IA8201 Voice Wake Soultuon AVS Setup Guide

The Reference IA8201 Voice Wake Solution has integrated Amazon AVS Device SDK (v1.19). providing end to end AVS feature. Users have to configure the Raspberry pi environment and the Amazon Device SDK client to enable this feature on the setup.

This document aims to provides step by step instructions to the users to configure and use the AVS feature on IA8201 EVM.

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Table of Contents

Chapter 1: Configuring Alexa Voice Service1.1 Prerequisites1.1 Prerequisites

1.5 Set up your Raspberry Pi environment

1.1 Prerequisites

- RaspberryPi Release image with AVS support.

- Amazon User account for linking to the device.

1.2 Hardware Setup

Complete the Hardware Setup by following the Quick Start Guide.

1.3 Register the AVS device (in this case the IA8201 EVM HW) with Amazon

1. Before you set up the AVS Device SDK, you must register an AVS device and create a security profile. Website:

After registering your device, you download a config.json file. This file contains your client ID and client secret. The client ID and client secret authorize your device to retrieve access tokens from AVS. Your config.json file facilitates the authorization calls between your device and AVS. Save the config.json file somewhere accessible. You use it later in the tutorial to build the SDK.

Follow the steps from the Amazon Website: https://developer.amazon.com/en-US/docs/alexa/alexa-voice-service/register-a-product-with-avs.html.

Please check the Create Device profile sections below for more details.

1.4 Getting Raspberry Pi Console

The AVS software configuration has to be done from the Raspberry pi kernel console or an ssh terminal.

Users can either connect a UART-to-USB bridge to get the default kernel console or use the SSH to connect to the raspberry pi.

Please refer to the below raspberry pi documentation to get the IP address of the device to get connected via SSH: https://www.raspberrypi.org/documentation/remote-access/ip-address.md.

Note: You can use an HDMI monitor to view the console and find out the Device IP address if the above method is not working.

```
# ssh pi@<ip-address>
enter the password "raspberry" to gain access to the ssh terminal
```

1.5 Set up your Raspberry Pi environment

Before setting up and running AVS feature, you must set up all the dependency software on your Raspberry Pi for the AVS. The following instructions presume that you set your home directory to `/home/pi`. Make sure to switch to the root user using sudo su mode before executing all the commands.

(List of dependency software: "curl", "sqlite3", "gstreamer1.0-plugins-good", "gstreamer1.0-plugins-baad", "gstreamer1.0-alsa)

1.4.1 Run the Environment Setup Script

To configure the system software, the user has to run a setup script.

1. Login to the pi and switch to root user "sudo su". (Important: run it as root as we are installing software dependencies)

2. Move to the /home/pi/Alexa_SDK/Scripts/

3. Execute the script ./setupAVS.sh

```
pi@raspberrypi:~/Alexa_SDK/Scripts $ ./setupAVS.sh ${NORMAL}

===========================================================
Welcome to Alexa SDK Image Setup Utility
Let's setup your environemt...

Make sure your are connected to the internet before we procced!.

Press any key to start
===========================================================

```

Once you press any key, it starts installing the AVS dependencies automatically.

1.4.2 Setup Your Configuration File

Before you run the sample app, you must set up an AlexaClientSDKConfig.json file for your device. This file contains your SDK settings and authorizes your device with Amazon.

The script will ask you to enter the required device information to generate the JSON file. Please follow the instruction to complete the step.

1.

Figure 1

Enter the below details.

```
Device Serial No. → [Any 6 digit No.]
Client id        → Enter your Client ID      Ex: amzn1.application-oa2-
client.799de52239364989bf530396827cced9
Product id       → Enter your Product ID      Ex: Calypso_2_0_1
Select the region/endpoint.
                 → Asia / Europe / North America


You will be asked to press "Y" to save all the details and "N" to reenter the
details again. Save and Reboot the Device.
```

1.4.3 Run and Authorize the Sample App

When you run the sample app for the first time, you must authorize it with Amazon by using a generated code specific to your device. Press any keyWait for the to start this configuration and wait for the sample app to display the following message.

1. Open a browser, and then navigate to the URL specified in the message from the sample app.

2. Log in to your Amazon developer account.

3. Enter the code specified in the message from the sample app.

4. Select **Allow**.

5. Wait for the sample to authorize.

1.   Wait for the sample to authorize.

Figure 2

You have completed the software configuration successfully. Please reboot your device to test the AVS Demo.

For demonstration purpose, the Knowles IA8x01 Release has configured the AVS Sample App to start automatically after every system boot. All the AVS sample app debug logs will be printed only to the default raspberry pi UART console(and HDMI monitor) as we are starting from system startup.

Users can change this auto launching AVS demo behavior if they prefer to start it manually from the SSH terminal to access the full logs. Please use the below script to control the auto-start behavior.

auto_start_ctl.sh

```
# use the script to control the audo launch demo
# 'Y' to enable auto launch (default behaviour)
# 'N' to disable auto launch the AVS demo


/usr/share/auto_start_ctl.sh <Y/N>
```

A system reboot is required for this change to take effect.

Use the below command to run the AVS Demo manually from an SSH terminal or kernel console.

Run AVS Sample App

```
sudo su

/usr/share/demo_3rd_party_mode.sh 'ONLINE_MODE' 1
```

Chapter 2: Test the Alexa Voice Service Feature

By now we have completed all the hardware/software setup and ready to use the system. Please utter Alexa followed by a command to test the Alexa feature.

- Once the keyword is detected, the Amazon AVS sample application will play a tone when the keyword is detected and start listening for the commands. The output will be played out through the speaker and some display card output will be rendered to the console. "Alexa! what is the weather "

- "Alexa! tell me a Joke"

- "Alexa! sing happy birthday"

- "Alexa! Set a reminder"

Note: Customers need to request special permission to enjoy the music services from amazon on your test device profile.

Chapter 3: Troubleshooting

2.1 No Audio Output

The 3.5mm speaker input should be connected to the headphone jack on the LT-EVM adapter card (not on to the Raspberry Pi). There is a limitation that the audio output may not play to the speaker if the HDMI monitor is connected to the system.Due to software limitation the default audio playback will not be routed to the connected speaker if anraspberry pi

Please try removing the HDMI monitor and reboot your system.

2.2 How to Reconfigure AVS with a different account

Please follow the below steps if you want to change an already configured account on a device without reflashing the image again.

```
cd /home/pi/Alexa_SDK/Scripts
./cleanAVSEnv.sh
sync
```

Reboot the system and it will ask the AVS credentials to start from the beginning.

2.3 Authorization Failures

If you are not getting the code based linking or "Authorized" message please make sure that the information you have entered is correct.

The below case is a typical failure if the device profile details is entered wrongly.


```
##################################################
#      NOTIFICATION INDICATOR STATE: OFF         #
##################################################

########################################################################
#      UNRECOVERABLE AUTHORIZATION ERROR: INVALID_REQUEST        #
#      Entering limited interaction mode.                        #
########################################################################


+----------------------------------------------------------------+
|                      In Limited Mode:                          |
```

The above logs indicate that the client ID user hard entered is incorrect. Please make sure you have created the client id as per the original document.

Try to reconfigure the AVS and enter the correct details again.

Chapter 4: Additional Support

For additional support, including forums, FAQ's, and a support ticketing system, please visit:
https://solutions.knowles.com/.

Revision History

Revision	Description	Date
0.1	Initial release	7/6/2021