Quick Start Guide

Thank you for acquiring the Cirrus Logic Voice Capture Development Kit for Amazon AVS-Enabled Products. This document aims to get you up and running with the kit.

1 Hardware Set Up

This section lists the hardware you'll need, and how to connect it up.

1.1 Supplied Hardware

The development kit comes with:

- CRD1569-1 voice capture board
- Raspberry Pi and power supply
- ribbon cable (optional use)
- passive speaker, to provide functionality (option – your own powered speaker can be used instead)

For the one-time set up of the voice capture board, you'll need to connect the following to the Raspberry Pi directly:

- a USB keyboard and mouse
- an HDMI cable to connect to your monitor
- an Ethernet connection (optional use)

1.2 Connecting the Hardware

To set up the hardware, you can either mount the voice capture board directly on to the Raspberry Pi, or use the supplied ribbon cable to connect the voice capture board to the Raspberry Pi:

- To mount the voice capture board directly on to the Raspberry Pi, position the board over the Raspberry Pi as shown in Figure 1, ensuring that the connector on the underside of the voice capture board aligns exactly with the pins on the Raspberry Pi, and press the two boards together.

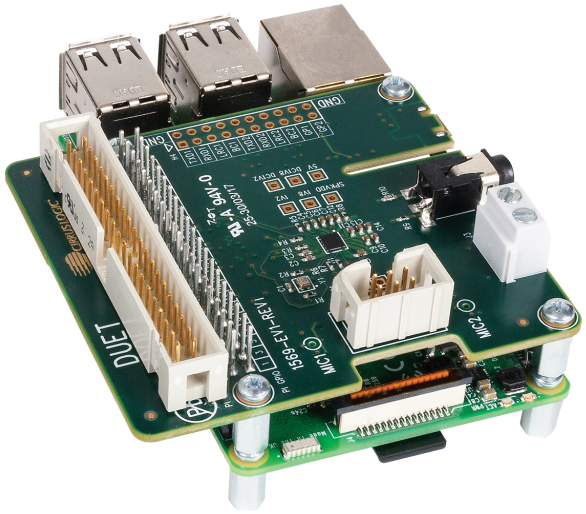

Figure 1 Voice Capture Board Plugged Directly into Raspberry Pi

- To use the ribbon cable, plug the cable connector that has a cable key (a plastic bump on it) in to the long connector on the voice capture board. The cable key fits into a notch in the 40-pin connector, ensuring that the

cable is plugged in correctly. The other end of the cable plugs into the parallel row of pins on the Raspberry Pi, with the side of the cable with the red stripe (pin 1) nearest the SD card slot, as shown in Figure 2.

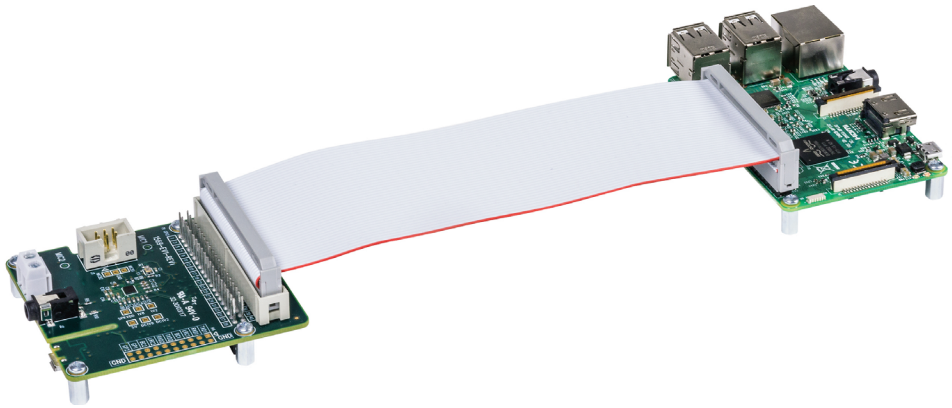

Figure 2 Voice Capture Board Connected by Ribbon Cable to Raspberry Pi

Once the boards are connected, insert the supplied microSD card in to the slot on the underside of the Raspberry Pi, at the opposite end to the USB connectors (the card can be seen protruding at the bottom of Figure 1). Attach the speaker to the screw terminals on the voice capture board (labelled J3), plug in the monitor, connect the USB keyboard and mouse, plug the supplied power supply (with the appropriate regional adapter) in to the micro-USB port on the Raspberry Pi, and power up the Raspberry Pi.

Now you're ready to configure the software.

2 Software Set Up

The software set up is performed from the Raspberry Pi, and has three stages – setting up an internet connection to the Raspberry Pi, registering with Amazon for an AVS account, and configuring the voice capture board. (After set up, the voice capture board software will be accessible from your network.) (For wireless setup, see the CRD1569-1 User Guide.)

2.1 Set Up an Internet Connection

Initial set up of the voice capture board is done from the Raspberry Pi.

- On the Raspberry Pi, start the web browser and enter "`https://raspberrypi:3000`" in the address bar. The browser should connect to and display the console, as shown in Figure 3. If a security warning is shown, click the *Reload* button and wait for the connection.

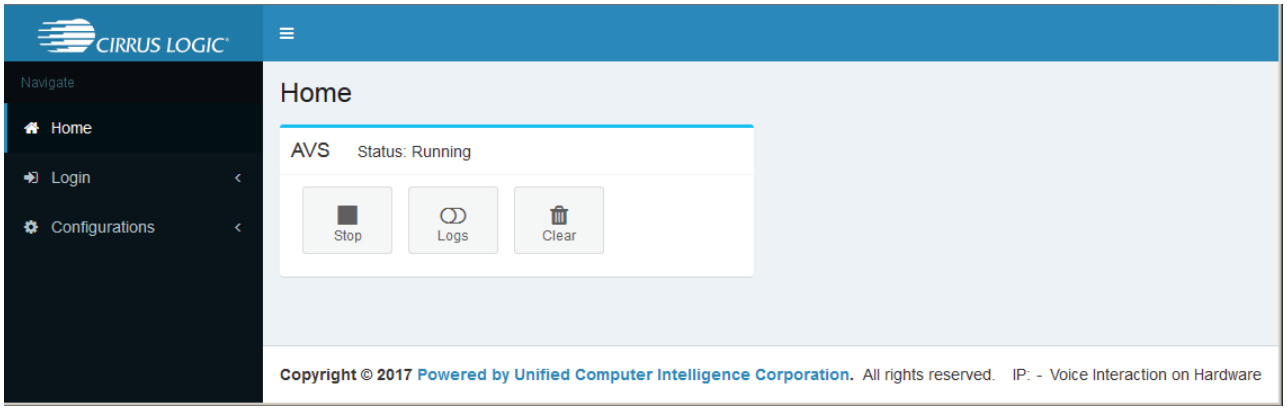

Figure 3 Console – Home

You now need to provide a connection to Amazon, to register for and use AVS. This can be via either Ethernet or Wi-Fi.

- To set up access to the internet via Wi-Fi, open the *Configurations* menu on the left side, and select the *WiFi* option. Click on the *Add new* button, then enter your Wi-Fi SSID name and password. Save this connection by

clicking on the *Save* button, and reboot the Raspberry Pi 3 by clicking on the *Connect and Reboot* button. After reboot, the Raspberry Pi 3 should be connected to your Wi-Fi network.

Note: the SSID must be visible if you wish to use a Wi-Fi connection.

- To set up access to the internet via Ethernet, plug in an Ethernet cable connected to your network router. Close the browser window.

2.2 Registering for an Amazon AVS Account

To use AVS, you need to register with Amazon for an AVS account. On the Raspberry Pi, start the web browser and enter "`https://developer.amazon.com/login.html`" in the address bar.

Provide an email address, choose the *I am a new customer* button and click on the *Sign in using our secure server* button, shown in Figure 4.

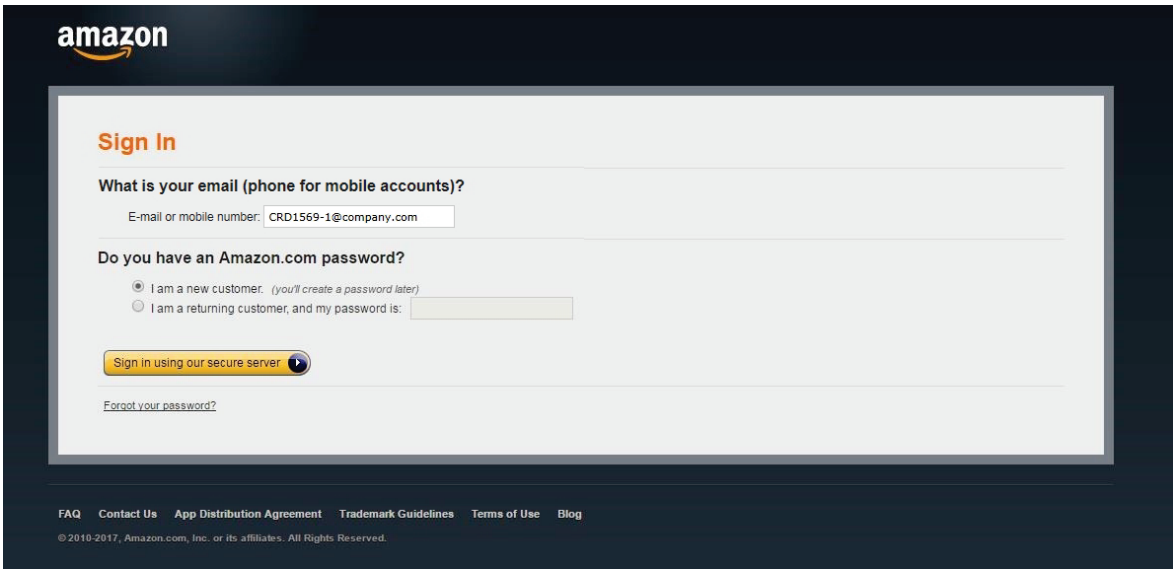

Figure 4 Amazon Developer Account Login Screen

Provide your name, create a password for the new account and click on the *Create account* button, shown in Figure 5.

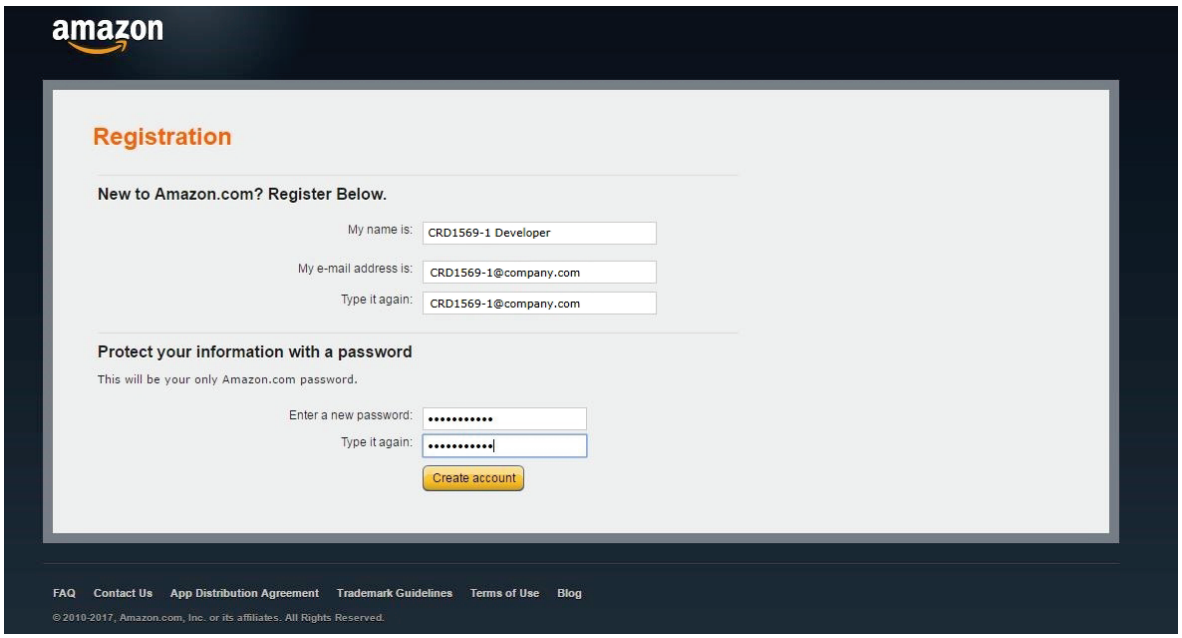

Figure 5 Amazon Developer Account Registration Screen 1

On the registration page, shown in Figure 6, provide the required information and click on the *Save and Continue* button.

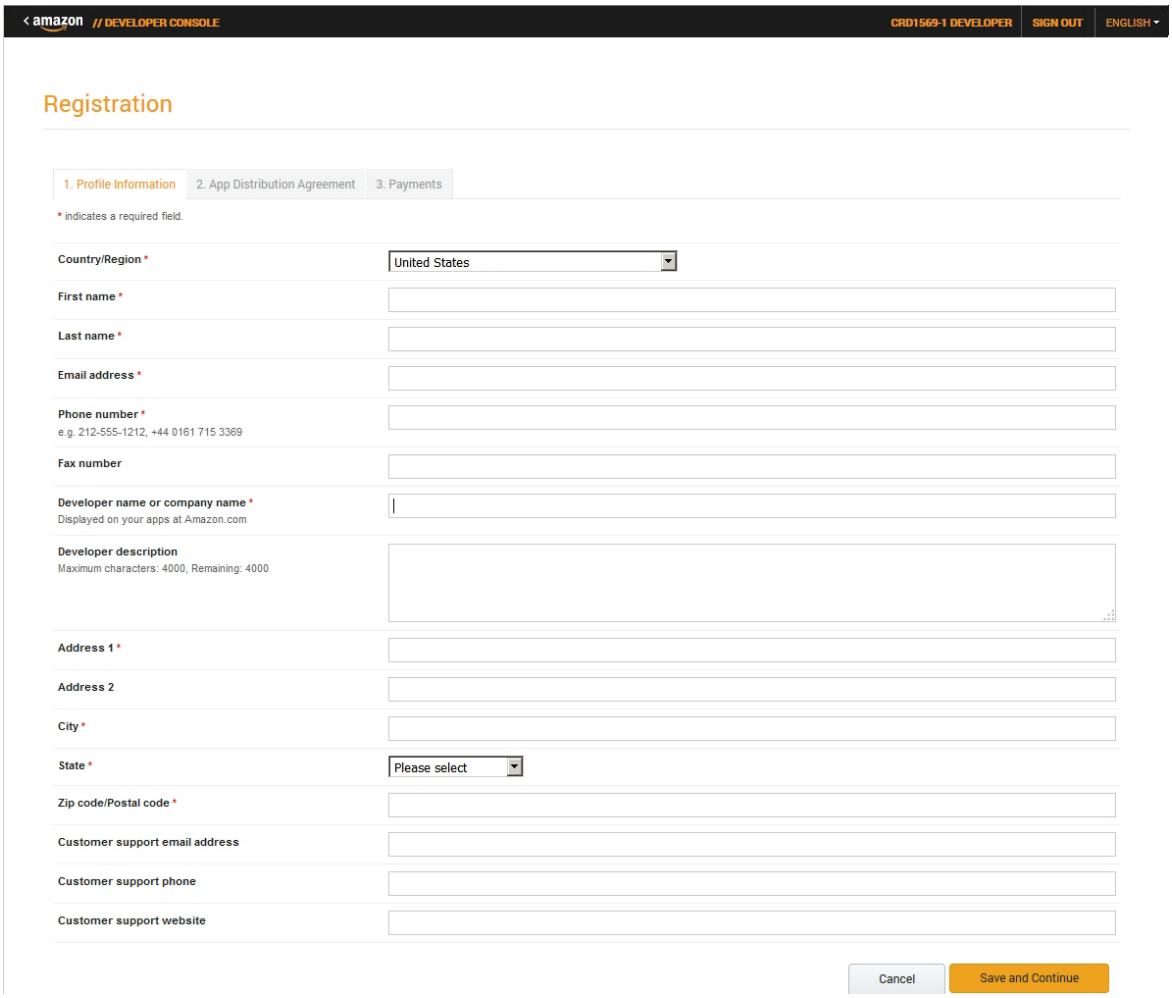

Figure 6 Amazon Developer Account Registration Screen 2

On the license agreement page, click on the *Accept and Continue* button.

On the payment screen, shown in Figure 7, choose the appropriate answers to the two questions, and click on the *Save and Continue* button.

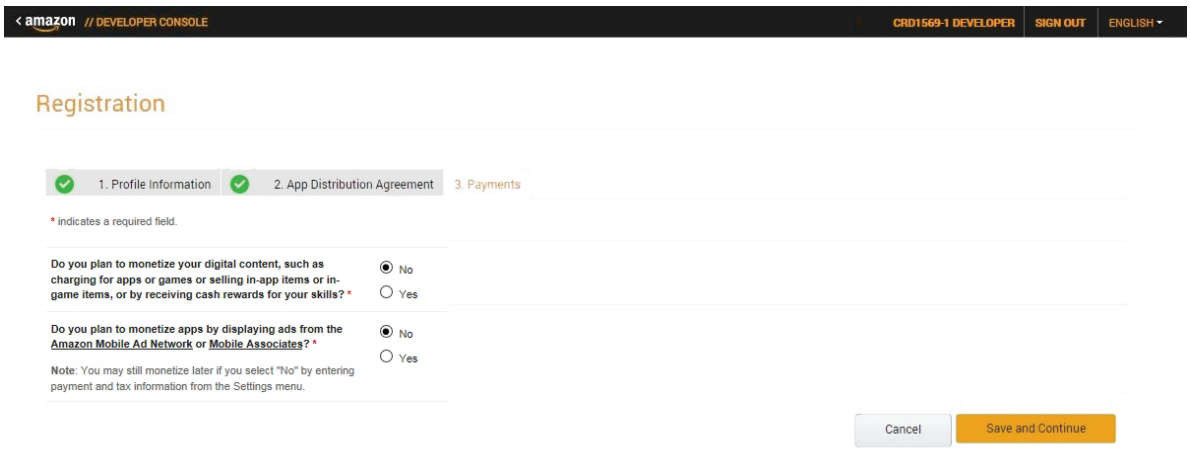

Figure 7 Amazon Developer Account Registration Screen 3

On the following webpage, shown in Figure 8, click on the *ALEXA* tab.

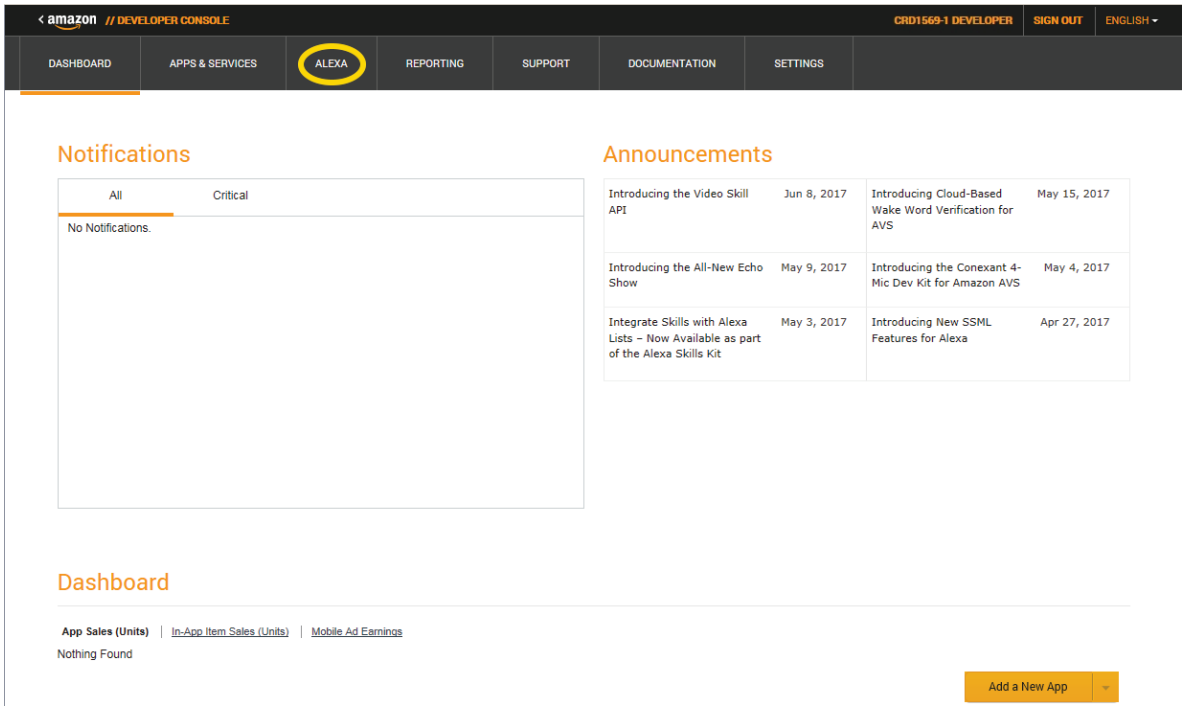

Figure 8 Amazon Developer Account Registration Screen 4

On the following webpage, shown in Figure 9, click on the big *Alexa Voice Service* button.

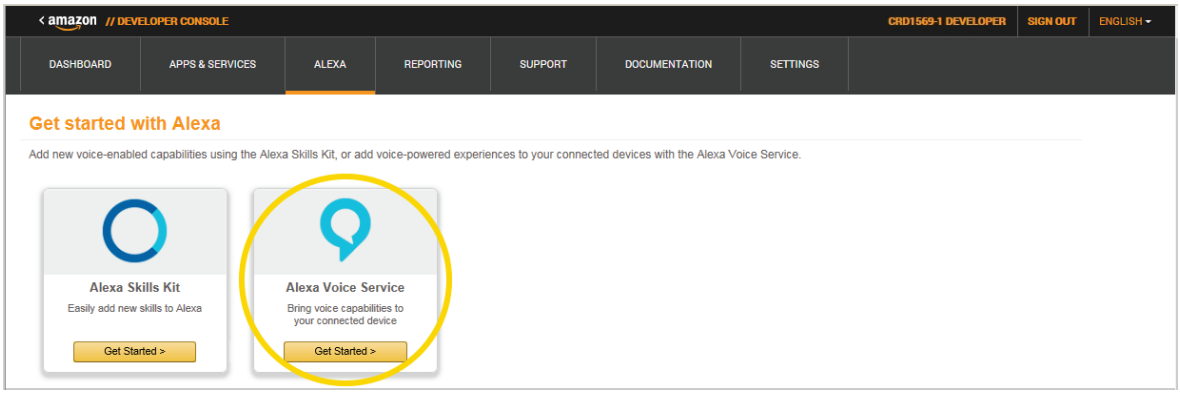

Figure 9 Amazon Developer Account Registration Screen 5

On the following webpage, shown in Figure 10, click on the orange *Register a Product* dropdown's down arrow and choose *Device*.

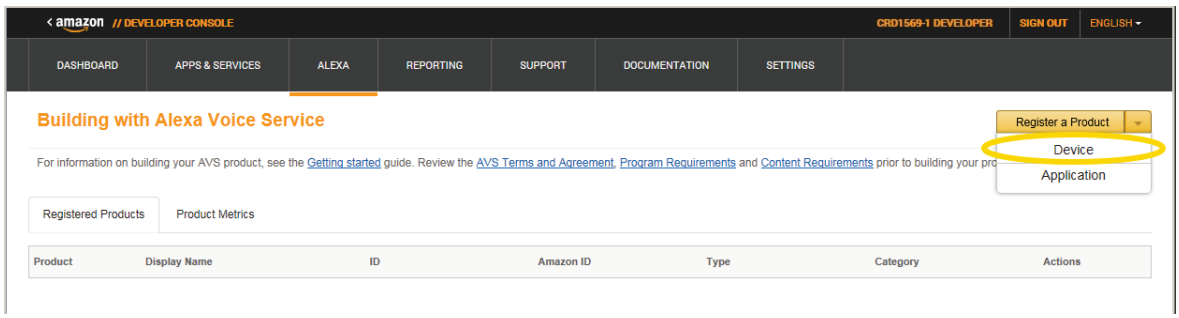

Figure 10 Amazon Developer Account Registration Screen 6

On the following webpage, shown in Figure 11, choose proper names for the *Device Type ID* (you'll use this when logging in to AVS) and the *Display Name*, and click on the *Next* button.

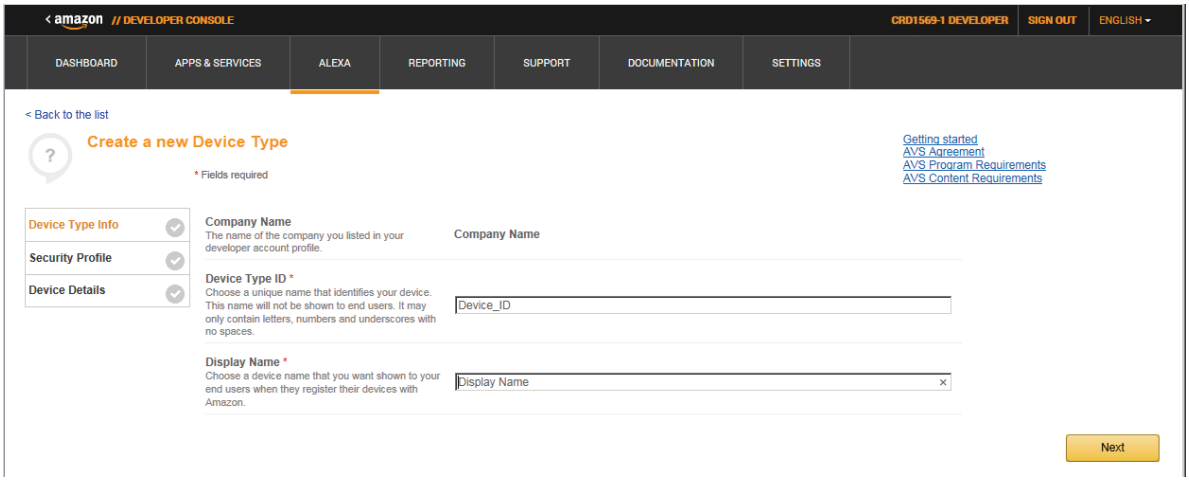

Figure 11 Amazon Developer Account Registration Screen 7

On the following webpage, shown in Figure 12, click on the *Select Security Profile* dropdown, then click on the *Create a new profile* option.

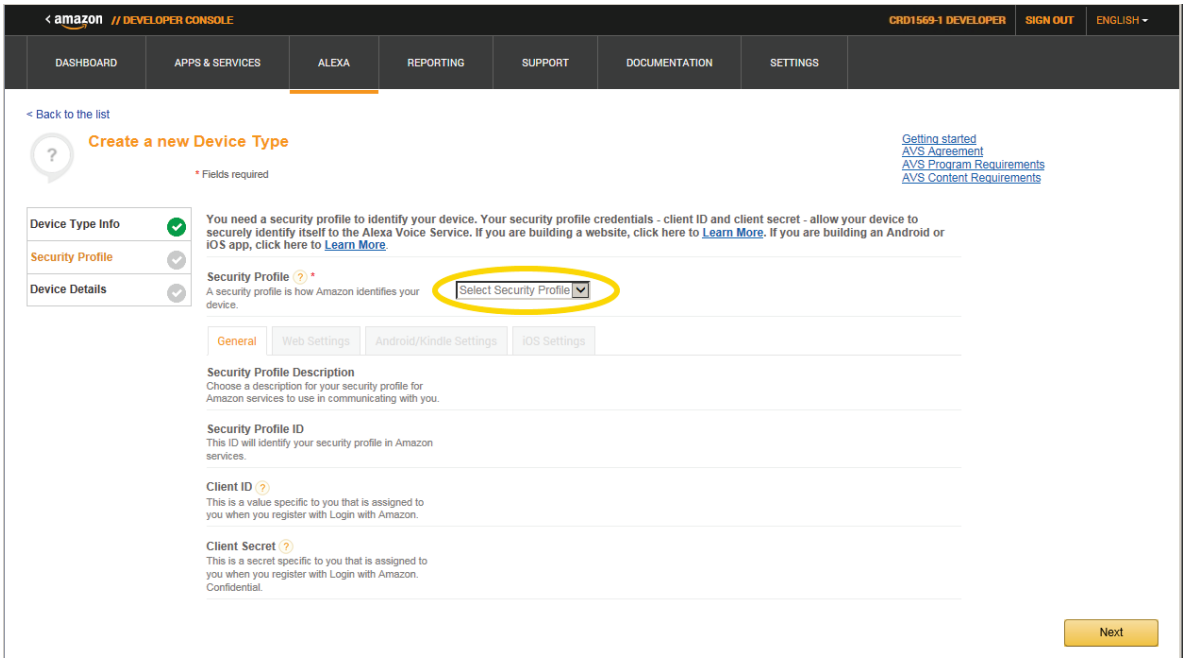

Figure 12 Amazon Developer Account Registration Screen 8

On the following webpage, shown in Figure 13, choose proper names for the *Security Profile Name* and *Description*, and click on the *Next* button.

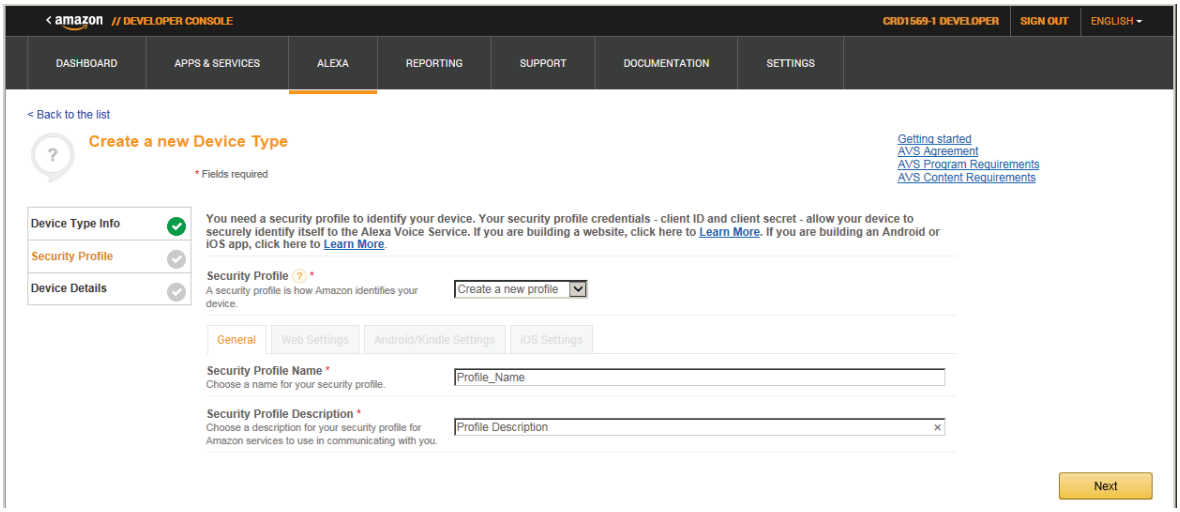

Figure 13 Amazon Developer Account Registration Screen 9

The following webpage, shown in Figure 14, shows the *Client ID* and *Client Secret* strings that are used to configure the voice capture board; you'll return to this webpage later, to allow you to copy-and-paste the strings.

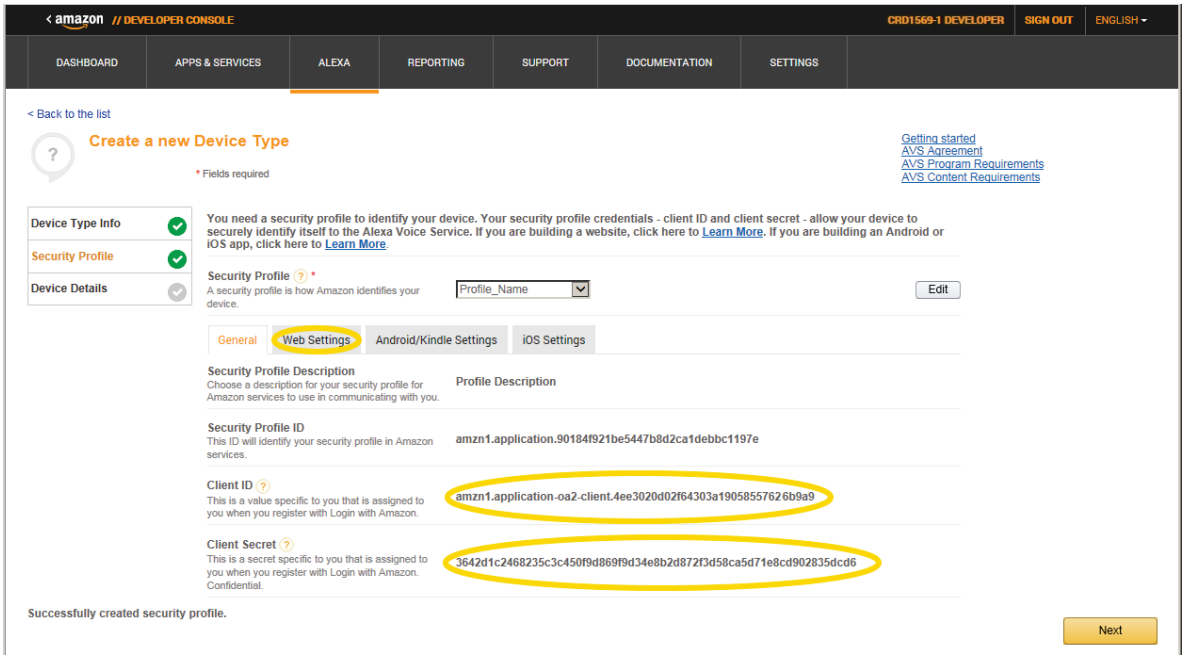

Figure 14 Amazon Developer Account Registration Screen 10

Click on the *Web Settings* tab and, on the following webpage, shown in Figure 15, click on the *Edit* button.

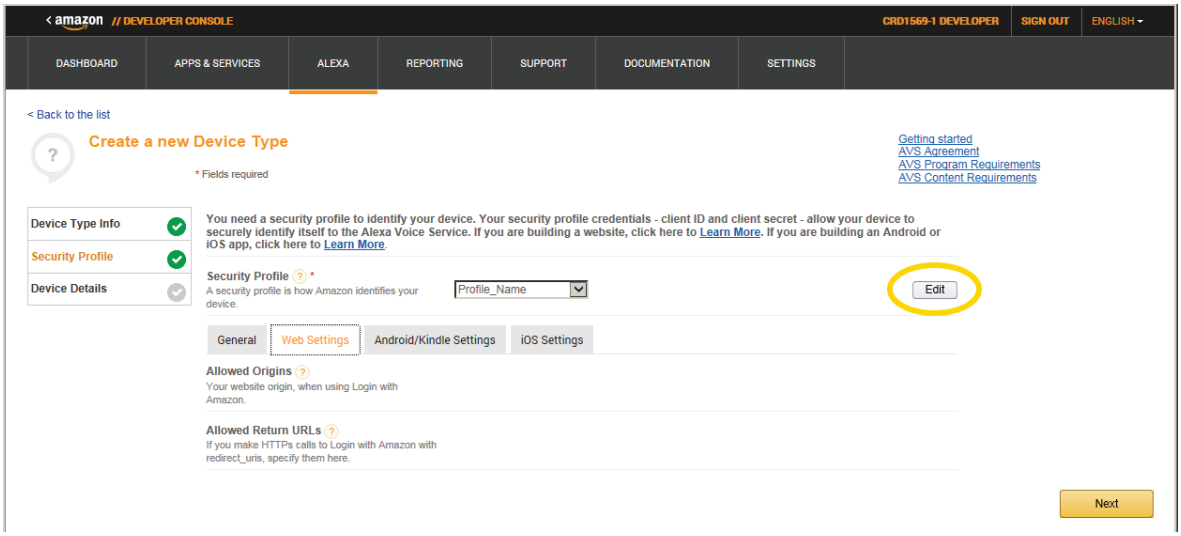

Figure 15 Amazon Developer Account Registration Screen 11

Click on the *Add Another* link for both *Allowed Origins* and *Allowed Return URLs*. Enter the following information, as shown in Figure 16:

- Allowed Origins: `https://raspberrypi:3000`
- Allowed Return URLs: `https://raspberrypi:3000/authresponse`

Then click on the *Next* button.

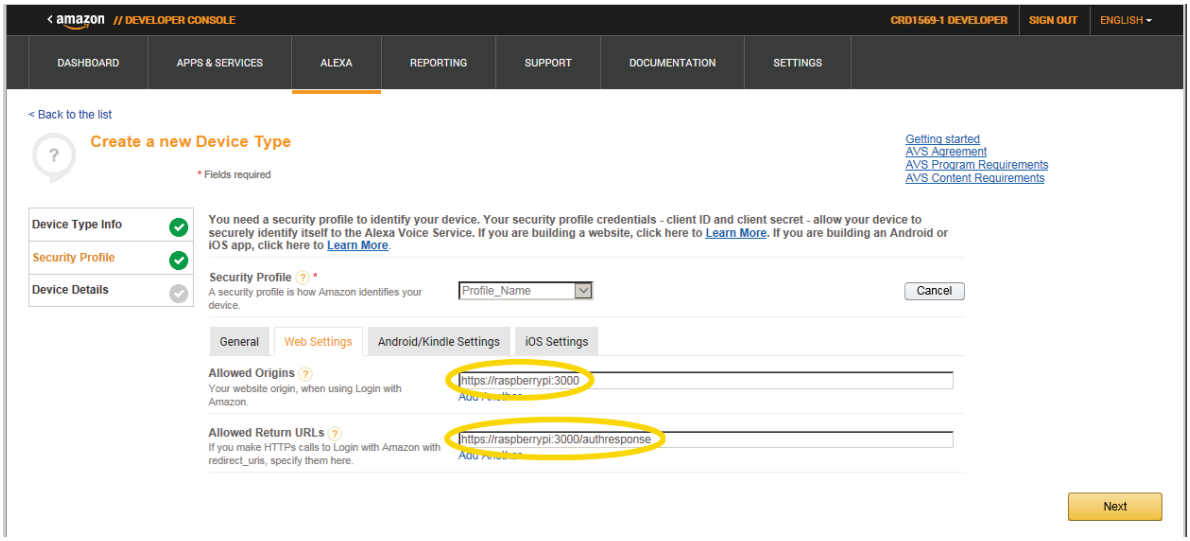

Figure 16 Amazon Developer Account Registration Screen 12

On the following webpage, shown in Figure 17, provide all the required information, then click on the *Submit* button.

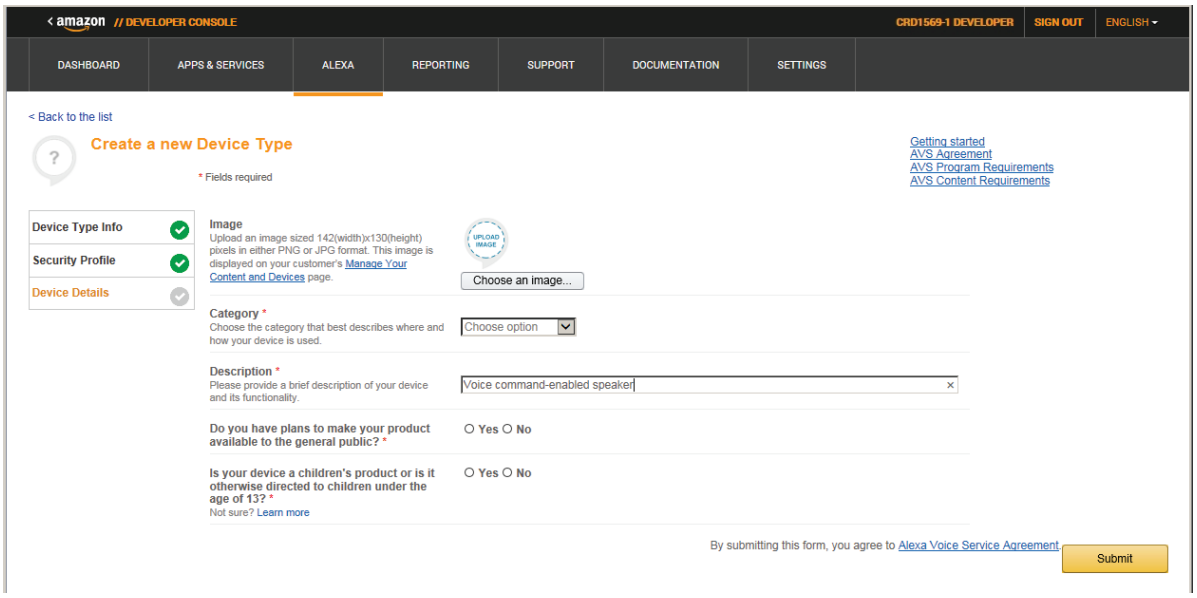

Figure 17 Amazon Developer Account Registration Screen 13

A summary page, similar to that shown in Figure 10 but with the device you just created, is displayed. You'll use the ID when logging in to AVS.

Click the *Edit* button on the right of the new device entry, and then click on the Security Profile tab, as shown in Figure 18, to display again the *Client ID* and *Client Secret* strings, so that they are available for you to copy-and-paste when you configure the voice capture board.

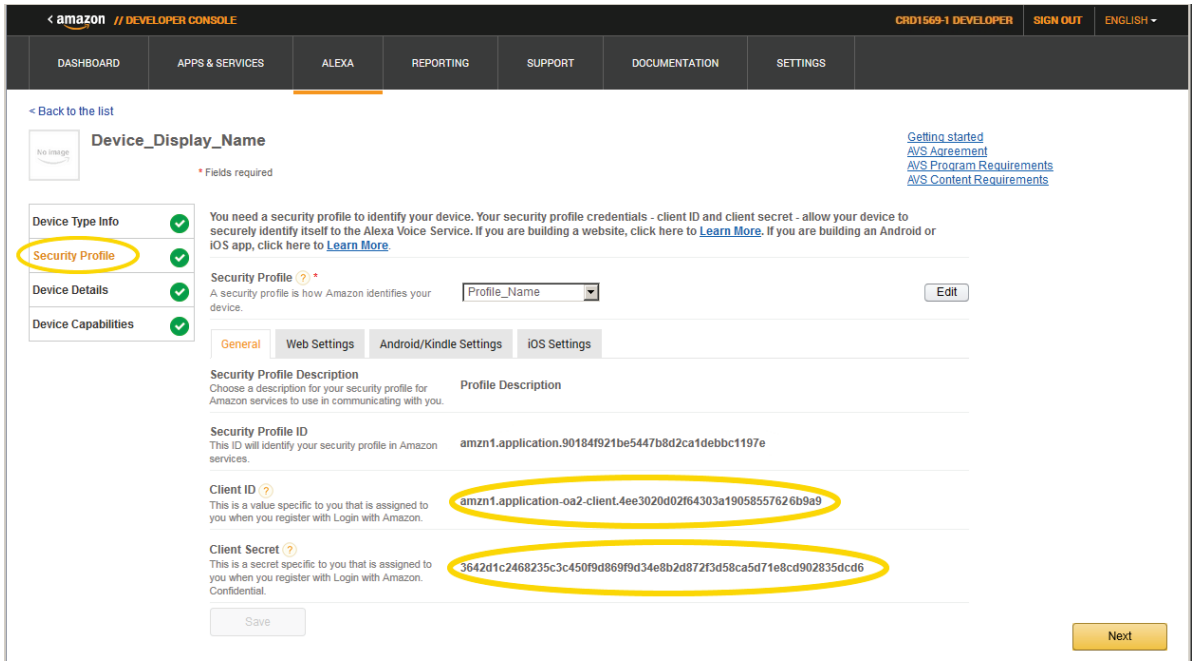

Figure 18 Amazon Developer Account Registration Screen 14

This completes creating an Amazon developer account.

2.3 Configuring the Voice Capture Board

The voice capture board should be available on your network; to access it, you need to determine its IP address.

- On the Raspberry Pi, open a new browser window and enter "`https://raspberrypi:3000`" in the address bar (the display may need reloading – click the *Reload* button – and/or refreshing – press *F5* if so)

You now need to enter the AVS configuration information and log in to Amazon.

- To add the AVS configuration details, open the *Configurations* menu on the left side, and select the *AVS* option, as shown in Figure 19. Provide the *Client ID* and *Client Secret* details from the Amazon developer account previously created (shown in Figure 14), and the *Product ID* (the Device ID shown in Figure 11), then click on the *Submit* button at the bottom of the page.

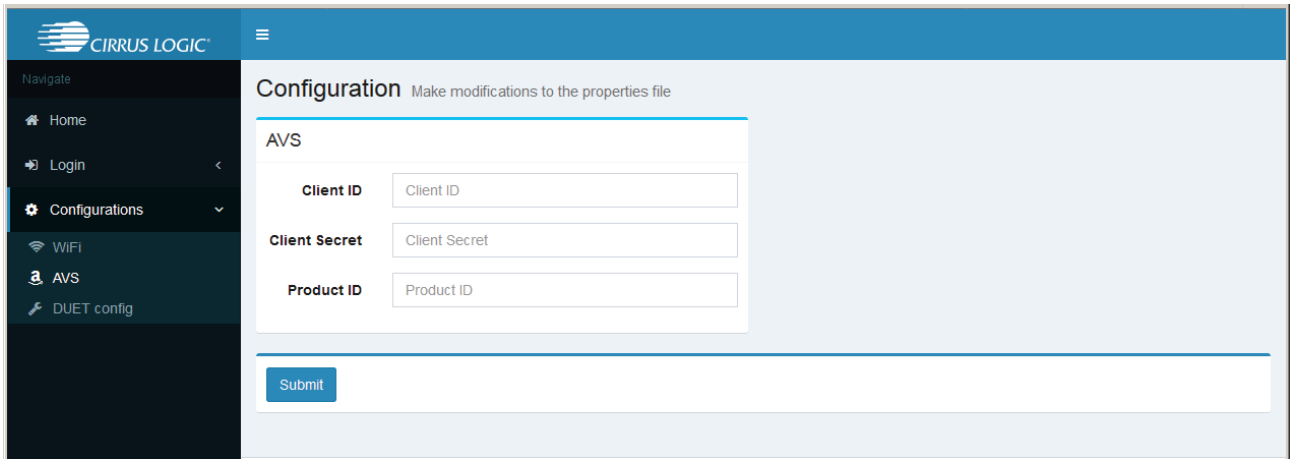

Figure 19 Console – AVS Configuration

A green banner at the top of the page will confirm that the properties were updated successfully.

- To log in to the AVS service, open the *Login* menu on the left side, and select the *AVS Login* option, as shown in Figure 20. Click on the yellow button to sign in to Amazon Voice Services, using the account details you set up previously and accept the terms of use.

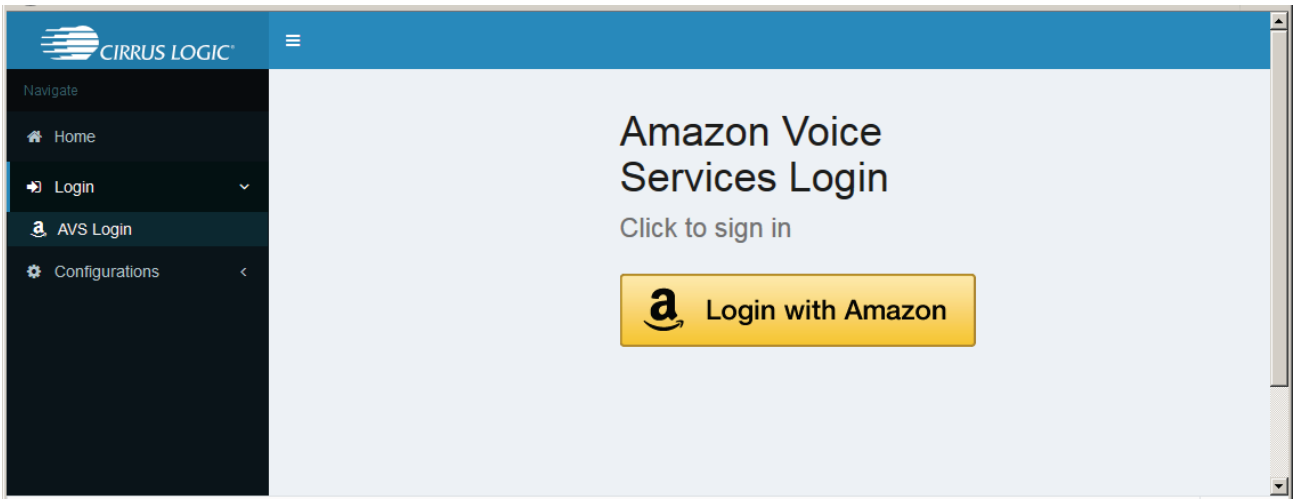

Figure 20 Console – AVS Login

- Once signed in, follow the prompts to return to the Raspberry Pi. The browser may issue certificate warnings, which can be ignored. If a privacy warning is shown, click on the *SHOW ADVANCED* button to continue to your device.

  You should be returned to the Console AVS Login screen, with a green banner at the top of the page confirming that login was successful.

So that you can subsequently access the Raspberry Pi from any browser connected to your network (headless mode),

you need to know the Raspberry Pi's IP address.

- In the task bar at the top right of the screen, hovering the mouse over the Wired/Wireless Network applet displays the information as shown in Figure 21. The IP address is the four numbers separated by '.'; for example, Figure 21 shows an Ethernet IP address of 198.90.202.35 and a wireless IP address of 192.168.1.179 – note the one appropriate for your connection.

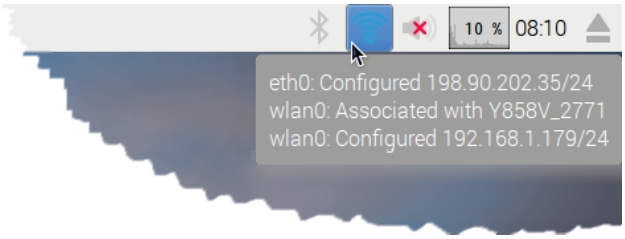

Figure 21 Raspberry Pi Wireless and Ethernet Connections

The software should now be set up correctly; this completes the software set up.

Now you can access the voice capture board via your network.

- On your computer, start a web browser, and enter `https://<IP address>:3000/` in the address bar, where *<IP address>* is the IP address noted above. The browser should connect to and display the console again.

3 Testing the Voice Capture Development Kit

The last step in getting the kit up and running is a quick test to ensure that all the basic elements are working.

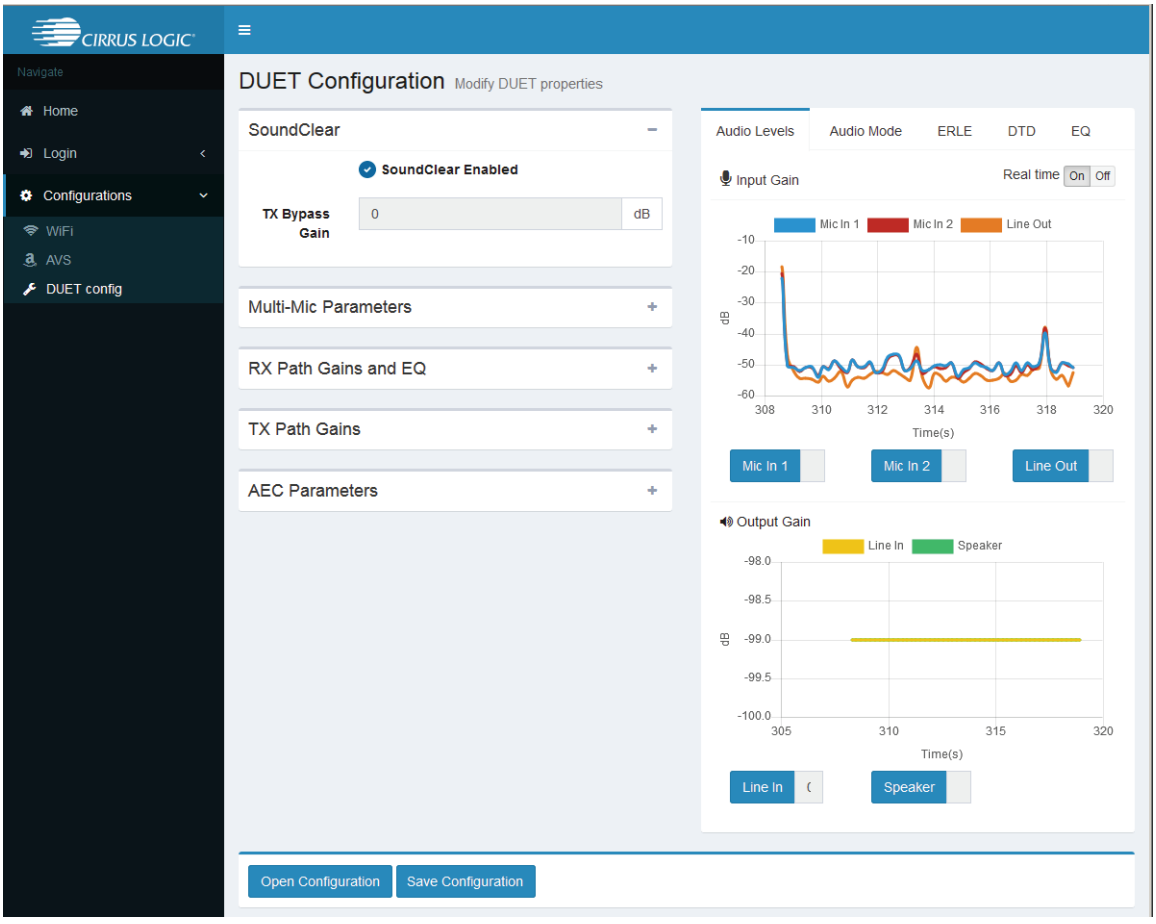

Figure 22 Console – Configuration

- In the console, select the *Home* menu on the left side.
- Restart the AVS application by clicking on the *Stop* button and then the *Start* button.

After a short pause, you should hear Alexa saying "Hello". This confirms that the application, speaker and Amazon connection are all working.

To test that the microphones are responding:

- Open the *DUET config* option in the *Configuration* menu, shown in Figure 22.

  The graphs on the right side show the microphone output. Speaking or making a loud sound near to the microphones (either side of the white 6-pin connector) should show a spike in the graphs.

Finally, to test Alexa:

- Say “Alexa” into the microphones; the voice capture board should respond with a beep to indicate processing.
- Ask Alexa a question. Following a second beep to indicate that she has finished listening, she should respond.

Further details of the Control Console operation can be found in the CRD1569-1 User Guide.

4 Revision History

Revision History

Revision	Changes
1.0 JUN '17	• First release

Contacting Cirrus Logic Support

For all product questions and inquiries, contact a Cirrus Logic Sales Representative.
To find one nearest you, go to www.cirrus.com.