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AK3918AV100 Development Platform

Amazon KVS

Quick Start Guide

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1 Introduction

This document provides instructions on how to set up Amazon Kinesis Video Streams (Amazon KVS) to connect with AK3918AV100 Development Board Platform.

1.1 AK3918AV100 SoC

AK3918AV100 is specially designed for internet of things camera (AIoT Camera) application, one of the key components of cost-sensitive electronic surveillance system.

With the intelligent **NPU** (Neural-network Processing Unit), the optimized image signal processing algorithm and hardware H.265/H.264 encoder, AK3918AV100 provides an enhanced object detection/tracking and face detection/recognition ability with high quality pictures and low bit rate video **encoding** at minimal power consumption. It also supports security boot for better security level.

A set of peripheral interface, such as UART, SPI, MMC/SD/SDIO, Ethernet MAC and USB2.0, feature AK3918AV100 with high extensibility and high flexibility. Meanwhile, the integrated Fast Ethernet PHY transceiver can reduce the cost of bill-off-**materials** (BOM) of the final products.

1.2 AK3918AV100 Development Board

The development board is composed of base board, Core board, CIS board, Wi-Fi board. The development board powered by the Anyka AK3918AV100 SoC.

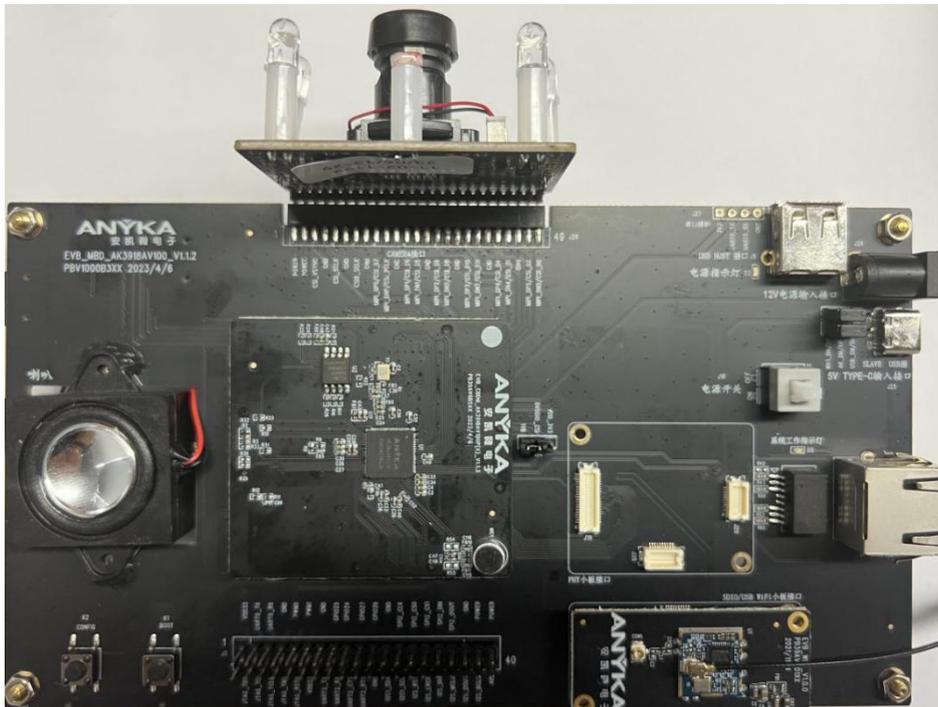


Figure 1- 1 AK3918AV100 Development Board

1.3 Directing Data from AK3918AV100 Development Platform to Amazon KVS

To direct data from AK3918AV100 development platform device to your AWS cloud implementation, an Amazon KVS service must be set up and configured to receive data from the devices. An AWS access key is required for Amazon KVS to connect a device to the AWS backend. Follow the steps listed in section 2.2 to acquire an AWS access key for Amazon KVS. The access key (*.csv) for the desired user ID will be created as described in Step 8.

2 Connecting to Amazon KVS

2.1 Introduction

This section provides instructions on how to establish a connection between a AK3918AV100 device and Amazon KVS service, including how to acquire an AWS access key for Amazon KVS and set up AK3918AV100 device.

2.2 Acquiring an AWS Access Key for Amazon KVS

Step 1

Refer to instructions in the following sections on webpage listed below to set up an AWS Account.

<https://docs.aws.amazon.com/kinesisvideostreams/latest/dg/gs-account.html>

- Sign up for an AWS account
- Create an Administrator IAM User
- Create an AWS Access Key

Pay special attention to the Notes on the AWS webpages.

Step 2

Access the IAM console at <https://console.aws.amazon.com/iam/>

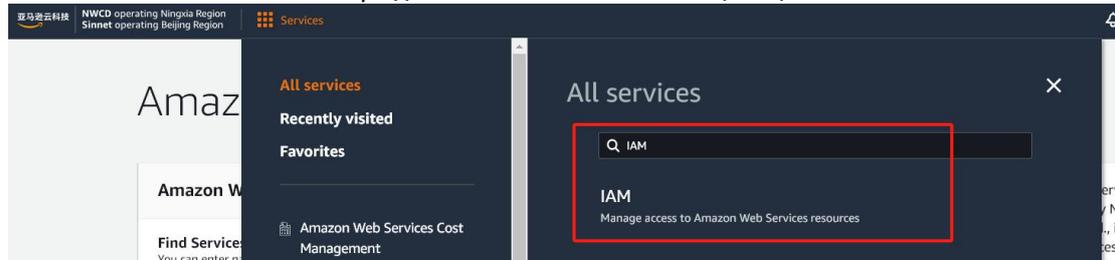


Figure 2- 1 Access the IAM Console

Step 3

Click on 'Access management/Users' and then click on the 'Create user' button in the right panel.

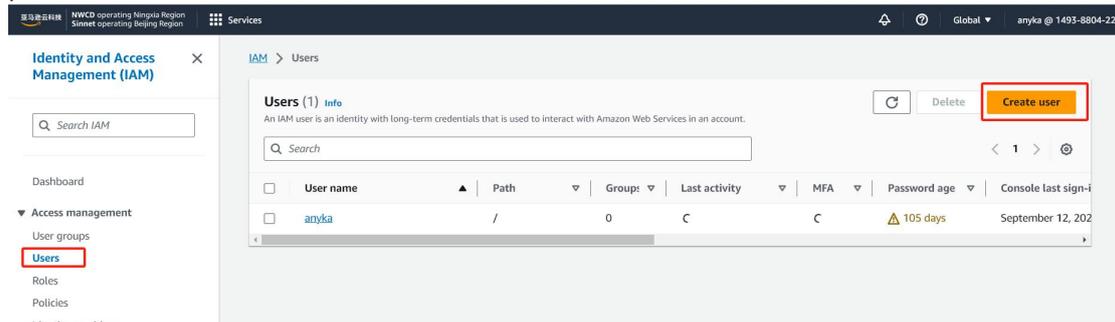


Figure 2- 2 Create User

Step 4

To add a user, enter a preferred name in the 'User name' field, check the 'Programmatic access' in the 'Select AWS access type' section and click on the 'Next: Permissions' button to proceed to set permissions.

Step 1
Specify user details

Step 2
Set permissions

Step 3
Review and create

Step 4
Retrieve password

Specify user details

User details

User name
webrtc_user
The user name can have up to 64 characters. Valid characters: A-Z, a-z, 0-9, and +, -, @, _ (hyphen)

Enable console access - optional
Enables a password that allows users to sign in to the Amazon Web Services Management Console.

Console password

Autogenerated password
You can view the password after you create the user.

Custom password
Enter a custom password for the user.

- Must be at least 8 characters long
- Must include at least three of the following mix of character types: uppercase letters (A-Z), lowercase letters (a-z), numbers (0-9), and symbols (! @ # \$ % ^ & * () _ + - (hyphen) = [] { })

Show password

Users must create a new password at next sign-in - Recommended
Users automatically get the [IAMUserChangePassword](#) policy to allow them to change their own password.

For programmatic access, you can generate access keys after you create the user. [Learn more](#)

Cancel **Next**

Figure 2- 3 Specify User Details

Step 5

Choose Attach existing policies directly and search 'AmazonKinesisVideoStreamsFullAccess'.

Set permissions

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. [Learn more](#)

Permissions options

Add user to group
Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.

Copy permissions
Copy all group memberships, attached managed policies, and inline policies from an existing user.

Attach policies directly
Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.

Permissions policies (1/584) [Refresh](#) [Create policy](#)

Choose one or more policies to attach to your new user.

Filter by Type: All types 1 match

Search: AmazonKinesisVideoStreamsFullAccess

<input checked="" type="checkbox"/> Policy name	Type	Attached entities
<input checked="" type="checkbox"/> AmazonKinesisVideoStreamsFullAccess	Amazon Web Services managed	0

Set permissions boundary - optional

Cancel Previous **Next**

Figure 2- 4 Set Permissions

Step 6

Click Next: Tags and do nothing. Then click Next: Review

Set description tag - optional [Info](#)

The description for this access key will be attached to this user as a tag and shown alongside the access key.

Description tag value
Describe the purpose of this access key and where it will be used. A good description will help you rotate this access key confidentially later.

Maximum 256 characters. Allowed characters are letters, numbers, spaces representable in UTF-8, and: _ . : / = + - @

Cancel Previous **Create access key**

Figure 2- 5 Set Description Tag - Optional

Step 7

In Review page, click 'Create user'. You should see your Access key ID and Secret access key now. Please download the csv file and keep it securely.

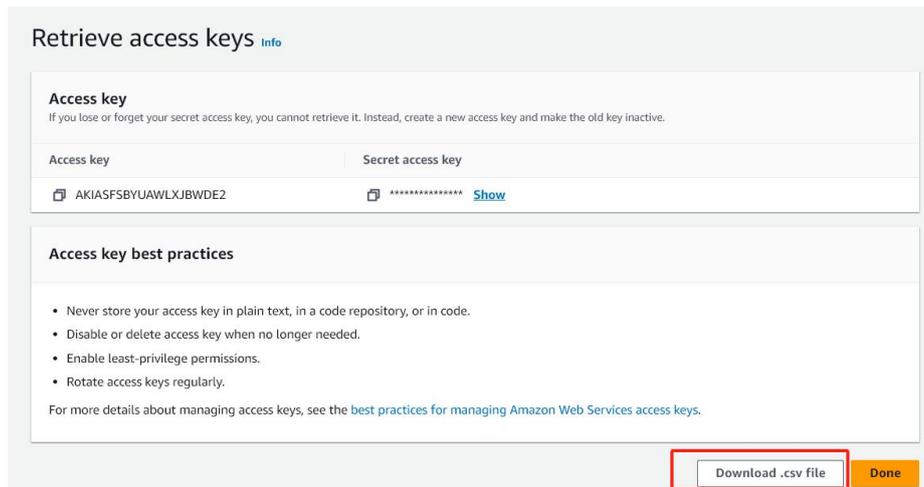


Figure 2- 6 Download .csv File

Step 8

Follow the steps to configure Amazon KVS WebRTC and run it.

```
#Use the access key ID and secret access key you created above.
#If you don't setup the region, the default region will be us-west-2.
export AWS_DEFAULT_REGION=your_desired_region
export AWS_SECRET_ACCESS_KEY=your_secret_access_key
export AWS_ACCESS_KEY_ID=your_access_key_id
#Optional, to configure debug level. The level is 1 (VERBOSE) to 7 (SLIENT).
export AWS_KVS_LOG_LEVEL=1
#Make sure your system time is up-to-date. Or you should sync it manually.
date
cd ~/amazon-kinesis-video-streams-webrtc-sdk-c/build
#To run Amazon KVS WebRTC stream local file to the viewer side
./kvsWebrtcClientMaster your_desired_channel_name
```

NOTE

The examples in this document are intended only for dev environments. All devices in your production fleet must have credentials with privileges that authorize only intended actions on specific resources. The specific permission policies can vary for your use case. Identify the permission policies that best meet your business and security requirements. For more information, refer to Example policies and Security Best practices.

2.3 Setup your hardware

2.3.1 Prerequisites

- debug cable and a USB flash drive are required for set up.
- serial port communication program such as WindTerm or Tera Term is required.

2.3.2 Setup the AK3918AV100

Step 1

Connect a host machine and the AK3918AV100 through the onboard COM connector labeled as "COM".

Step 2

Use a serial port communication program such as WindTerm or Tera Term to connect the debug console. Set the console Baud Rate to "115200", data to 8bit, stop bit to 1 bit.

2.4 Set up your Development Environment

After configuring the serial communication, you need to declare the environment variables that the running KVS program depends on.

```
#Use the access key ID and secret access key you created above.
#If you don't setup the region, the default region will be us-west-2.
export AWS_DEFAULT_REGION=your_desired_region
export AWS_SECRET_ACCESS_KEY=your_secret_access_key
export AWS_ACCESS_KEY_ID=your_access_key_id
export AWS_KVS_CACERT_PATH=/***(absolute path)/rootca.pem
#Declare dynamic library paths that KVS programs depend on.
export LD_LIBRARY_PATH=/***/

#Optional, to configure debug level. The level is 1 (VERBOSE) to 7 (SLIENT).
export AWS_KVS_LOG_LEVEL=1
```

2.5 Connecting with the AK3918AV100

This section guides developers on how to enable and run the KVS program.

Step 1

Click "Services" in the top menu panel of AWS Web and click on 'Kinesis Video Streams' under the 'Media Services' category.

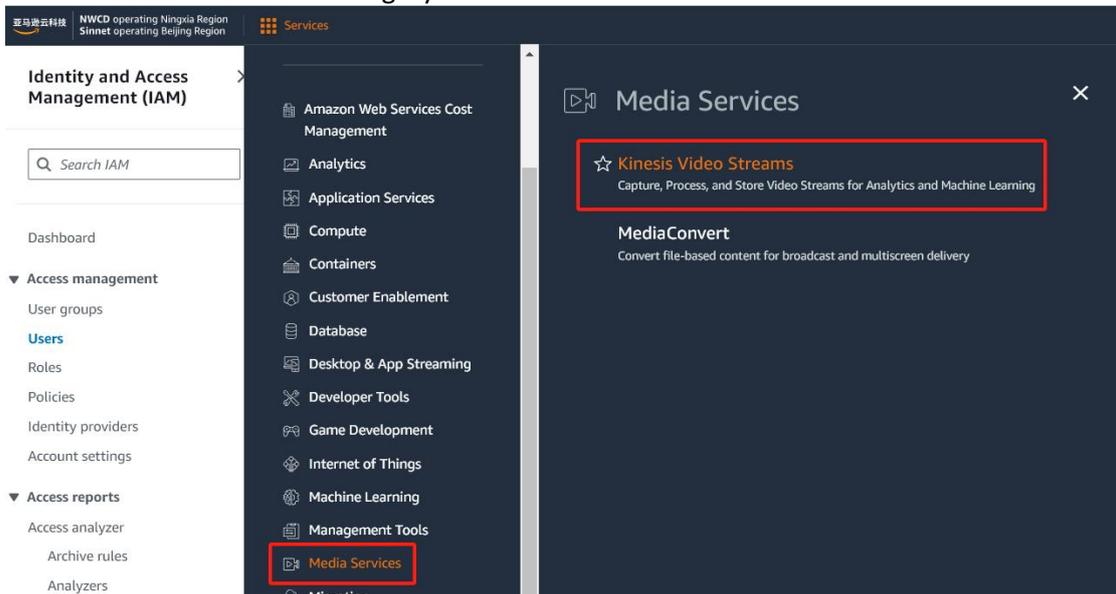


Figure 2- 7 Media Services

Step 2

Next, click on 'signalingChannels' in the right panel, Select the signaling channel name you created below.

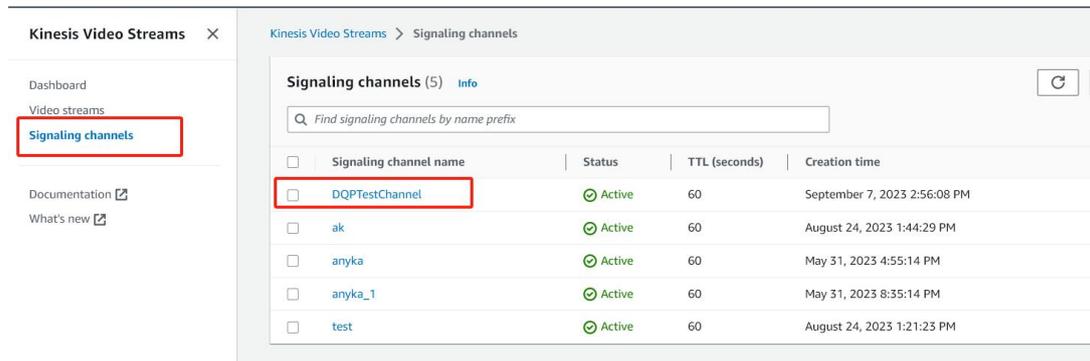


Figure 2- 8 Signaling Channels

Step 3

After the environment variables are declared, Check the AWS Web console for the Region.

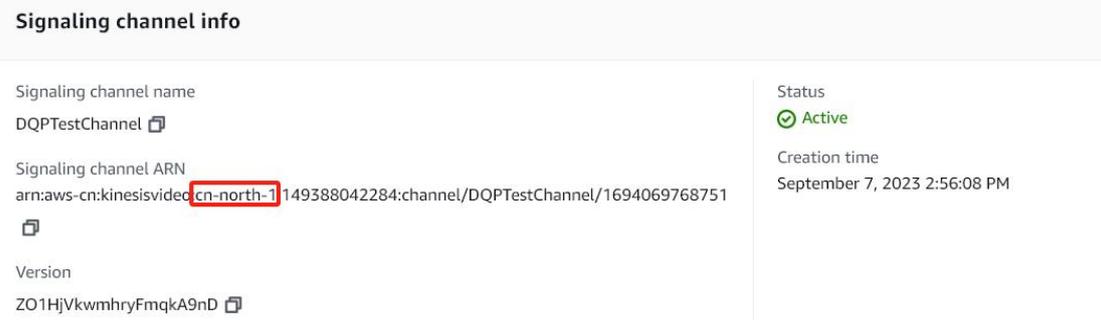


Figure 2- 9 Check AWS Web Console

Step 4

Click the webcam demo button on the signaling channel page you created to test the signal channel connection.

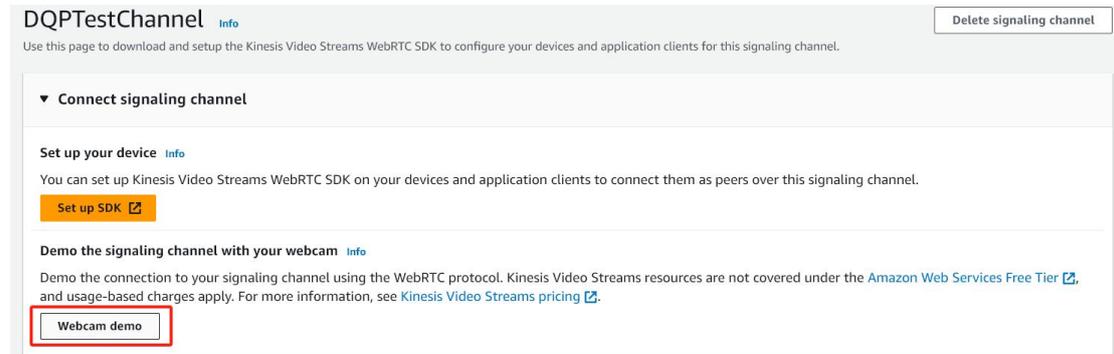


Figure 2- 10 Test Signal Channel Connection

Step 5

Open the webcam (master) and media playback (viewer) in sequence on the webcam demo interface to view the signal channel video streaming effect.

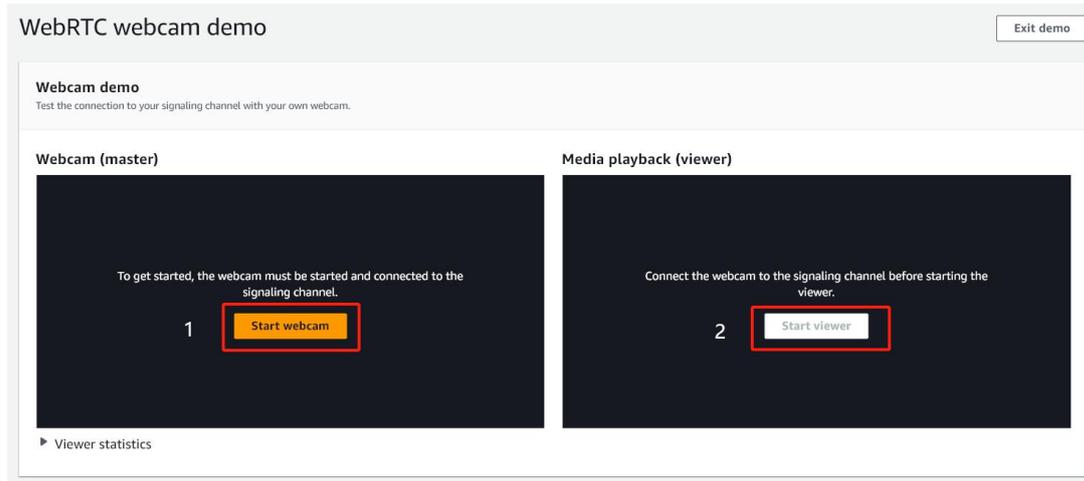


Figure 2- 11 View Signal Channel Video Streaming Effect

2.6 Troubleshooting

Check the table below for troubleshooting common Amazon KVS issues that may arise during development:

1) Device does not connect to the Internet

AK918AV100 device can connect to Wi-Fi through `wifi_driver.sh` script or obtain network through wired network connection. If there is no network, please check whether the wired network is normal and whether Internet Protocol Address is used. You can ping `extranet` to test whether the network is normal; if the Wi-Fi is not connected to the network normally, you need to check whether the network information entered in the `/etc/config/wpa_supplicant` file is correct. If you can't connect, you can check whether the Wi-Fi is 2.4G frequency band or 5G frequency band, and whether the device Wi-Fi supports connecting to 5G frequency band Wi-Fi.

2) Device does not connect to AWS

- Confirm that the device time is synchronized
- Verify that appropriate keys and region are loaded on the AK3918AV100 device.
- Verify the policies of the user or role set on AWS IAM.

3) FPS or Steam is too low

If FPS is too low, try to add light when the light is too dim; else if Steam is too low, check if the screen is static and try to change the screen.