IoT Explorer

FAQs

Copyright Notice

Trademark Notice

Service Notice

This document provides an overview of the as-is details of Tencent Cloud's products and services in their entirety or part. The descriptions of certain products and services may be subject to adjustments from time to time.

The commercial contract concluded by you and Tencent Cloud will provide the specific types of Tencent Cloud products and services you purchase and the service standards. Unless otherwise agreed upon by both parties, Tencent Cloud does not make any explicit or implied commitments or warranties regarding the content of this document.

Contact Us

We are committed to providing personalized pre-sales consultation and technical after-sale support. Don't hesitate to contact us at 4009100100 or 95716 for any inquiries or concerns.

Contents

FAQs
Common Issues in Product Application Scenarios

Last updated: 2025-05-14 16:38:53

What Services Are Provided by IoT Explorer?

The IoT Explorer provides one-stop development service to complete device to cloud. You can also use the official mini program to control device. You can also perform personalized development of the control panel based on the Application End services provided by the development platform. You can also build a mini program or Application End App exclusive to your brand through the platform's open APIs, so as to quickly complete device intelligence. For non-consumer devices, users can also choose to perform personalized business development through the device access capability and open APIs of the development platform.

What Is the Difference between the Internet of Things Development Platform and the Internet of Things (IoT) Hub?

- IoT Hub is an IoT connection platform provided by Tencent Cloud IoT Product Center for users. It focuses on massive device connectivity and message communication, providing users with reliable access services. This product is suitable for users with strong cloud-based R&D capabilities.
- IoT Explorer, in addition to providing device access capability, also provides services such as mini program application development, data development, and third-party voice skill platform integration. The product positioning is to lower the development threshold, shorten the R&D cycle, and provide users with development-free services or quick device intelligence with only a small amount of customized development. It is suitable for device manufacturers and solution providers of traditional home appliances, home furnishings, and intelligent hardware.

Can the Internet of Things Development Platform Meet the Message Processing Capability of High-Concurrency Devices?

The IoT Explorer is based on IoT communication products. Therefore, the products created by the development platform can meet users' need for massive message processing capability.

What Are the Limitations of IoT Explorer?

About product usage restrictions related to the IoT Explorer, you can refer to product limitations.

How Is IoT Explorer Charged?

The fees of the IoT development platform consist of three parts, including the basic device access fee, service fee; and the number of messages generated by the device.

Console Related Issues

Last updated: 2026-03-27 17:50:20

Whether Created Products under a Public Instance Support Customizing Topics?

Unsupported. Since public instances are primarily aimed at Consumer IoT scenarios, if you use the official mini program "Tencent Lianlian" provided by the Internet of Things development platform or use the "application side" SDK of the platform to develop Chinese domestic brand mini programs or apps, only the Thing Model Topics agreed under the public instance can be used.

Whether Created Products under an Enterprise Instance Support Custom Topics?

Support. For detailed operations, see "Device Development".

How to View the Upstream and Downstream Logs of a Device in Console View?

After logging in to IoT Explorer, enter the corresponding instance and product of the device. Click "Device Debugging" in Product Development to view all upstream and downstream logs of the target device. For details, see "Device Debugging".

How to View the Trajectory Logs of a Device in Console View for Easier Problem Location?

For details, see "Device Debugging", referring to the cloud diagnostic logs section.

How Long Are the Device Object Model Data, Upstream and Downstream Communication Content Logs, and Cloud Diagnostic Logs in the Console Saved?

The platform provides the data of the most recent 3 days by default. The data exceeding 3 days cannot be queried. If users need to dump data, they can use the rule engine functionality of the platform to forward device data to other products on Tencent Cloud or users' own business systems.

What Should the User'S Business System Do to Query Device Properties and Event Data Within a Range of 7 Days, One Month or Longer?

Since the IoT Explorer defaults to a 3-day rolling storage duration for device-related data, historical data exceeding 3 days will not be saved on the IoT Explorer. If the User Business System needs to query device data for a longer period due to business needs, it can use the rule engine functionality of the IoT Explorer to forward the collected device data to the user's opened CKafka, Tencent Cloud MySQL database, and other methods to obtain data, and handle the storage cycle of device data based on your business needs. For details on how to forward, please refer to the "Rule Engine Overview" document.

Is It Necessary to Perform the Application Release Operation in Batch Production during the Last Step of Product Development for Products under a Public Instance?

Only products under public instances that need to be connected to the official mini program "Tencent Lianlian" need to apply for release. If the user is developing a self-owned brand mini program or APP, the product being in the "under development" status does not affect user use.

Can the Thing Model Definition of a Product Be Modified after the Product Is Released?

To prevent problems from occurring to devices that have been sold to consumers or are in operation, the Thing Model of a product in published status cannot be modified or deleted. If it is necessary to modify the Thing Model of a product, you can recreate the product or Contact Us for a solution. The definition of the Thing Model should be backward compatible, allowing only additions and prohibiting modifications and deletions.

Integration of Tencent Lianlian Products: How Long to Wait after Application Release Following the Completion of Product Development and Testing?

The review will generally be completed within 7 working days by default. Developers should complete product development and testing. For the reviews submitted by users who fully try out platform features, the platform will not review them in general. The platform only reviews applications submitted by users who have purchased activation codes for public instances.

How Can Different Device Developers Manage Different Projects or Products?

The development platform provides access control capabilities based on Tencent Cloud CAM. You can create sub-accounts under the root account and assign manageable projects, products, and devices to them. You can also flexibly control permissions during the Internet of Things project development process. For more details, see Sub-account Permission Control.

What Is the Function of a Virtual Device?

A virtual device is a simulated device on the platform, used to help developers quickly experience platform features. Developers can simulate device-reported data, bind virtual devices using the Tencent Lianlian Mini Program, and then control the virtual devices, which can speed up the joint debugging efficiency of mini programs or apps.

Common Issues in Message Communication

Last updated: 2026-03-27 17:48:23

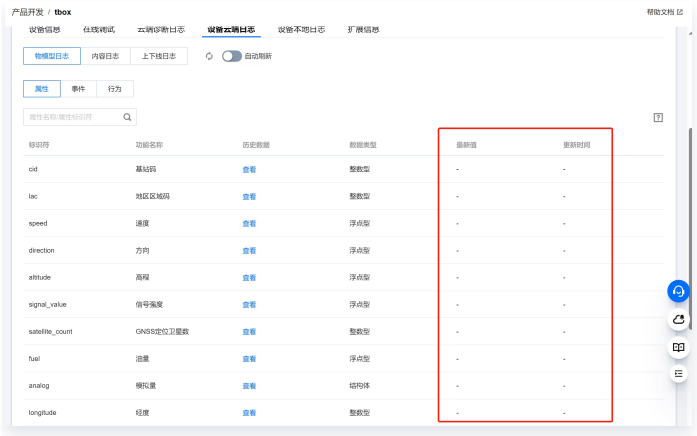
What Is a Thing Model?

Thing Model refers to the digital abstraction of physical devices in the cloud, consisting of properties, events, and actions, which respectively represent the state of the device, events triggered by the device, and execution actions on the device side.
IoT Explorer describes the Thing Model of devices in JSON format. Devices can report data according to the Thing Model defined in the cloud, and applications can initiate operations to modify device properties and call device actions from the cloud.

Why Are the Most Recent Logs and Latest Time of the Thing Model Empty?

The user device has successfully connected to the platform and successfully published data to the platform. Why does the Thing Model log, as shown in the red box in the figure below, not show the latest value reported by the device and the latest update timestamp?

- First determine whether the device publishes data to the platform's Topic in the form of `$thing/up/property/product ID/${deviceName}`. If not, the latest value and update time will not be displayed. Only when the Topic is `$thing/up/property/product ID/${deviceName}` will the corresponding attributes, events, and behavior logs be displayed in the Thing Model log. If it is a Custom Topic or a detailed message of the Thing Model Topic, you can view it in the "content log".
- Secondly, judge whether the Thing Model JSON format reported by the device is correct. If the format is incorrect, it cannot be displayed.



Device Reporting Thing Model Attributes to the Platform, Why Unable to View Reported Data in Thing Model Logs on the Console?

When the device publishes a message to the Topic `$thing/up/property/{ProductID}/{DeviceName}`, the data in the device properties and device logs cannot be viewed. Need to check whether the submitted message conforms to the following requirements. If not, it cannot be viewed on the console. You can learn about the detailed message details through thing Model Protocol.

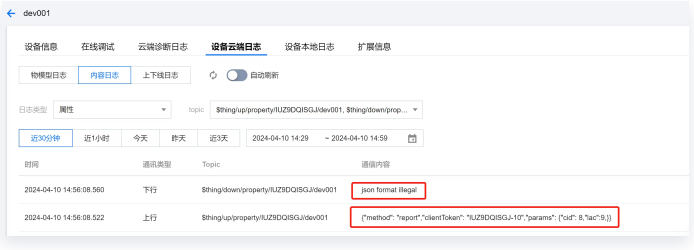
- Whether the message format is the correct JSON format.
- Timestamp format must be UNIX timestamp, cannot be a format similar to "2021-08-01 10:00:00".
- Check whether the attribute identifiers in the params structure are consistent with the identifiers in the Thing Model definition.
- Check whether the type of the value part in the params structure is consistent with the data type defined in the Thing Model.
- Check whether the range of the value in the params structure exceeds the data definition range.

Common Errors of Device Reporting Thing Model Attributes to the Platform

When the device publishes a message to the Topic `$thing/up/property/{ProductID}/{DeviceName}`, if a return message with code 406 is received, it is usually the following error.

Illegal JSON Format

When the device publishes an illegal JSON format message to Topic `$thing/up/property/{ProductID}/{DeviceName}`, the latest value of the thing Model log cannot be displayed. The system log "JSON format illegal" can be queried in the content log, as shown below:



Due to an error in the JSON message reported by the device, for example, there is a comma after "lac":9. Therefore, before the user device publishes a message to `$thing/up/property/{ProductID}/{DeviceName}`, it needs to verify that the submitted message is a valid JSON message.

```
{
```

```
    "method": "report",
    "clientToken": "IUZ9DQISGJ-10",
    "params": {
        "cid": 8,
        "lac": 9,
    }
}
```

The Data Type of the Reported Data Value Does Not Match the Data Type Defined by the Thing Model

When the JSON message published by the device to the Topic `$thing/up/property/{ProductID}/{DeviceName}` sets a numeric Key to a string value or a string Key to a numeric value, a type detection error will also occur.

```
{
    "method": "report",
    "clientToken": "IUZ9DQISGJ-10",
    "params": {
        "cid": 8,
        "lac": "9",
        "str_model": 133
    }
}
```

In the above JSON, if the definition of lac in the Thing model is numerical type, but the corresponding Value is string type 9; if the definition of str_model in the Thing model is string type, but the corresponding Value is numerical type 133, when such a format is reported after reporting, the system will prompt the following errors respectively:

```
{"method":"report_reply","clientToken":"IUZ9DQISGJ-
10","code":406,"status":"check report data err: readNumberAsString:
invalid number, error found in #0 byte of ...|\"str\"|..., bigger
context ...|\"str\"|..."}
```

```
{"method":"report_reply","clientToken":"IUZ9DQISGJ-
10","code":406,"status":"check report data err: ReadString: expects \"
```

```
or n, but found 1, error found in #1 byte of ...|133|..., bigger context
...|133|..."}
```

Value Out of Range Error

If the value of the Boolean type exceeds the range of 0 or 1, or the value reported by the numeric type exceeds the data scope defined by the Thing Model, a violation error will occur.

```
{
    "method": "report",
    "clientToken": "IUZ9DQISGJ-10",
    "params": {
        "win_switch":3,
        "altitude": 9999999
    }
}
```

If win_switch is defined as a boolean type in the Thing Model, but the corresponding Value is 3; altitude is defined as a numerical type in the Thing Model, but the corresponding Value range is -1000 to 20000, when the above format is reported, the system will prompt the following errors respectively:

```
{"method":"report_reply","clientToken":"IUZ9DQISGJ-
10","code":406,"status":"check report data err: win_switch value 3 out
of range:[0,1]"}
```

```
{"method":"report_reply","clientToken":"IUZ9DQISGJ-
10","code":406,"status":"check report data err: altitude value 9999999
out of range:[-1000,20000]"}
```

The Enumeration Value Does Not Exist

For the enumerated integer value, if the reported enumeration value is not in the enumeration values defined by the Thing Model, an error of undefined enumeration item will occur.

```
{
   "method": "report",
    "clientToken": "IUZ9DQISGJ-10",
    "params": {
```

```
        "work_mode":3
    }
}
```

The above message is returned for the value of the enumerated type work_mode reported by the device side. The reported enumeration key-value is 3, but there is no enumeration key-value 3 in the actual Thing Model definition. The platform will return the following message.

```
{"method":"report_reply","clientToken":"IUZ9DQISGJ-
10","code":406,"status":"check report data err: work_mode value 3 enum
not defined"}
```

How to Real-Time Synchronize Reported Data and Device Online/Offline Status to Users' Own Business Systems?

The rule engine with the "data flow" functionality can transmit the reported data and status of devices in real-time to HTTP services built by users or databases such as CKafka and MySQL on Tencent Cloud. Please refer to "Rule Engine Overview".

Device-Side Development Issues

Last updated: 2025-05-14 16:39:36

What Are the Causes of Failures in Device Connection to the IoT Development Platform?

There are multiple causes for device connection failure. For example, the device fails to connect to the cloud network, the device authentication fails, or a timeout is caused by wireless network signal issues. You can distinguish and handle them based on the error log type of the device connection process SDK. Generally, the handling steps are as follows:

1. First, you need to check the connection status between the local network at the device end and IoT Explorer. You can check the network connection status by following the steps below:
   - ping PRODUCT_ID.iotcloud.tencentdevices.com. Here, PRODUCT_ID is a variable parameter. The user needs to enter the PRODUCT ID automatically generated when creating the PRODUCT. For example: `T****DS8G.iotcloud.tencentdevices.com`.
   - telnet PRODUCT_ID.iotcloud.tencentdevices.com 8883 (TLS) or 1883 (NOTLS) to detect the port connection status. Replace PRODUCT_ID with the PRODUCT ID of the device ownership.
   - If the results of executing the above commands are all normal, you may still need to check the local firewall policy.
2. In a wireless network environment, if the connection times out due to signal quality and environmental interference issues, you can modify the timeout setting in the SDK's variable parameters. The following is the default configuration in the C-SDK code **qcloud_iot_export_variables.h**:

```
/* default MQTT/CoAP timeout value when connect/pub/sub (unit: ms) */
#define QCLOUD_IOT_MQTT_COMMAND_TIMEOUT                                    (5
* 1000)
```

3. If there are no problems with the network connection, authentication error may also lead to connection failure. You need to check the following settings:
   - Check whether the device information parameters used are correct. Common errors include extra spaces in device information or key, inconsistent device information and key information, or inconsistent certificate file name and file name written in the code.
   - For certificate-based connection, if the local time is incorrect, it may also lead to TLS connection failure. You need to install ntp client software locally for time

synchronization.

4. When using the Android SDK to perform an MQTT connection, a notification "incorrect username or password" appears.
   If you confirm that the device parameters (ProductId, DeviceName, DevPsk) are configured correctly, just check whether the system time of the testing device is correct. For example, use adb shell date to view the system time of the Android device.

What Communication Protocol Is Used between the Device and IoT Explorer?

The device endpoint and IoT platform achieve data interaction in the format of a data template. The data is carried by the MQTT payload. The SDK has completed the subscription to the Topic and the handling of the callback. Users can develop business logic based on the Data Template Protocol.

Why Does the Device Keep Going Online and Offline?

The access layer of IoT has the logic of Device Mutual Kick. If the same device ID is used to log in at different places, one party will be forced to log out by the other. Therefore, when it is found that a device keeps going online and offline, it is necessary to confirm whether different people or multi-thread are using the same device ID to perform the log in operation.

Will the Device Automatically Reconnect after Disconnection?

When using the device-side SDK to establish an MQTT connection. If the initialization parameter enables auto reconnection (enabled by default), then the auto reconnection operation will be performed. In the Yield function of the SDK, the network connection status will be determined based on whether the send and receive of packets and the behavior of the heartbeat packet are normal. If a disconnection occurs, auto reconnection will be automatically conducted. Meanwhile, to avoid frequent reconnections in case of network failure, the reconnection interval of the SDK changes dynamically, starting from the minimum value:.

- If the reconnection fails, the reconnection interval will double. If the reconnection still fails after the reconnection interval reaches the maximum value, a reconnection timeout error will be returned.
- If it is a situation where the user manually disconnects, such as actively calling the Destroy function, auto reconnection will not be performed.

The default configuration for the maximum value of the reconnection interval is in **qcloud_iot_export_variables.h**:

```
/* MAX MQTT reconnect interval (unit: ms) */
```

```
#define MAX_RECONNECT_WAIT_INTERVAL                                    (60
* 1000)
```

What Should Be Done If There Is a Compilation Error When Integrating the Android SDK Into the Project?

If there is a compilation error when using the remote dependency method, it may be due to untimely updates of the remote repository causing compilation errors. You can modify the dependency method in the gradle file to a local library dependency:

- compile project(':iot_core')
- compile project(':iot_service')

Limited Embedded Device Resources: How to Reduce the Runtime Memory and Library Size of the C-SDK?

Suggestion:

1. First, you can disable the features that are not required. For example, set the unnecessary feature options to n in make.setting and set BUILD_TYPE to release.
2. Check the memory usage of the system call functions in the HAL layer. For example, on some systems, it has been detected that the system function getaddrinfo allocates more memory for IPV6. If the SDK only uses IPV4, then the memory allocation operation in getaddrinfo can be considered for optimization, which can save the running RAM.
3. In the methods of device access authentication, the TLS certificate method requires the most storage resources and run memory, and has the highest security. The TLS KEY method occupies fewer resources while ensuring security. The NOTLS KEY method occupies the least resources and does not require a TLS library, but has the lowest security. Data is transmitted in plain text, with risks of being stolen and tampered. Users need to make choices and trade-offs based on the resources of the device.
4. When using the TLS library, the required encryption algorithms and key exchange algorithms can be customized according to the usage scenario. For example, the feature macros in the config.h of the mbedtls library can be customized.

How Does the Heartbeat Packet Mechanism of MQTT Connection Work for the Device-Side C-SDK?

MQTT uses TCP persistent connection and requires a heartbeat packet mechanism to ensure the connection is active. The device-side C-SDK follows the MQTT specification's Keep Alive mechanism. There is a default setting for the heartbeat packet sending cycle in **qcloud_iot_export_variables.h**:

```
/* default MQTT keep alive interval (unit: ms) */
#define QCLOUD_IOT_MQTT_KEEP_ALIVE_INTERNAL                    (240
* 1000)
```

Within a heartbeat transmission interval, if the device fails to successfully send MQTT control messages (including SUB / UNSUB / QoS1 PUB messages and receiving corresponding ACKs), it will send an MQTT PINGREQ to the cloud and wait for the cloud to reply with a PINGRESP message. If the PINGRESP message is not received within a certain period, the device considers the connection lost and will perform an automatic reconnection operation.

What Is the Automatic Code Generation Feature of the MCU SDK?

For communication modules that support Tencent AT commands, the platform automatically generates MCU-side code according to the data template defined by the user. The auto-generated code has completed the framework of the data template. The user only needs to adapt the serial port of the MCU hal layer and the module network registration to speed up the development.

Is It Possible to Non-Use the Automatic Code Generation Feature of the MCU SDK?

If you are familiar with Tencent Cloud IoT AT Command Protocol, you can integrate based on this protocol. Automatic code generation using the MCU SDK can speed up your development.

How to Burn the Firmware Program of the Module Into the Module?

After purchasing the specified model of module from the module supplier who integrates with the development platform, you need to use the burning tool yourself to burn the downloaded firmware program into the module.

Can I Purchase a Module in Tencent Cloud?

We temporarily do not sell. For purchasing modules during device development, you will be navigated to the official websites of our cooperative module suppliers.

How to Integrate Linux Devices?

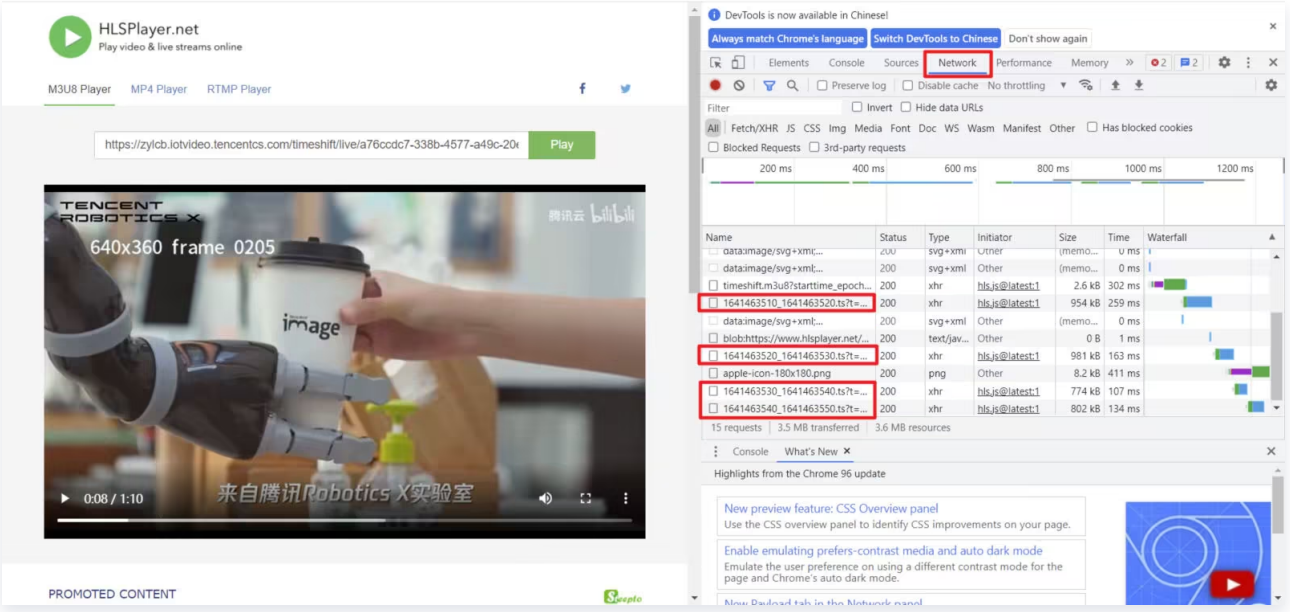
You can refer to SDK cross-platform porting.

Audio/Video Device Development Issues
Issues Related to Cloud Storage
Cloud Stored Video Download Method

Last updated: 2025-05-14 16:40:07

Method 1 (Recommended)

1. Use Google Chrome Browser to open `https://www.hlsplayer.net/` and other m3u8 online players.
2. Press [F12] to open the developer tool, input the playback address of Cloud Storage and play.
3. Can see several ts files on the **Network** tag page, as shown below:



4. Right-click on these ts files and select **Copy > Copy link address.**.
5. Put the copied link into any downloader to download (you can also download by directly accessing the link in Chrome).

Method Two (Recommended)

Customize a Python script to perform the download. Here is an easy-to-use download script for reference only.

```
from urllib.parse import urlparse
import requests

def get_m3u8(url):
    r = requests.get(url)
    if (r.status_code != 200):
        return None
    return r.content.decode("utf-8")

def make_ts_list(url, m3u8):
    ts_list = []
    m3u8_url = urlparse(url)
    url_head = m3u8_url.scheme + '://' + m3u8_url.hostname
    m3u8_lines = m3u8.split("\n")
    for each_line in m3u8_lines:
        if not each_line.startswith('#') and each_line != '':
            ts_list.append('%s%s' %(url_head, each_line))
    return ts_list

def download_ts(ts_list):
    for each_ts in ts_list:
        ts_url = urlparse(each_ts)
        pos = ts_url.path.rfind('/') + 1
        filename = ts_url.path[pos:]
        print("download " + filename)
        r = requests.get(each_ts)
        if (r.status_code != 200):
            return
        with open(filename, "wb") as fw:
            fw.write(r.content)
    print("download finish")

def main():
    aim_url =
"https://zylcb.iotvideo.tencentcs.com/timeshift/live/timeshift.m3u8"
    m3u8 = get_m3u8(aim_url)
    ts_list = make_ts_list(aim_url, m3u8)
    download_ts(ts_list)
```

```
if (__name__ == "__main__"):
    main()
```

Method 3

1. Install "Web Resource Sniffer" and similar plug-ins in Google Chrome Browser (There are many such plug-ins, but we do not recommend here).
2. Open `https://www.hlsplayer.net/` and other m3u8 online players.
3. Enter the playback address of Cloud Storage and play. The sniffer will automatically recognize the video and download it.

Must-Knows

Do not use tools such as ffmpeg and vlc to perform download, as these tools will perform secondary encapsulation or secondary format conversion, resulting in the loss of original information.

Methods for Troubleshooting Cloud Storage Recording Issues

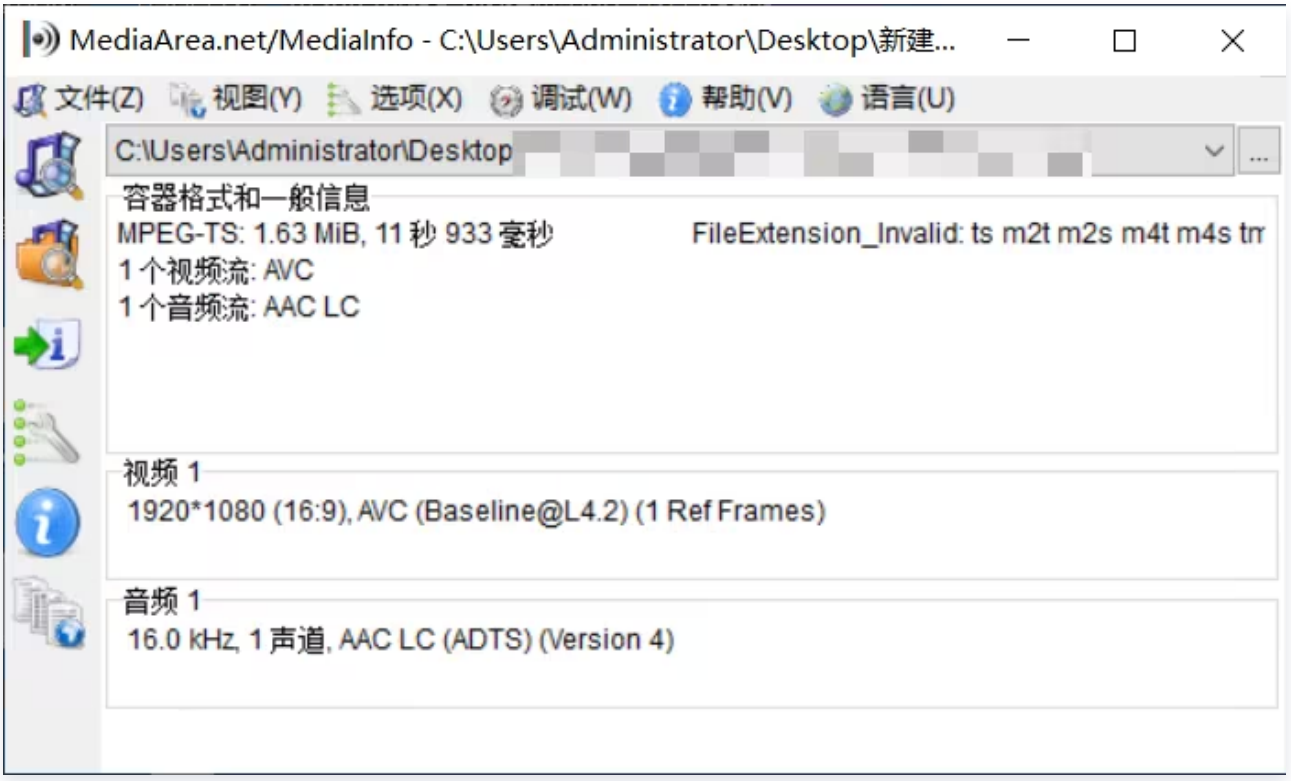
Last updated：2025-05-14 16:40:22

Preparations

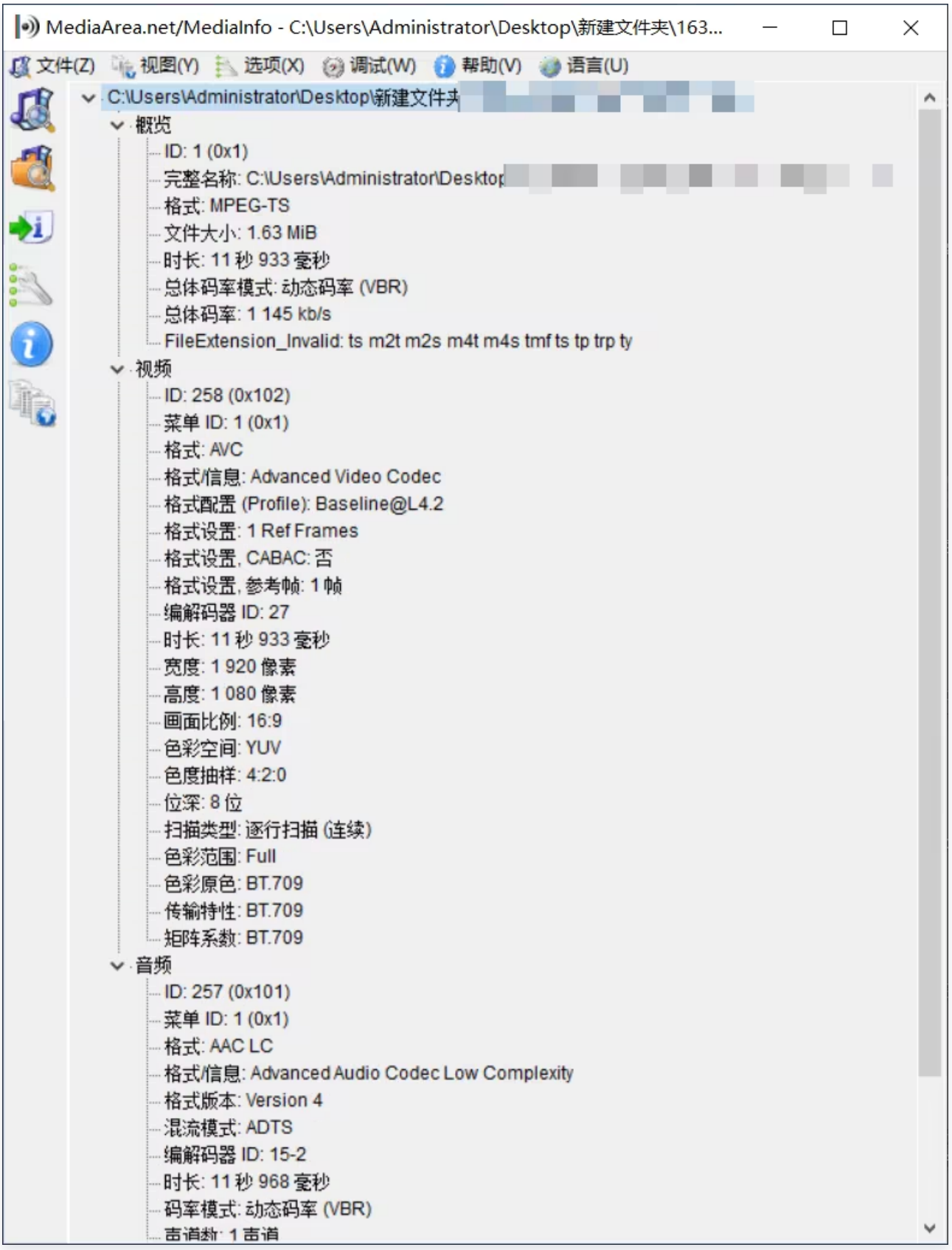
- Download Cloud Storage Video by the previously mentioned method.
- Prepare relevant tools and software.

Basic Check for Cloud Storage Recording

Use **MediaInfo** to open the video file and you can see the basic information.



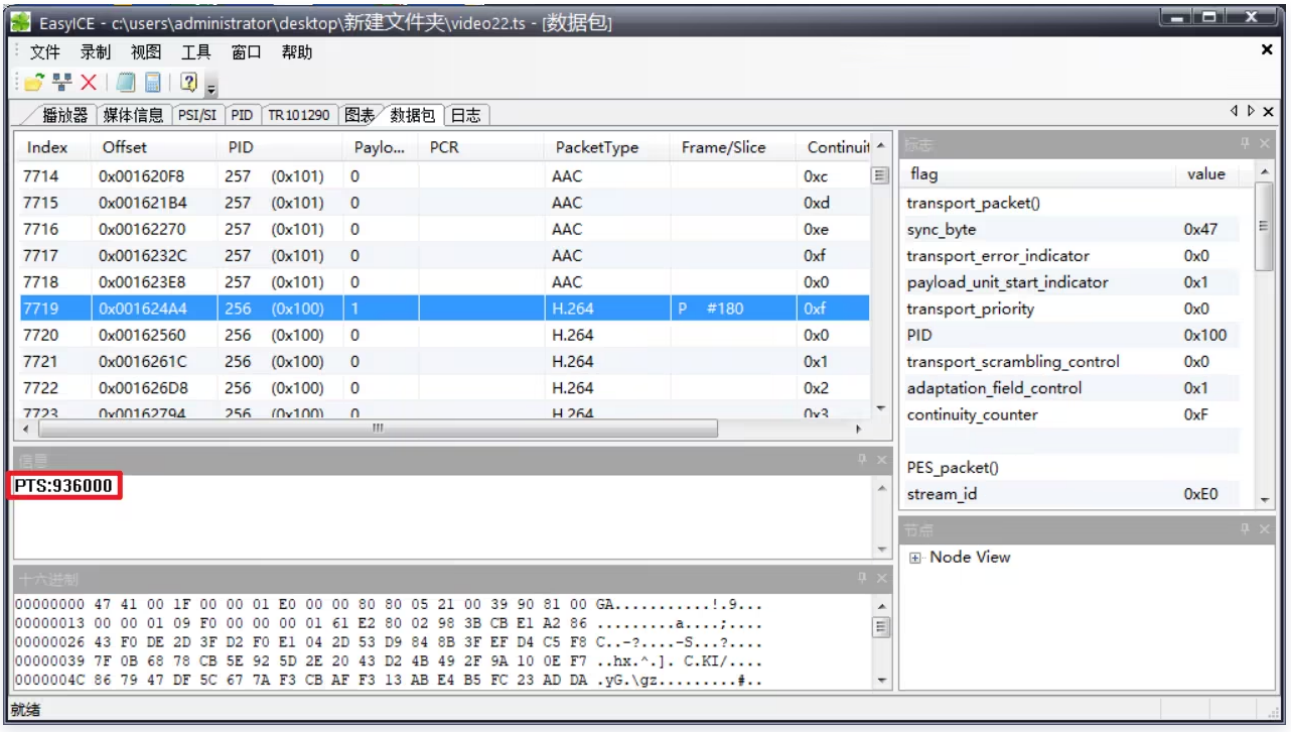
Click **View** > **Dendrogram** to see more detailed information.



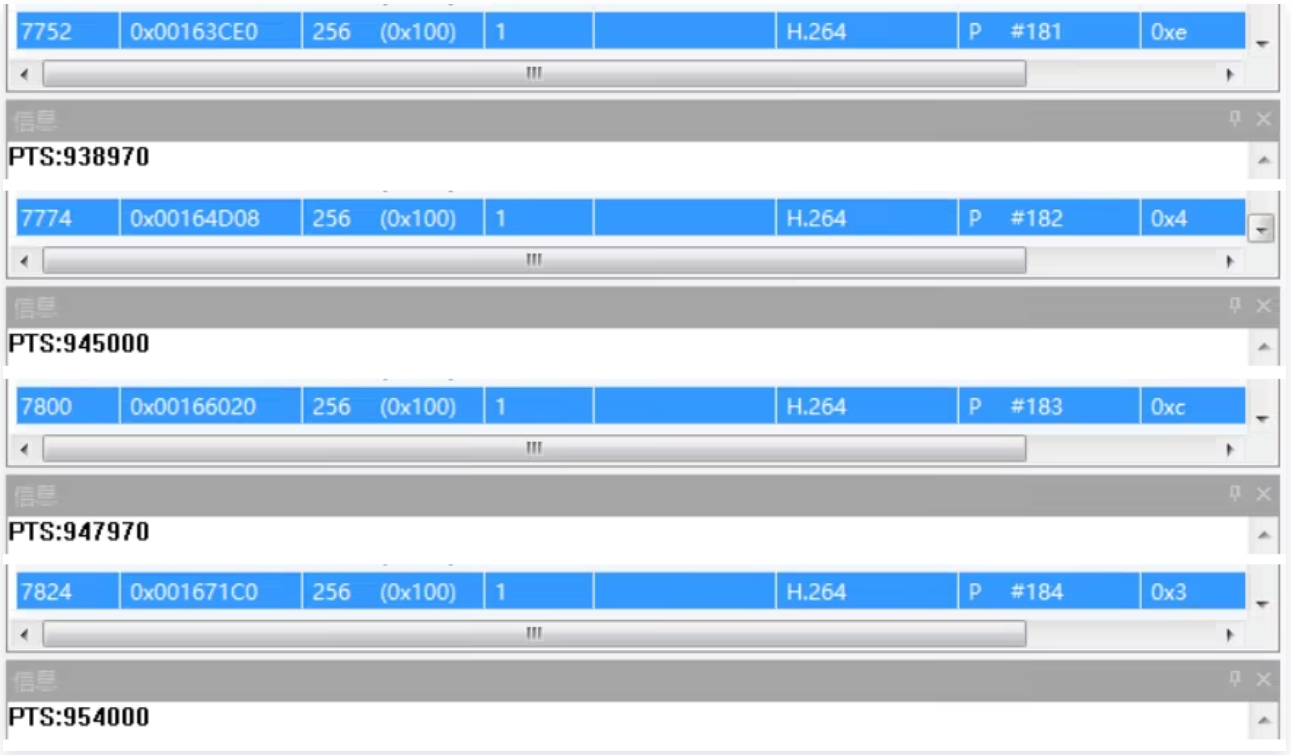
Based on this information, you can perform basic checks on the video, such as whether the video resolution is correct, whether the frame rate is normal, whether the audio stream data is missing, etc.

Time Anomaly Issue of Cloud Storage Recording

Use **EasyICE** to open the video, click on the **Data Packet** tab page, find any consecutive video frames, and calculate whether the pts interval between them is correct.

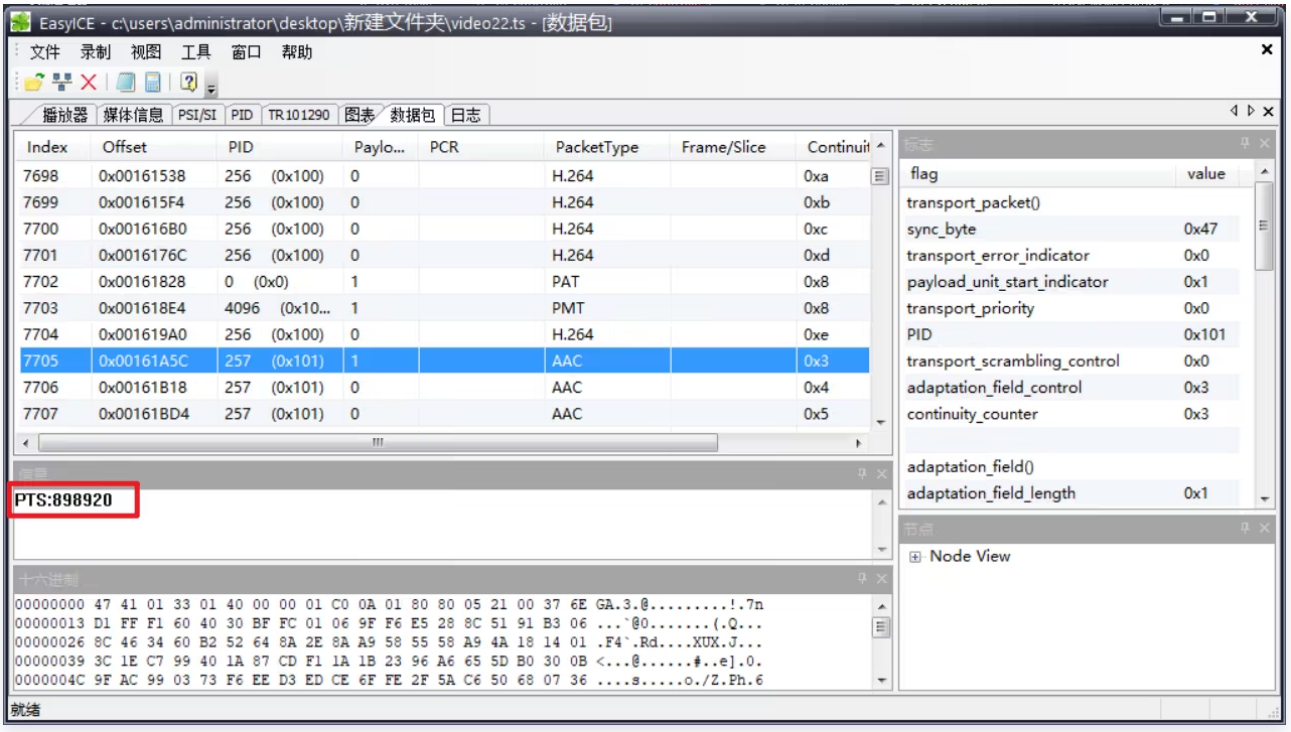


As shown below, starting from frame 180, the PTS of several video frames are 936000, 938970, 945000, 947970, 954000 respectively.



The MPEG-TS standard specifies that audio and video should be synchronized using a 90KHz relative or absolute clock. Therefore, to convert them into milliseconds, divide by 90. The

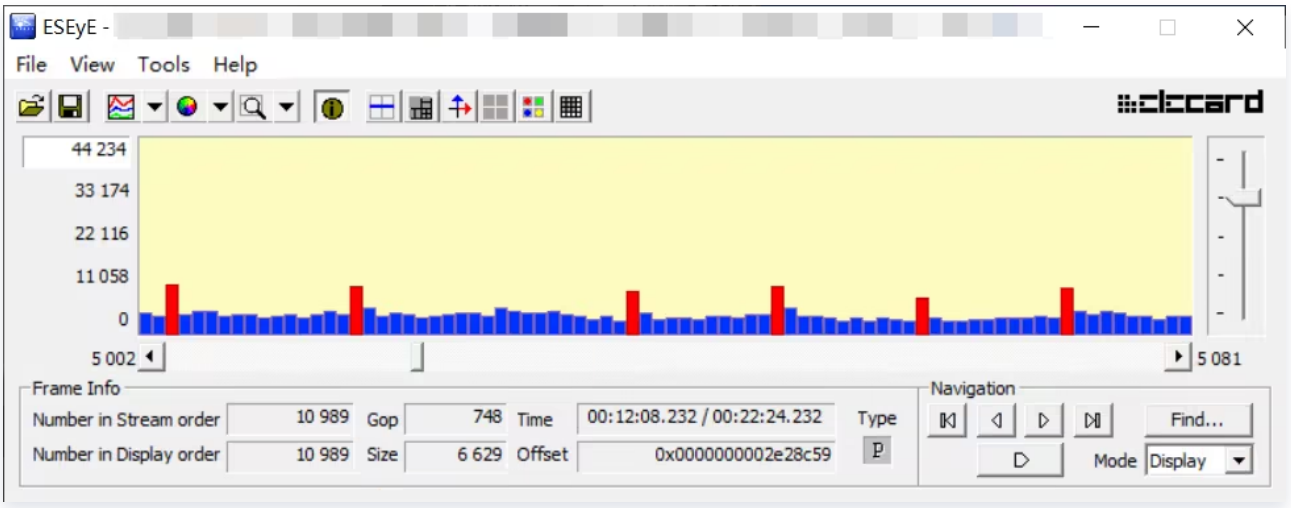
calculation results are: 10400, 10433, 10500, 10533, 10600.
Assuming the frame rate on the device side is 25fps, although these timestamps are unevenly distributed, the differences between them are basically around 50ms, so the video timestamps can be considered normal.
Similarly, audio frames can also be checked in this way. However, it should be noted that cloud storage will convert all non-aac audio to aac format. Each aac audio frame has 1024 sampling points. Assuming the audio sample rate is 44.1KHz, then the duration of each audio frame is 1024/44100 = 0.02322s = 23.22ms.
Next, check whether the audio and video timestamps are synchronized. Randomly find some audio near the video frames and observe whether the PTS deviation between the audio frames and video frames is too large.



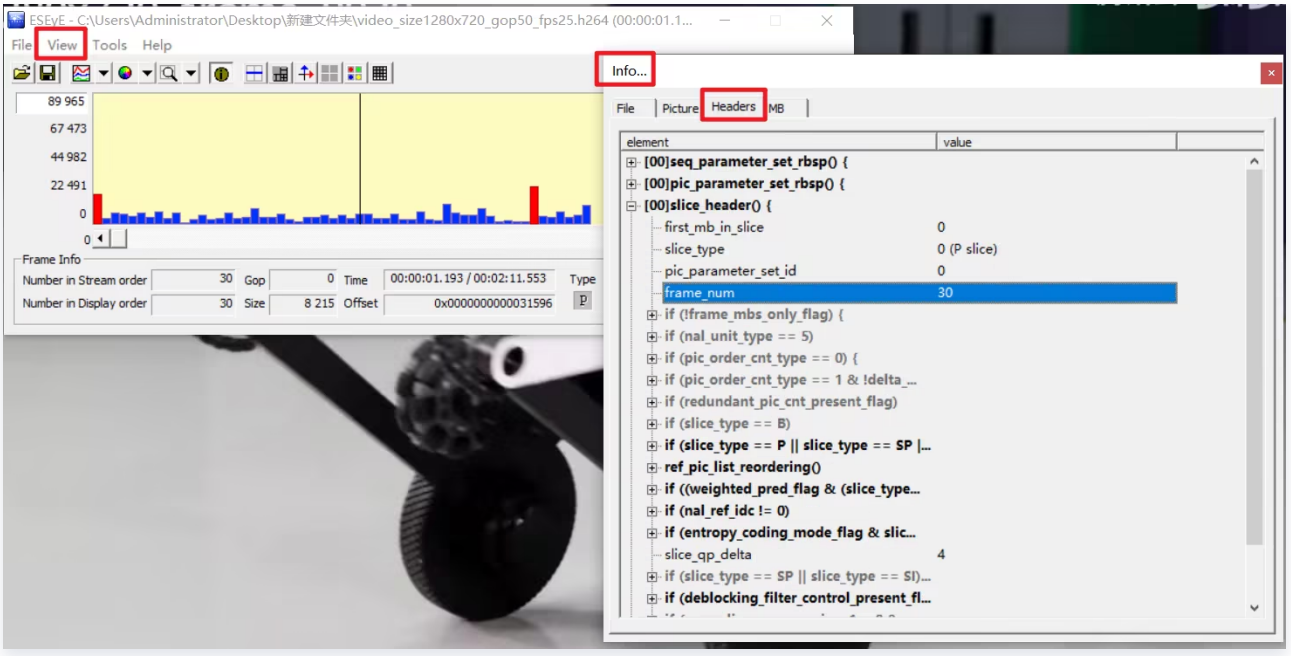
As shown above, this is an audio frame before frame 180. The PTS is 898920, which is 9988ms. It differs from the video frame by 412ms (the video frame is 10400ms). This deviation is a bit large, but generally normal. Generally speaking, a deviation within a few hundred milliseconds is within the acceptable range. If the timestamp deviation between audio and video is too large, please check whether the timestamp is normal when pushing the stream.

Blurred Screen Issue of Cloud Storage Recording

Use **Elecard StreamEye Tools** to open the video.
Assuming the GOP is 15 frames, as shown below, the distribution of I frames and P frames here is uneven, and there is an obvious loss of a large number of video frames. The Cloud Storage Video will glitch when playing to this point.



You can also click **View** > **Info** > **Headers** > **slice_header()** to check whether the **frame_num** of the previous and next frames is consecutive. If not, there is frame loss.



Cloud Storage Video Playback Exception

Last updated: 2025-05-14 16:40:37

Detailed Description

Playback issues of cloud storage recordings, including but not limited to the following situations:

- Some Cloud Storage Video players can play normally, while other players can not.
- Cloud Storage Video playback failure online, playable after download.
- Cloud storage video playback is lagging.
- The player crashes.

Cause Analysis

Currently, commonly used player features vary greatly. Judgments need to be made according to the actual situation. Common causes are:

- Soft decoding (or hardware decoding) of H.264 is not supported.
- Soft decoding (or hardware decoding) of H.265 is not supported.
- Soft decoding of H.265 causes stuttering due to high CPU utilization (ordinary home computers (or mobile phones) may find it very difficult to softly decode high-bitrate 4K H.265 videos).
- Cloud Storage Video exception, decoder error of the player causes crash.

Solution

It is recommended to make adjustments according to the actual situation of the player, for example:

- Turn on or off the H.264 soft decoding (hardware decoding) functionality.
- Turn on or off the H.265 soft decoding (hardware decoding) functionality.
- Enable frame skipping functionality, giving priority to the smoothness of the video.
- Enable error correction functionality and ignore exception data.

Cloud Storage Recording Replay Time Anomaly

Last updated: 2025-05-14 16:40:54

Detailed Description

Time anomaly in cloud storage recording replay, not limited to the following situations:

- Audio and video out of sync.
- Only audio in the first 30 seconds. Audio and video start from the 30th second. There is a 30-second difference between audio and video (or similar issues).
- The playback speed of video playback fluctuates.
- The actual video recording duration is 1 minute. When replaying, the visual only shows for an instant, and the player crashes.
- The actual video recording duration is 1 minute. The progress bar of the player shows a duration of 16 hours, and the visual is stuck.
- The actual video recording duration is 1 minute, but the progress bar of the player shows a duration far exceeding 1 minute, and there is no visual or no sound or neither visual nor sound.
  Some players handle this situation differently, and the final actual playback effect also varies. The above symptoms are for reference only.

Cause Analysis

The above issues or similar issues are all caused by audio and video frame timestamp anomalies. Cloud storage video replay strictly depends on timestamps. Therefore, ensure the correctness of timestamps when pushing audio and video frames.
Perform analysis one by one:

- **Audio and video out of sync.**
  Normally, the timestamp of an audio and video frame is the moment when this frame is collected. Generally, hardware encoders come with timestamps. It is recommended to directly fetch the timestamp from the encoder. If the encoder does not have a timestamp, please try to ensure the accuracy of the timestamp when manually adding it.
  A common mistake in manually adding timestamps is not considering the accumulation of errors. Especially for audio, operations such as resampling and format conversion, and for video, operations such as changing the frame rate, can more easily introduce errors, causing the timestamp deviation of audio and video frames to become larger and larger.

  > For example, if the video frame rate is 30fps, the difference between each frame is 33.333... milliseconds, which is exactly 33 milliseconds. The timestamp without error

> compensation is 0, 33, 66, 99, 132, 165, 198, and the timestamp after compensation is 0, 33, 66, 100, 133, 166, 200.

Another scenario is that the timestamp of hardware encoding starts timing from the moment of initialization. For example, the audio encoder is initialized at 0 seconds, and the video encoder is initialized at 3 seconds. The timestamps of both encoders start counting from 0. Although the timestamps of both encoders start counting from 0, because the initialization times are different, the audio and video timestamps obtained always differ by 3 seconds, resulting in audio and video being out of sync.

- Only audio in the first 30 seconds. Audio and video start from the 30th second. There is a 30-second difference between audio and video (or similar issues).
  This is also an audio and video out-of-sync issue. See the previous context.
- **The playback speed of video playback fluctuates.**
  To maintain video quality in low light conditions, some chips extend the exposure time at night or in dark environments to enhance brightness, which may reduce the frame rate. This issue is generally caused by manual frame rate calculations.

> For example, the frame rate is 20fps in a bright environment and reduced to 10fps in a dark environment, but the timestamp is still calculated at 20fps.
> As shown below, assume that the frame rate changes from 20fps to 10fps at the 5th frame, then:
> - Normal timestamps: 0, 50, 100, 150, 200, 300, 400, 500, 600, 700
> - Abnormal timestamps 0, 50, 100, 150, 200, 250, 300, 350, 400, 450

The final effect is that the visual is normal in a bright environment, and the speed of the visual is twice as fast in a dark environment. If the ISP algorithm of the chip changes the frame rate, it is advisable to directly obtain the timestamp from the encoder. If you need to manually calculate the timestamp, please calculate it according to the actual frame rate, or directly obtain the millisecond-level timestamp from the system when pushing video frames to the SDK.

- The actual video recording duration is 1 minute. When replaying, the visual only shows for an instant, and the player crashes. Fill in the timestamp of the audio and video frame incorrectly. A typical case is filling in the timestamp as the frame number by mistake.

> Assume the frame rate is 20fps
> - Normal timestamps: 0, 50, 100, 150, 200, 300, 400, 500, 600, 700
> - Abnormal timestamps: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

The playback effect is that the picture is fast-forwarded at 50 times the normal speed. That is, a 1-minute video is played in about 1 second, giving the impression that the picture is only displayed for an instant, and the player crashes.

- The actual video recording duration is 1 minute. The progress bar of the player shows a duration of 16 hours, and the visual is stuck.
  The measurement unit of the audio and video frame timestamps received by the SDK is milliseconds. This situation is caused by mistakenly filling in the timestamps as microseconds, making a 1-minute recording become 16 hours. The visual is not actually stuck. Instead, it is playing back at a speed equivalent to one in a thousand.
- **The actual video recording duration is 1 minute, but the progress bar of the player shows a duration far exceeding 1 minute, and there is no visual or no sound, or both.**
  This issue is caused by the audio and video using different timestamps. For example, the timestamp of the audio starts counting from 0, while the timestamp of the video starts counting from the current UTC time. The difference between the two is very large, resulting in an abnormal duration displayed on the player's progress bar and playback issues.
  The SDK requires filling in the timestamps for audio and video frames, but does not mandate a specific reference time for the timestamps. Users can fill in the timestamps according to their actual circumstances. For example, for devices with continuous power supply, the timestamp can use UTC time accurate to milliseconds, while for devices that experience power outages, the timestamp can start counting from 0, or alternatively use other values as the benchmark for audio and video timestamps. In short, audio and video must use the same reference time or the same time source, and should not use independent time sources respectively.

Solution

Ensure the accuracy of audio and video timestamps (consider deviations, variable frame rates, etc. when manually calculating timestamps), and ensure that audio and video timestamps use the same reference time or the same time source (such as encoder clock, RTC clock, UTC clock, 1 millisecond tick clock, etc.).

Cloud Storage Recording Mosaic Screen Effect

Last updated：2025-05-14 16:41:08

Detailed Description

Mosaic screen effect may occur when replaying cloud storage recordings (some players may skip the mosaic part and continue playing).

Cause Analysis

The mosaic screen effect in video recordings indicates that frame loss may occur during the cloud storage upload process. For example, due to network speed issues, the cloud storage cache may be full. At this point, it is unable to push new audio and video frames. If the user does not cache them, these frames can only be discarded. After the network speed recovers, subsequent audio and video frames can continue to be uploaded. Frame loss in such cases may cause abnormalities. Some players may force decoding or skip to find the next I-frame and continue playing.

Solution

Enable the error correction feature of the player, etc.
If you don't want mosaic screen effect, users can store temporarily the video data that cannot be pushed and continue sending after network recovery; or discard the P-frames that cannot be pushed until the next I-frame and then continue pushing, to reduce mosaic screen effect.

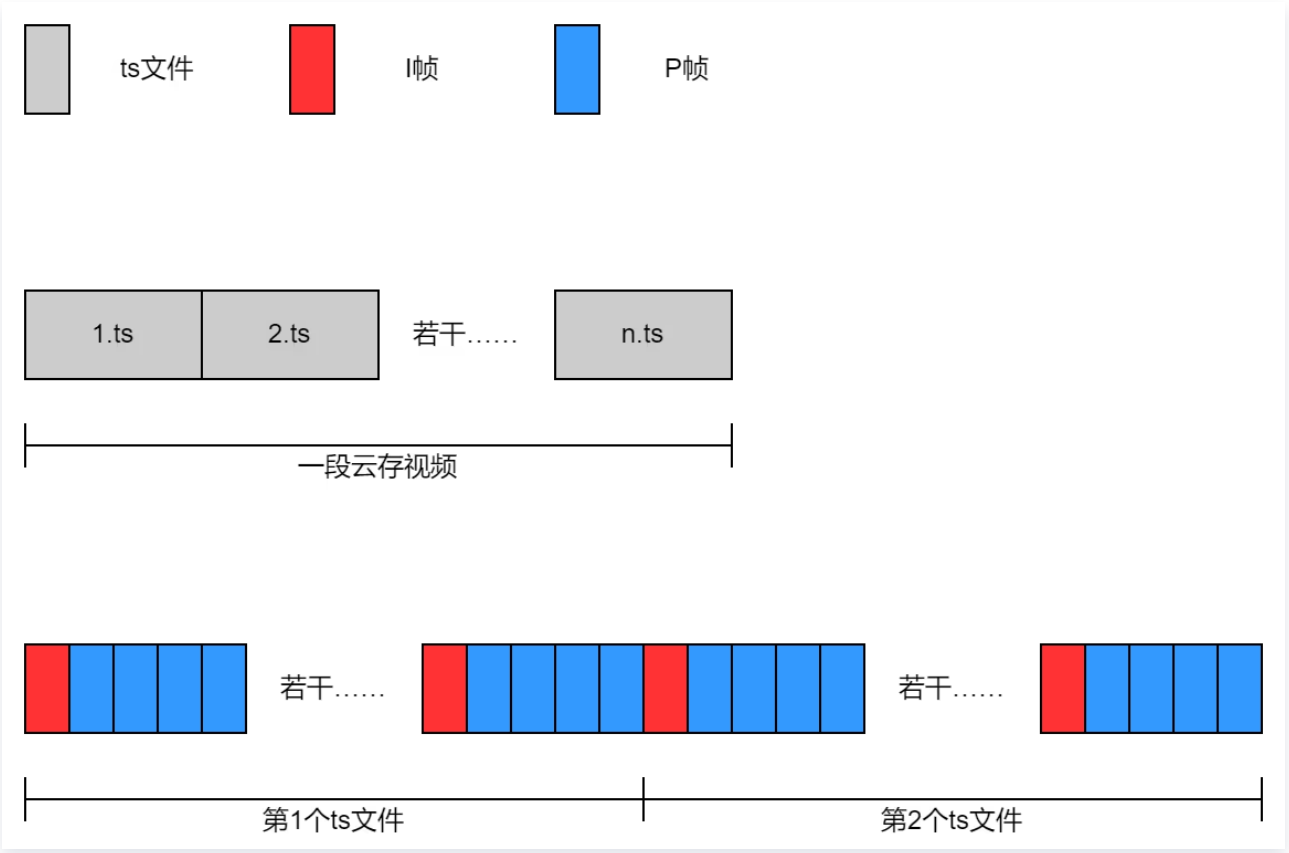
Incorrect Parallel Event Recording Duration

Last updated：2025-05-14 16:41:21

Detailed Description

The duration of concurrent event recordings is incorrect. For example, Event 1 was triggered at 0 seconds, Event 2 was triggered at 15 seconds, and both Event 1 and Event 2 ended simultaneously at 30 seconds.
In the pulled event list, Event 1 has a duration of 30 seconds and a video duration of 30 seconds, while Event 2 has a duration of 15 seconds and a video duration of 20 seconds.

Cause Analysis



As shown below, for considerations such as server load, the current SDK will split every 10 seconds of video into a ts file (or ts segment). The ts file will be split at the I-frame to avoid mosaic screen effect. The actual length may fluctuate.
For example:
fps=20, GOP=40 frames, that is, one I-frame every 2 seconds. At the 10th second, there is exactly an I-frame, and a ts file will be split at this time.

fps=20, GOP=60 frames, that is, one I-frame every 3 seconds. At the 10th second, there is no I-frame, so it will wait until the next I-frame, that is, split at the 12th second.
The above issues show that the server has actually saved three video files: [0 seconds to 10 seconds], [11 seconds to 20 seconds], and [21 seconds to 30 seconds]. When searching for the video of event 2, that is, the video from 15 seconds to 30 seconds, the server will return all video segments within the start and end time range of 15 seconds to 30 seconds, that is, these two video segments: [11 seconds to 20 seconds] and [21 seconds to 30 seconds]. Therefore, the actual video duration of event 2 seen is 20 seconds. Likewise, assume that event 3 was triggered at the 9th second and the end event of event 3 occurred at the 21st second. The actual duration of event 3 is 12 seconds, and the corresponding videos are these three videos: [0 seconds to 10 seconds], [11 seconds to 20 seconds], and [21 seconds to 30 seconds].

Solution

This issue does not affect cloud storage recording. If necessary, video duration can be precisely matched with event duration by precisely pinpointing the video time through the player.

Cloud Storage Recording +1 Minute

Last updated: 2025-05-14 16:41:36

Detailed Description

The actual length of the cloud storage recording is 3 minutes, but the progress bar display during replay shows 4 minutes, and the last 1 minute is unplayable.

Cause Analysis

As the name suggests, full-time cloud storage requires continuous video recording. The normal use flow of full-time cloud storage is that after initialization, you will receive the `iv_cs_push_stream_start_cb` callback. Then, users should continuously push audio and video data until they receive the `iv_cs_push_stream_stop_cb` callback due to reasons such as the expiration of the cloud storage package or exiting the cloud storage, and then stop streaming. During the full-time cloud storage streaming process, you can call `iv_cs_event_start` and other APIs to trigger events. If the user stops shooting for special reasons, the SDK will wait for 1 minute internally. If it does not recover within 1 minute, the shooting will stop. It will return to normal during the next streaming. During these 1 minute of waiting, because no data comes in, the progress bar display time during replay is 1 minute longer than the actual video recording time, and this 1 minute is unplayable.

If you have enabled the full-time cloud storage package but do not stream correctly as required by the SDK, this phenomenon will occur. That is, you have enabled the full-time package, but do not start streaming according to the instructions of the `iv_cs_push_stream_start_cb` callback. Instead, you use it in a way of starting streaming when an event is triggered and stopping streaming when an end event occurs. If the SDK detects no video stream, it will continue to wait for 1 minute and then stop recording, thus causing the phenomenon described in the problem.

Solution

Perform continuous video recording in full-time cloud storage, or replace the Event Cloud Storage Package.

Event Cloud Storage Without Event Messages

Last updated：2025-05-14 16:41:49

Detailed Description

Only videos are available after the Event Cloud Storage event trigger, with no images (or no event messages, or other similar scenarios).

Cause Analysis

When calling APIs such as `iv_cs_event_start` without checking the error code and continuing to push the stream, it may cause the above issues.

Solution

When calling APIs such as `iv_cs_event_start`, please check the return value. If there is any exception, it is not recommended to continue streaming. In such cases, the SDK cannot ensure normal data upload.

Cloud Storage Upload Succeeded but Player Not Playable

Last updated：2025-05-14 16:42:03

Detailed Description

The cloud storage has been uploaded successfully as discovered in the device logs. During playback, the progress bar shows time, but it is unplayable.

Cause Analysis

Cloud Storage Video requires both audio and video to be uploaded. If the user only uploads the video data part, the player can play normally in some cases, but not in others.
The common causes of unplayable videos are that the player preferentially uses the timestamp of audio frames for audio-video synchronization. Therefore, the player will keep reading backward until it encounters audio data before starting playback.
No audio, no playback (audio is marked in ts, but there is no actual audio data, and the player freezes, etc.).

Solution

- Upload audio and video data normally.
- If audio is not required (for example, no microphone, muted, privacy protection, etc.), it is recommended to send an audio data frame filled with zeros.
- If the device is unable to upload audio, modifications are needed to the player's related settings. Take ffplay as an example. Add `-an` parameter to disable audio. Add `-sync video` parameter to synchronize with video.

Method of Playing Cloud Storage Video on PC

Last updated: 2025-05-14 16:42:16

- Use players such as VLC, PotPlayer, select online video streaming to play, and input the cloud storage link to start playback.
- Use ffplay. Enter the command and replace the Cloud Storage Video link `ffplay <replace your link address>`. Add `-loglevel trace` parameter to display detailed information, which helps troubleshoot Cloud Storage Video issues to some extent.
- Use Google Chrome Browser to open `https://www.hlsplayer.net/` and other m3u8 online players, input the playback address of Cloud Storage Video and play.

Audio/Video Transmission and Intercom Related Issues How to Achieve Adaptive Bitrate

Last updated: 2025-05-14 16:42:42

Detailed Description

The actual network environment fluctuates greatly. How to achieve adaptive bitrate.

Solution

Method	Description
Method A	`iv_avt_init` Initialization parameter **pstInitParm > congestion** allows you to set whether to enable water level alarms and three levels of high, medium, and low water level values for the alarm. When the water level in the p2p internal cache reaches this value, you will receive a `iv_avt_notify_cb` callback.
Method B	Actively call `iv_avt_get_send_stream_buf` to query the current water level value during use.
Method C	Actively call `iv_avt_get_send_stream_status` to query the current instantaneous network speed and the average network speed within 1 second during use.

Users develop and implement adaptive bitrate based on the query results of the above three methods.
Below is an implementation approach, for reference only.

- Reduce the video bitrate when the p2p watermark exceeds a certain value.

  For example, when the water level exceeds the low water level, the video bitrate will be reduced to 80% of the original. Under normal network conditions, the p2p water level value is very low. The water level value of a video with a bitrate of 2 mbps is generally below 100 KB. This value is for reference only. Sending larger I frames, network fluctuations, etc. will impact the water level value.
- During stream pushing, call `iv_avt_get_send_stream_status` to obtain network speed information at specified intervals (for example, every 1 second).

  Since the instantaneous speed fluctuates greatly, it is recommended to use the average transmission speed within 1 second and set a queue of a certain length (for example, a

length of 5. If the calling interval is relatively short, the window can be extended appropriately). Store this value in the queue and simultaneously remove the oldest value in the queue. Remove the highest value and the lowest value, and then calculate the average value. The calculated average value can be used to control the bitrate. Generally speaking, this value is similar to the video bitrate. When the average network speed is detected to be lower than the video bitrate, proactively reduce the video bitrate to a value lower than the average network speed.

Users can combine the above methods to implement or reference the thought of the cubic congestion control algorithm to implement their own adaptive bitrate strategies. For p2p pass-through data, please refer to the APIs `iv_avt_p2p_set_buf_watermark`, `iv_avt_p2p_get_send_buf` and `iv_avt_p2p_get_send_status`. The specific implementation approach is similar.

Issues with Returning Errors When Sending Audio and Video Data

Last updated: 2025-05-14 16:42:56

Detailed Description

Calling `iv_avt_send_stream` to send audio and video data returns an error. The causes for different error codes are different.

Cause Analysis

Several common error codes have the following causes:

- When the error code is -303, it indicates that the internal cache is full at this point, and data sending fails. Generally, this is due to network reasons, which cause the network speed to be lower than the data sending speed at this point.
- When the error code is -305, it indicates that at least one of the three parameters `visitor, channel, video_res_type` has a difference in parameter values from the value notified by `iv_avt_start_real_play_cb`.
- When the error code is -306, it indicates that the first video frame pushed into when starting push stream at the current bitrate is not an IDR frame.
- When the error code is -308, it indicates that the input audio/video format is inconsistent with the format set by `iv_avt_get_av_enc_info_cb`, or there is a problem with the format of the input data frame itself, resulting in the failure of streaming media protocol encapsulation.

Solution

- When error code -303 occurs, generally there will be a water level alarm before this error. It is required to reduce the bitrate. For the bitrate control method, please refer to Documentation Description.
- When error code -305 occurs, users are advised to check whether there is an issue with their own code parameter configuration.
- When error code -306 occurs, the first video frame pushed by the user needs to be an IDR frame. It can also be ignored. Wait for the encoder to normally generate an IDR frame. The SDK will discard the data frame that returned the error code.
- When error code -308 occurs, firstly users are advised to detect whether the format set in the `iv_avt_get_av_enc_info_cb` callback matches the actual data frame. If the error still occurs after matching, users need to save the saved data and analyze whether the format of the data is correct.

Lag or Screen Glitch When Viewing Live Stream or Replay

Last updated: 2025-05-14 16:43:10

Detailed Description

When viewing the live stream of a device on a mini program or App, the picture lags, is unsmooth, or has a mosaic screen effect.

Cause Analysis

There are many reasons for lagging. They need to be excluded one by one. The troubleshooting methods are as follows:

- Save the audio and video stream received on the App or mini program locally, usually in flv format; use a third-party player (PotPlayer or VLC is recommended) to view the locally saved audio and video data. If the playback is still choppy, start analysis from Reason 1, otherwise start from Reason 2.
- Reason 1: This kind of stutter is generally due to missing video data. Extract H264/H265 raw data (recommended to use ffmpeg) from the locally saved audio and video streams. Use elecard to analyze the H264/H265 raw data and find the time point of stutter. Confirm if there is any frame loss (judged by the frame_num value in the silce header). Usually, there is frame loss, which is generally caused at the device end. Search for the audio and video data that occurred at this time point on the device end. Check if there are any errors when calling `iv_avt_send_stream`, or if there is frame loss in the data generated by the encoder (print out the real-time GOP value of the encoder to judge).
- Reason 2: This kind of stutter is generally caused by the network bandwidth being lower than the data bitrate or issues with the time sequence. First, judge if there is a water level alarm at the stuttering device end. Then, use flv analysis tools to analyze if there are issues with the data time sequence. If there are no issues with the time sequence, bitrate control needs to be done at the device end.

Solution

- If the stutter is caused by the bandwidth at the device end, bitrate adaptation is required.
- If it is caused by frame loss at the device end, users are advised to check if there are any problems with the frame loss logic in the code.
- If there is a problem reading encoder data, users are advised to check whether the CPU occupancy is too high or the thread priority of fetching data is too low in business logic.

Screen Delay or Black Screen When Watching Live or Replay

Last updated: 2025-05-14 16:43:22

Detailed Description

When viewing the live stream of a device on a mini program or App, there is significant image delay or a black screen.

Cause Analysis

- The image delay is large, which is generally caused by exceptions in the PTS of audio and video frames. The IoT Video SDK requires that the PTS unit of the input audio and video frames must be milliseconds. If the configured unit is not milliseconds, exceptions will occur during viewing.
- The image delay is large. It might also be that there is too much cached audio and video data on the device end. Users need to check whether there is too much cached data in the currently connected business.
- The large image delay may also be due to too much cached audio and video data in the player. It is mostly accompanied by synchronization issues of audio and video PTS. It is required to check whether the difference in the PTS of audio and video frames is too large on the App side or mini program side.
- A black screen is generally also due to problems with the PTS. The most common issue is that the PTS has a loopback and is not monotonically increasing, causing playback problems.

Solution

- If it is a PTS issue, the device-side user needs to check whether there is an issue with the PTS configuration of the input audio and video frames. The device-side IoT Video SDK will not synchronize and cache the audio and video frames or modify their PTS when sending.
- If the issue is caused by excessive cached data on the device end, users need to check their own business logic issues. The IoT Video SDK on the device end will only cache data due to high network latency; it will not cache otherwise.
- Another business scenario is that some camera equipment has a PTZ function. When turning, in order to filter out the motor sound, it does not send audio but waits until the equipment is stationary before sending. This way, it can also destroy the continuity of the PTS, resulting in a large delay. It is recommended to solve this problem by sending silent frames.

Methods for Troubleshooting Audio/Video Transmission and Intercom Issues

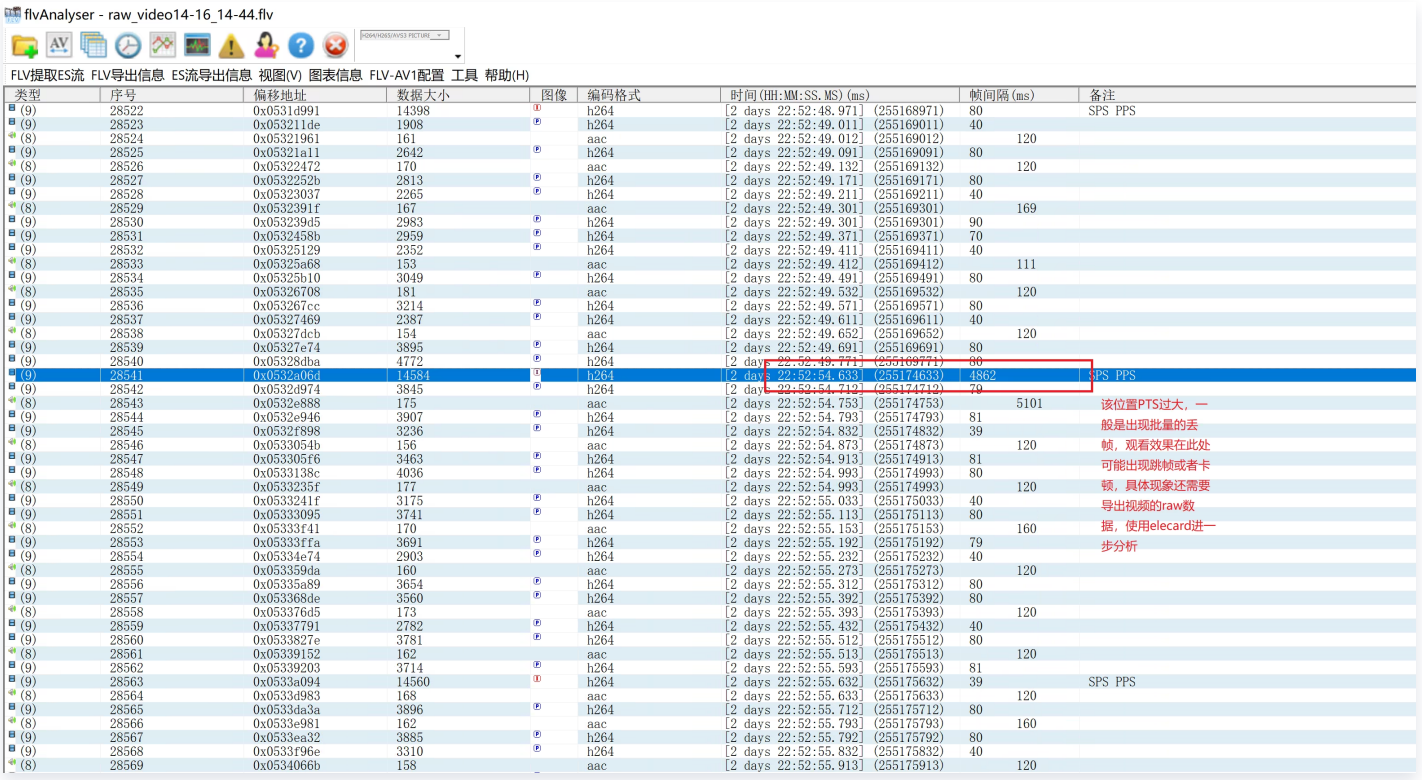
Last updated: 2025-05-14 16:43:36

Preparations

- Save the received video stream on the APP.
- Prepare relevant tools and software.

FLV File Time Sequence Issue

Use **flvAnalyser** to open the video.
If there are time sequence issues in the video, as shown below:



类型	序号	偏移地址	数据大小	图像	编码格式	时间(HH:MM:SS.MS)(ms)	帧间隔(ms)	备注
(9)	28522	0x0531d991	14398	I	h264	[2 days 22:52:48.971] (255168971)	80	SPS PPS
(9)	28523	0x053211de	1908	P	h264	[2 days 22:52:49.011] (255169011)	40	
(8)	28524	0x05321961	161		aac	[2 days 22:52:49.012] (255169012)	120	
(9)	28525	0x05321a11	2642	P	h264	[2 days 22:52:49.091] (255169091)	80	
(8)	28526	0x05322472	170		aac	[2 days 22:52:49.132] (255169132)	120	
(9)	28527	0x0532252b	2813	P	h264	[2 days 22:52:49.171] (255169171)	80	
(9)	28528	0x05323037	2265	P	h264	[2 days 22:52:49.211] (255169211)	40	
(8)	28529	0x0532391f	167		aac	[2 days 22:52:49.301] (255169301)	169	
(9)	28530	0x053239d5	2983	P	h264	[2 days 22:52:49.301] (255169301)	90	
(9)	28531	0x0532458b	2959	P	h264	[2 days 22:52:49.371] (255169371)	70	
(9)	28532	0x05325129	2352	P	h264	[2 days 22:52:49.411] (255169411)	40	
(8)	28533	0x05325a68	153		aac	[2 days 22:52:49.412] (255169412)	111	
(9)	28534	0x05325b10	3049	P	h264	[2 days 22:52:49.491] (255169491)	80	
(8)	28535	0x05326708	181		aac	[2 days 22:52:49.532] (255169532)	120	
(9)	28536	0x053267cc	3214	P	h264	[2 days 22:52:49.571] (255169571)	80	
(9)	28537	0x05327469	2387	P	h264	[2 days 22:52:49.611] (255169611)	40	
(8)	28538	0x05327dcb	154		aac	[2 days 22:52:49.652] (255169652)	120	
(9)	28539	0x05327e74	3895	P	h264	[2 days 22:52:49.691] (255169691)	80	
(9)	28540	0x05328dba	4772	P	h264	[2 days 22:52:49.771] (255169771)	80	
(9)	28541	0x0532a06d	14584	I	h264	[2 days 22:52:54.633] (255174633)	4862	SPS PPS
(9)	28542	0x0532d974	3845	P	h264	[2 days 22:52:54.712] (255174712)	79	
(8)	28543	0x0532e888	175		aac	[2 days 22:52:54.753] (255174753)	5101	
(9)	28544	0x0532e946	3907	P	h264	[2 days 22:52:54.793] (255174793)	81	
(9)	28545	0x0532f898	3236	P	h264	[2 days 22:52:54.832] (255174832)	39	
(8)	28546	0x0533054b	156		aac	[2 days 22:52:54.873] (255174873)	120	
(9)	28547	0x053305f6	3463	P	h264	[2 days 22:52:54.913] (255174913)	81	
(9)	28548	0x0533138c	4036	P	h264	[2 days 22:52:54.993] (255174993)	80	
(8)	28549	0x0533235f	177		aac	[2 days 22:52:54.993] (255174993)	120	
(9)	28550	0x0533241f	3175	P	h264	[2 days 22:52:55.033] (255175033)	40	
(9)	28551	0x05333095	3741	P	h264	[2 days 22:52:55.113] (255175113)	80	
(8)	28552	0x05333f41	170		aac	[2 days 22:52:55.153] (255175153)	160	
(9)	28553	0x05333ffa	3691	P	h264	[2 days 22:52:55.192] (255175192)	79	
(9)	28554	0x05334e74	2903	P	h264	[2 days 22:52:55.232] (255175232)	40	
(8)	28555	0x053359da	160		aac	[2 days 22:52:55.273] (255175273)	120	
(9)	28556	0x05335a89	3654	P	h264	[2 days 22:52:55.312] (255175312)	80	
(9)	28557	0x05336368de	3560	P	h264	[2 days 22:52:55.392] (255175392)	80	
(8)	28558	0x053376d5	173		aac	[2 days 22:52:55.393] (255175393)	120	
(9)	28559	0x05337791	2782	P	h264	[2 days 22:52:55.432] (255175432)	40	
(9)	28560	0x0533827e	3781	P	h264	[2 days 22:52:55.512] (255175512)	80	
(8)	28561	0x05339152	162		aac	[2 days 22:52:55.513] (255175513)	120	
(9)	28562	0x05339203	3714	P	h264	[2 days 22:52:55.593] (255175593)	81	
(9)	28563	0x0533a094	14560	I	h264	[2 days 22:52:55.632] (255175632)	39	SPS PPS
(8)	28564	0x0533d983	168		aac	[2 days 22:52:55.633] (255175633)	120	
(9)	28565	0x0533da3a	3896	P	h264	[2 days 22:52:55.712] (255175712)	80	
(8)	28566	0x0533e981	162		aac	[2 days 22:52:55.793] (255175793)	160	
(9)	28567	0x0533ea32	3885	P	h264	[2 days 22:52:55.792] (255175792)	80	
(9)	28568	0x0533f96e	3310	P	h264	[2 days 22:52:55.832] (255175832)	40	
(8)	28569	0x0534066b	158		aac	[2 days 22:52:55.913] (255175913)	120	

Other Issues
How to Optimize High CPU Usage

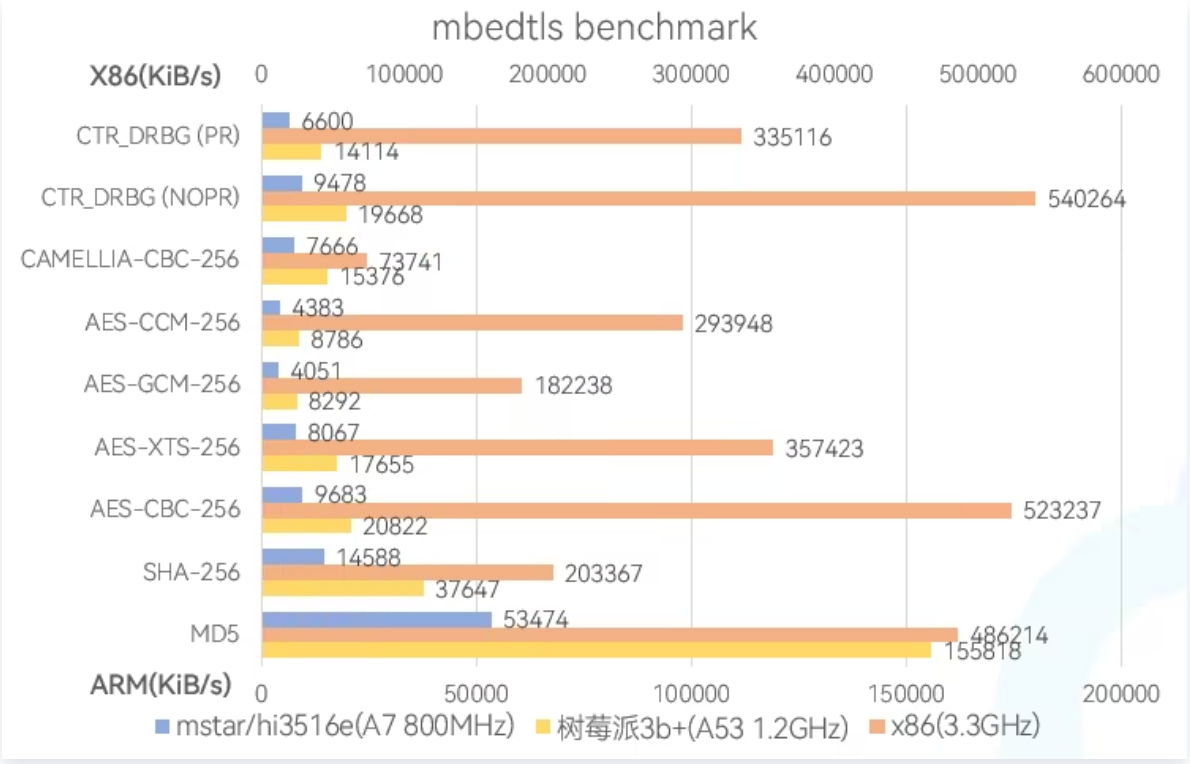
Last updated：2025-05-14 16:44:00

Detailed Description

How to Optimize High CPU Utilization.

Cause Analysis

Encryption algorithms generally cause this issue, which is more obvious on low-end chips.
By default, encryption features are enabled for Cloud Storage Video and P2P video transmission. Currently, the encryption algorithms used for Cloud Storage Video and P2P video transmission are AES-CBC-128 and AES-CTR-128, respectively.
Below are the benchmark test results of some encryption algorithms on different platforms:



It can be seen that the encryption performance of AES-CBC-256 on the Hi3516E series CPU is approximately 9600 KB/s (the performance of AES-CBC-128 is slightly higher than that of AES-CBC-256). Assuming the bitrate of Cloud Storage Video is 2 mbps, i.E., the data volume per second is approximately 256 KB, it can be calculated that the CPU utilization is approximately 3%. In actual use, affected by other businesses, the CPU utilization may exceed the estimate.
The performance of AES-CTR-128 used in P2P video transmission is similar to that of AES-

CBC-128. Suppose multiple users are simultaneously pulling and playing back streams on the device side, the CPU utilization will multiply, bringing significant pressure to the device side.
The version of mbedtls used by the SDK is 2.16.9. Users can download the corresponding version and compile it to perform benchmark tests. Follow these steps:
Set environment variables and compile.

```
export CC="XXXXX"
export CFLAGS="-std=c99"
make
./programs/test/benchmark
```

It is a performance testing program. Run this program on devices to view the benchmark test results and estimate the CPU utilization.

Solution

- Users manually adapt to the hardware acceleration relevant APIs of mbedtls and replace the default mbedtls library in the SDK.
- Disable the encryption feature (not recommended).

Common Tools

Last updated: 2025-05-14 16:44:13

1. MediaInfo
   View the format information of audio/video files.
   Download Address
2. EasyIce
   Analyze ts video files or video streams.
   Download Address
3. Elecard StreamEye Tools Analyze h264 video files. Download Address
4. Elecard HEVC Analyzer Analyze h265 video files. Download Address
5. flvAnalyser
   Flv analysis tool.
   Download address
6. VLC, PotPlayer, ffplay and other video players.
7. mp4box
   MP4 file analysis tool.
   Download address
8. Bento4
   mp4 file analysis tool.
   Download Address

Issues Based on App SDK

Last updated: 2025-05-14 16:44:26

Android SDK Development Issue

How to Tell If the Network I'M Using Is 2.4G or 5G?

Steps to view on the PC side are as follows:

1. Click the network icon in the bottom-right corner of the Windows system desktop.
2. In the pop-up box, click **Network and Internet settings**.
3. In the open **settings** window, click **hardware properties** under **WLAN**, and you will see the network band.

Integrate SDK, Application Reports an Error after Calling the SDK Initialization Method: java.lang.ClassNotFoundException: Didn't find class "org.java_websocket.client.WebSocketClient"

You need to add the following to the dependencies in the `build.gradle` file of the application module in your App:

```
dependencies {
  implementation "org.java-websocket:java-WebSocket:1.4.0"
}
```

Integrate SDK, Application Reports an Error after Calling SDK Method: `java.lang.NoClassDefFoundError: Failed resolution of: Lkotlinx/coroutines/Dispatchers` or `java.lang.ClassNotFoundException: Didn't find class "kotlinx.coroutines.Dispatchers"`

You need to add the following to the dependencies in the `build.gradle` file of the application module of your App:

```
dependencies {
  implementation "org.jetbrains.kotlinx:kotlinx-coroutines-
android:1.3.4"
}
```

iOS SDK Development Issue

How to Tell If the Network I'M Using Is 2.4G or 5G?

Steps to view on Mac: Press and hold the option key, click on the Wi-Fi icon in the upper-right corner of the desktop, and you can see the frequency band information.

Other App SDK Development Issues

How Many Users Can Log in with One Account at the Same Time?

No limit.

Why Is the Verification Code Failed to Be Delivered When Registering an Account with an Email?

Generally, the verification code can be received. If there is a timeout phenomenon, you need to first confirm with the user registered by email whether the verification code email has been received in the spam mailbox. Our email address for sending verification codes is cloud_smart@tencent.com. Please confirm whether the email sent from this email address has been received. Some mailboxes may intercept our verification code emails. You can configure the allowlist of the mailbox to not block emails sent from this account. If there are still problems, you can provide the App Information where the verification code was not received and the user's application account, and submit them to a professional engineer for handling.

What Are the Specifications for the Device Connection'S Wi-Fi Name and Password?

When adding a device and going online in the App, there is no limit to the Wi-Fi name, and the Wi-Fi password length can be up to 58 characters.

What Is the Device Connectivity Capacity Limit of a Wireless Router?

The number of devices that can be connected is determined by the router. Generally, an ordinary home router can connect about 10 devices. The maximum number will also vary depending on the parameters of the router you select.

What Are the Differences between SmartConfig (Intelligent) Networking Mode and softAP (Self-Service) Networking Mode?

- SmartConfig mode:
  SmartConfig is where the mobile App sends UDP broadcast or multicast packets containing the Wi-Fi username and password. The Wi-Fi chip on the smart terminal can receive these UDP packets. As long as you know the structure of the UDP packets, you can decrypt the Wi-Fi username and password from the received UDP packets. Then the

intelligent hardware configuration sends the received Wi-Fi username and password to the designated Wi-Fi AP.

- softAP (self-service) networking mode:
  App Configuration. The mobile phone connects to the intelligent hardware (the AP of the Wi-Fi chip). The mobile phone directly establishes communication with the Wi-Fi chip and sends the Wi-Fi username and Wi-Fi password to be configured to the intelligent hardware. At this point, the intelligent hardware can connect to the configured router.

How to Change Settings When Using a New Router?

After updating the router and home network, the previously added devices will go offline. Remove the original devices from the App, then add them again using the new network (5G is not supported temporarily, use 2.4G only need to).

Equipment Displayed As Offline after Successful Addition. How to Check?

If a device is found offline, please perform troubleshooting according to the following methods:

1. Check whether the device is powered on normally.
2. Whether the device has ever been powered off or disconnected from the network. For example, if the connection has been disconnected, it takes some time to go live. Confirm whether it shows online 2 minutes later.
3. Please troubleshoot whether the device's Network Location is stable. Troubleshooting method: Place the mobile phone or iPad in the same network and next to the device, and try to open a web page.
4. Please confirm whether the family Wi-Fi network is functioning normally, or whether the Wi-Fi name or password has been modified. If so, you also need to reset the device and re-add it.
5. If the network is normal but the device is still offline, please confirm whether the number of Wi-Fi connections is too many. You can try restarting the router, power off the device and then reboot it, and then wait for 2 – 3 minutes to check whether the device can recover connection.
6. Check whether the firmware is the latest version. Check path on the App: Me – Settings – About – Check for updates.

If the above steps have been excluded but there are still issues, it is recommended that you remove the device and re-add it. If there are still problems after removal and re-addition, please select the device in the App user feedback, fill in the login account and device ID, and submit feedback to us. We will submit it to professional technical engineers for inquiry.

What Could Be the Cause of Wi-Fi Equipment Failing to Connect Online?

Perform troubleshooting by following the steps below:

1. Ensure that the device is powered on and started.
2. Ensure that the device is in the networking (flashing fast/slow) status and the indicator light status matches the App networking status.
3. Ensure that the device, mobile phone, and router are close to each other.
4. Ensure that the Network Location of the device is smooth and stable. Troubleshooting method: Place a mobile phone or iPad in the same network and next to the device, and try to open a web page.
5. Ensure that the input router password is correct. Pay attention to whether there are spaces before and after the password.
6. Ensure to use the 2.4G Wi-Fi frequency band to add a device. The Wi-Fi needs to enable broadcast and cannot be set as hidden. Check whether 2.4G and 5G share the same SSID. It is recommended to modify to different SSIDs.
7. Ensure that the encryption method in the router's wireless settings is WPA2-PSK type, and the authentication type is AES, or both are set to automatic. The wireless mode cannot be 11n only.
8. If the number of connected devices of the router reaches the limit, you can try turning off the Wi-Fi function of a certain device to free up a channel for reconfiguration.
9. If the router has wireless MAC address filtering enabled, you can try removing the device from the router's MAC filter list to ensure that the router does not forbid the device from connecting to the internet.
10. Ensure that the router has the DHCP service enabled. If not enabled, it will cause the address to be occupied.
11. If the above doesn't work, it might be that the router has poor compatibility with the device. It is recommended that you replace the router and try again.

What'S the Maximum Number of "Families" One Can Have?

A maximum of 20 families can be had.

How Many Rooms Can Be Created in a Family at Most?

A maximum of 20 rooms can be had.

How Many Members Can a Family Have?

A maximum of 20 members can be had.

How Many Devices Can Be Bound in a Family at Most?

A maximum of 1000 devices are allowed.

Issues with the Open Source Edition Based on App

Last updated: 2025-05-14 16:44:39

Common Issues in Developing the Open Source Edition of iOS App

For common development issues related to Tencent Mobile Push Notification Service, please first refer to iOS FAQs of Tencent Mobile Push Notification Service.

Common Issues in Developing the Open Source Edition of Android App

For common development issues related to Tencent Mobile Push Notification Service, please first refer to Android FAQs of Tencent Mobile Push Notification Service.

Other Issues

1. Other issues of Tencent Push Notification Service for reference
2. Related issues of the Internet of Things Platform
   - General Issues
   - Console-related issues
   - Development issues on the device side
3. FAQs about WeChat login functionality

H5 Custom Development Issues

Last updated: 2025-05-14 16:44:53

Performing H5 Custom Dashboard Configuration on the Console, Does It Not Take Effect in Tencent Lianlian Mini Program?

1. Please check whether you clicked **save** after uploading the H5 custom panel to make the new panel configuration take effect.
2. If you first open the Tencent Lianlian Mini Program, then modify the H5 custom panel configuration in the console, please pull down to refresh on the homepage of the Tencent Lianlian Mini Program to retrieve the latest panel configuration.

How Do Sub-Devices Share an H5 Custom Dashboard with a Gateway?

The platform supports setting the product under the gateway to use the gateway's H5 panel. For details, see Sub-device Gateway Panel Use.

How to Use the Device Details Page of the Mini Program on the H5 Custom Dashboard?

In the H5 panel, call the standard device details page mini program navigation API to navigate to the device details page of the mini program.

How to Customize the Device Details Page in a Custom H5 Panel?

In the H5 panel, call the display H5 custom device detail view API. Parameters can be passed through the API to add custom menu items and buttons to the device details page. For examples of the custom device detail page, for details, see call H5 custom device details.

How to Resolve When the H5 Custom Dashboard JS File Size Exceeds the 2 MB Limit?

If you use webpack to build the JS files of the H5 custom panel, you can enable the code splitting feature of webpack to split the panel into multiple JS files less than 2MB and then upload them again. The H5 custom panel Demo provides an example of configuration for webpack code splitting. Set `enableCodeSplitting` to `true` to enable it. For details, see the webpack configuration file of the H5 custom panel Demo.

How to Resolve the Notification "You Have No Access Permission to the Product under Development. Please Set the Access Allowlist in the

Console Settings" When Opening the H5 Custom Dashboard in Tencent Lianlian?

During the development phase, setting the access allowlist is necessary to use Tencent Lianlian to debug the H5 custom panel. For the steps to set the access allowlist, please see H5 Panel Access Allowlist.

How to Modify the Font Size and Width of the Custom H5 Development Title?

If you need to modify the font within the H5 page, you can add appropriate style rules to the CSS stylesheet of the H5 custom panel to adjust the font size and width of the Title. If it is the Title of the top navigationBar, since H5 is nested in a webview, due to the limitations of the mini program, the top Title does not support modification.

Common Issues of Chinese Domestic Brand Mini Programs

Last updated: 2025-05-14 16:45:08

How to Resolve the Notification "APP Has No Permission to Operate This Product" When a Mini Program Binds or Controls a Device?

Possible Cause 1: the Mini Program Is Not Associated with the Corresponding Products.

Mini programs can only perform operations such as binding and controlling devices under associated products. Please follow the following steps to check whether the mini program has been associated with the product being operated.

1. Log in to Tencent Cloud IoT Development Platform and enter the project management page.
2. Select **Application Development** in the left menu, click **App Name** in the list, and open application details page.
3. In the associated product list at the bottom of the page, find the product that requires operation for the mini program. Click the switch in the **Associate** column to enable it.

Possible Cause 2: Not Updating the Relevant Code after Replacing the AppKey, or Not Clearing the Login State of the Mini Program Cache.

If you have ever changed the AppKey and AppSecret configured in the Chinese domestic brand mini program, please handle it according to the following steps.

1. Check whether the AppKey and AppSecret configured in the mini program code are filled in correctly.
2. If you are using a Chinese domestic brand mini program Demo, please re- deploy the cloud function.
3. In the project interface of WeChat Developer Tools, click **Clear Cache** > **Clear Emulator Cache** > **Clear Data Cache** on the toolbar.
4. Delete the mini program in the WeChat Mini Program list on the mobile phone.

5. Recompile and run the mini program.

`The Tooltip of WeChat Developer Tools Shows "<1>module 'qcloud-iotexplorer-appdev-sdk' is not defined`". How to Resolve?

If you use the npm support of WeChat developer tool, please check according to the following steps:

1. In the project interface of WeChat Developer Tools, click **detail** in the upper right corner of the interface, select **local setting**, and check "use npm module".

2. Under the mini program project directory, execute `npm install` via the command line to install project dependencies.
3. In the project interface of WeChat Developer Tools, click **tool** > **Build npm** in the menu bar. After the building succeeds, the interface prompt shows that the building is completed.

4. If there is still an error after the npm build is completed, try selecting **Project** > **Reopen this project** from the menu bar to reload the project.

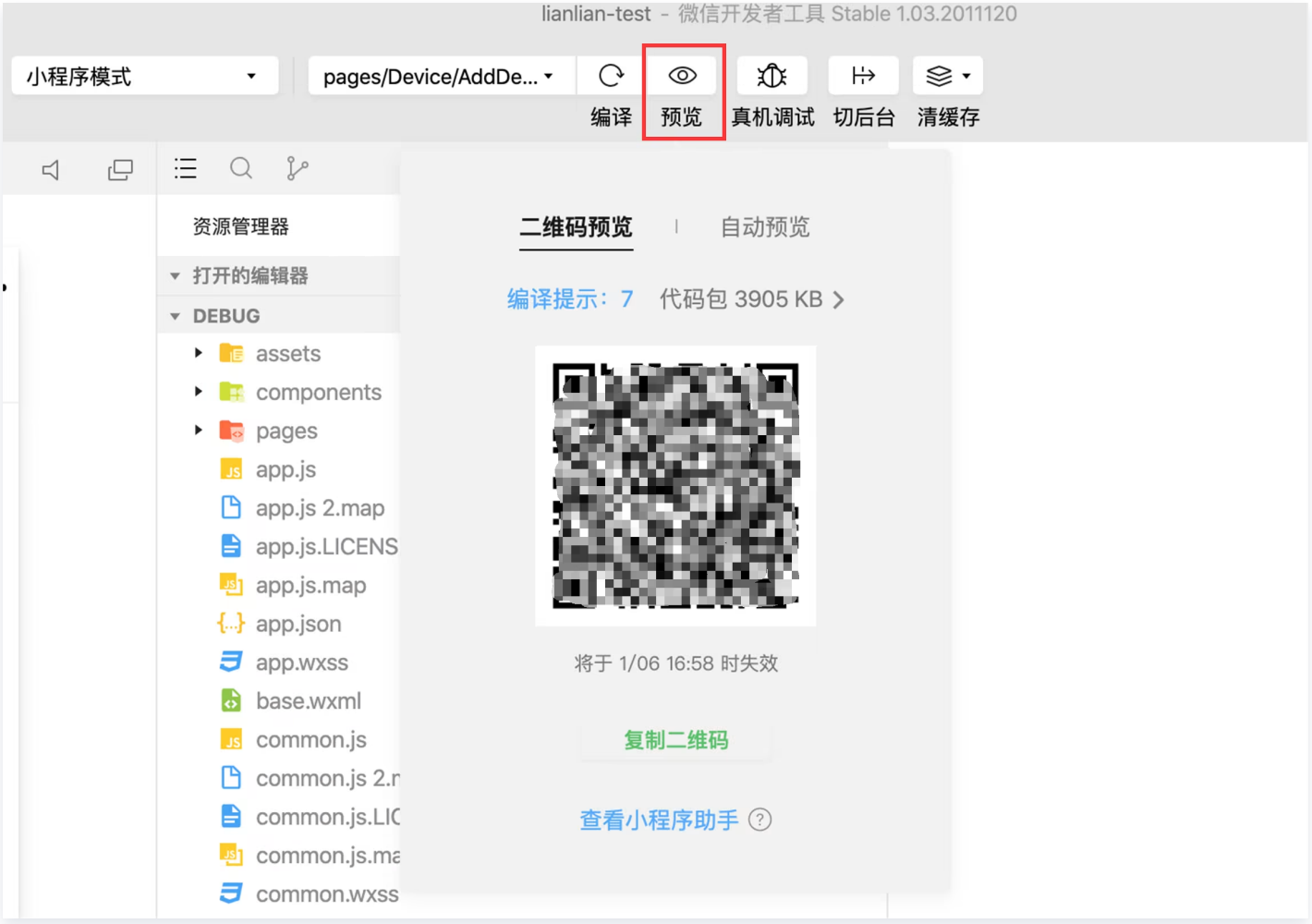
Real Device Debugging of Mini Programs. When Configuring the Network, a Notification `TypeError: Cannot read property 'bind' of undefined` Appears. How to Resolve?

The following is the error message:

```
onProgress-data ▶ {code: "WIFI_CONF_START"}                                    smartconfig.js:199
onProgress-data ▶ {code: "PROTOCOL_START"}                                     smartconfig.js:199
▶ (in promise) MiniProgramError                                                VM21:2
Cannot read property 'bind' of undefined
TypeError: Cannot read property 'bind' of undefined
    at A.value (eval at n.call.document (http://127.0.0.1:43739/remote-debug/runtime.js?
devtools_ignore=true:1:12942), <anonymous>:2:2844450)
    at A.l.<computed> [as bind] (eval at n.call.document (http://127.0.0.1:43739/remote-debug/runtime.js?devtools_ig
nore=true:1:12942), <anonymous>:2:1931567)
    at new t (weapp:///miniprogram_npm/qcloud-iotexplorer-appdev-plugin-wificonf-core/index.js:1103:153)
    at new t (weapp:///miniprogram_npm/qcloud-iotexplorer-appdev-plugin-wificonf-smartconfig/index.js:292:314)
    at t.eval (weapp:///miniprogram_npm/qcloud-iotexplorer-appdev-plugin-wificonf-smartconfig/index.js:206:32)
    at step (weapp:///miniprogram_npm/tslib/index.js:358:25)
    at Object.eval [as next] (weapp:///miniprogram_npm/tslib/index.js:288:20)
    at eval (weapp:///miniprogram_npm/tslib/index.js:260:73)
    at new Promise (<anonymous>)
    at Object.__awaiter (weapp:///miniprogram_npm/tslib/index.js:239:16)
>
```

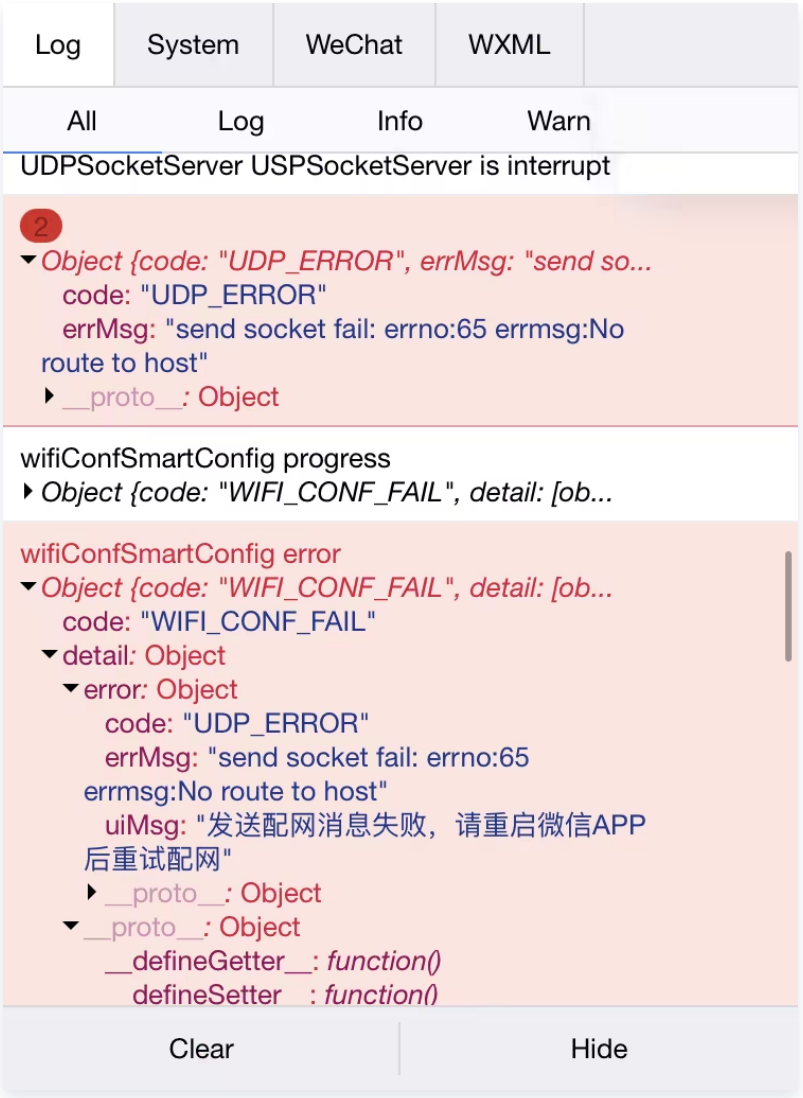
Solution:

Currently, the real device debugging feature of the mini program does not support debugging of UDP communication. If you need to debug network configuration, you can use the "preview" functionality (not "real device debugging") in the developer tool to run and debug the mini program on a mobile phone in preview mode.



Network Configuration Notification `UDP_ERROR: send socket fail:errno:65 nerrmsg: No route to Host` How to Resolve?

The error is as follows:



Solution:

This error occurs because a new local network permission item was added in iOS 13. When WeChat App first attempts to establish communication with a local area network IP, it will trigger a permission request. If the user refuses, subsequent attempts to connect to the local area network will fail. You just need to enable WeChat's "**Local Area Network**" permission in

system settings.

How to Resolve the Notification `request:fail url not in domain list` When a Mini Program Prompts during SDK Initialization or Application/IP Call?

The error is as follows:

Solution:

A mini program can only perform network communication with the specified domain names in the server domain name list. When a mini program connects to IoT Explorer, if the domain name `https://iot.cloud.tencent.com` is not in the list, this error will occur. For details, see the steps in Configure Mini Program Server Domain Name to configure.

Mini Program Can Log in Normally and the Feature Is Working Properly on the Developer Tool, but the User ID Displays unknown and API Request Error Occurs during Real Device Preview. How to Resolve?

You need to configure the request domain allowlist in the mini program management backend. It works normally on the development tool because "Do not verify legal domain names, web-view (business domain), TLS version and HTTPS certificate" is selected on the development tool. However, this configuration will not take effect when previewing on a real device.

TencentCloud API Related Issues

Last updated：2025-05-14 16:45:37

What Are the Use Cases of TencentCloud API?

The IoT development platform provides cloud API services, facilitating users to rapidly develop vertical applications across various industries based on IoT through the API method. Commonly, vertical IoT applications such as sharing and leasing scenarios, Smart Park, Smart Hotel Apartment, energy management monitoring, and industrial equipment management can be managed and control devices through the cloud API. For example, you can create products, create devices, remotely control devices, query device status, perform firmware upgrades, etc.

Whether TencentCloud API Supports an Online Debugging Tool?

Support. Tencent cloud provides a uniform API Explorer online debugging tool. Without the need for signature verification, users can fill in the necessary parameters to debug the cloud API opened by IoT Explorer online.

Which Region to Select When Invoking or Debugging TencentCloud API?

The China public cloud TencentCloud API of IoT Explorer currently supports the Guangzhou region. When calling the TencentCloud API in vertical industry applications or using API Explorer tool to debug the TencentCloud API, set the Region to "ap-guangzhou".

Where to Obtain SecretId and SecretKey When Invoking TencentCloud API?

Tencent Cloud API performs identity verification on each access request, meaning each request needs to include signature information (Signature) in the common request parameters to verify the requester identity. The signature information is generated by security credentials, which include SecretId and SecretKey. If a user does not have security credentials yet, please go to Cloud API Key page to apply for them, otherwise, the cloud API interface cannot be invoked.

Does TencentCloud API Have SDKs Supporting Various Programming Languages?

TencentCloud API provides SDKs in Python, Java, PHP, Go, NodeJS,.NET, C++, and Ruby. You can choose appropriate SDKs to integrate into users' vertical industry application systems.