name	String	Main
▶ Required device capabilities	Array	(1 item)
▶ Supported interface orientations	Array	(3 items)
▶ Supported interface orientations (i...	Array	(4 items)
View controller-based status bar a...	Boolean	YES

Changes

v1.1 - 2018-3-7, add support background mode
v1.2 - 2018-06-05, add support TVU Voice mode
v1.3 - 2018-08-17, add API whether is support auto rotate
v1.4 - 2019-02-18, support using FFmpeg(2.6.1) related files by SDK
v1.5 - 2019-8-22,add standard live UI
v1.6 - 2020-06-18,update dependency system framework@kyle
v2.0 - 2021-02-18, updated formatting and added additional background information

CONFIDENTIAL - TVU NETWORKS 2005~2021 COPYRIGHT