AVA ROBOTICS

Ava Robot Installation & Configuration Guide

v5.0.1

Table of Contents

Regulatory and Safety Info

This product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

This Class A digital apparatus complies with Canadian ICES-003.

Disposal of this product should be handled according to local and national laws and regulations.

Manufactured by Ava Robotics Inc., www.avarobotics.com.

Please read these safety instructions carefully before installing the Ava Robot:

- For indoor use only.
- Installation should comply with local and national building codes.
- Do not use the product if damaged.
- Follow all operating and use instructions.

CAUTION	Always use the handle to push or pull Ava. Attempting to lift or tilt Ava can lead to injury.

⚠	DO NOT EXPOSE THE ELECTRONICS OF THE CHARGING STATION. THERE ARE NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. PLEASE ENSURE VOLTAGE RATING FOR CHARGING STATION MATCHES STANDARD OUTLET VOLTAGE.

This equipment is not suitable to be used in locations where children are likely to be present.

The Ava Robot contains Lithium Ion batteries. Transport of batteries is subject to local and international regulations. Please contact Ava Robotics with any questions. Disposal of hazardous waste should be done according to local regulations.

Introduction

The Ava Installation and Configuration Guide contains the instructions for initial installation of an Ava robot at a customer site, as well as information about configuration changes that may be necessary during Ava's life cycle.

References

The following documents are referenced in this document:

- **Removing Ava from its Transport Box:** Instructions on unpacking Ava from its shipping container.
- **Ava Administrator's Guide:** Instructions on overall system configuration (including remote application information, managing users, etc.)
- **Ava Caretaker Guide:** Can be provided to local caretakers as orientation on Ava's features.

Conventions

Throughout the manual the following conventions are used:

CAUTION	This is a warning. If the person using the information ignores or violates this instruction, serious damage could result in the product or injury to the person.
!	This is an alert. If the person using the information ignores or violates these instructions, some minor negative consequences could occur.
i	This calls out supplemental information or information of particular note.

Comments and Suggestions

The Ava team welcomes your comments and suggestions for changes or additions to improve this manual. Please provide them to support@avarobotics.com.

Installation Process Overview

Installing Ava consists of the following steps:

1. Unpacking
2. Video codec installation (if not previously installed)
3. Battery Installation (if not previously installed)
4. Charging station installation
5. Configuration
6. Mapping
7. User configuration

To avoid setting Ava up in a public or high traffic area, you may want to install the batteries and configure Ava in a separate work area. This work area should have strong connectivity to the wireless network on which you will connect Ava and a place to plug in the charging station near a table or desk where you can do the configuration.

Ava comes packed in a large shipping crate. Ava and the charging station may be unpacked at receiving, or delivered in the crate to the work area. The project manager will discuss delivery timing and unpacking with you. Once you have installed the batteries and configured Ava, you will move Ava and its charging station to its operating area. There you will place the charging station in its final location. You may want to select the charging station location and determine the destinations before Ava arrives.

> You must be able to roll Ava from the work area to the operating area. Ava cannot be lifted or maneuvered up or down stairs.

User configuration involves using the Ava Administrator Console to enter some information about people who will be teleporting into Ava ('remote users'), their video endpoint address, and the sites they can visit. Your system will come with your remote user information already configured. You can also use the Administrator Console to monitor the health of Ava and see what sessions are reserved or active.

Tools and Resources You Will Need

You will need the following for installation:

- Ava Robot
- Ava's charging station
- Batteries (4 or 2, depending on configuration ordered)
- A compatible Cisco video conferencing codec (if not provided inside of robot)
- A 3mm hex driver or Allen key
- An Ethernet cable
- A laptop with Google Chrome browser and an Ethernet port (or a suitable adapter) and access to the Internet

If any questions or concerns arise during installation, email support@avarobotics.com for assistance.

Information You Will Need

You will need the following information for installation:

- Wi-Fi credentials for the wireless network you will be enrolling
- The Ava Cloud Service domain for your organization, which can be provided by your Ava representative
- For a full autonomous experience, your Ava representative will ask if you have a floorplan image that can be added to app for the remote users to see

Quick Guide to Installation of Ava Robot

The following table summarizes the steps to complete a deployment, and references on where to find more information. You can print this page or copy this table to an app on your computer, and use the checkmark column as you complete each step.

Step	Expected Result	✓	Reference
Remove Ava and its Charging Station from Transport Box	You have the robot, its charging station and the toolkit		Document "Removing Ava from its Transport Box"
If the codec did not come pre-installed on the your Ava, install the codec	Codec is mounted in the robot and all cables are connected		You Ava representative will share instructions for your codec type
If batteries did not come pre-installed, install the batteries in the Ava and power it up	With the robot off-dock, Ava will power on		Installation Guide
Enroll Ava to Wi-Fi and configure it to the Ava Cloud Service ID provided by your Ava representative	On Ava Configuration Interface, you see Ava Cloud Service status indicator as green		Installation Guide
If you installed your own codec, you now need to configure it	In Ava Configuration Interface, there are no faults		Installation Guide
Install the Charging Station at its final location, and push the Ava to contact	The white light on the dock should light up. The robot will be powered on, and LEDs will be pulsating white, alternating sides		Installation Guide
Ava learning/mapping: the Ava Support team will need to perform this task	The Ava Support team will confirm when this is complete		Contact your Ava representative
Create user accounts and enable access for these users. If you have access to the IT Admin Console, perform the documented steps. If not, the Ava Support team can perform this for you	The robot is fully functional and ready for use		IT Administrator's Guide

Installing a Video Codec

Ava Robots make and receive video calls via a video codec from a third-party manufacturer. Currently supported codecs are the Cisco Webex Codec Plus and the Cisco SX20.

The codec may have been pre-installed or it may be supplied separately, in which case you will need to install it. You can find instructions on how to physically install your codec in a separate document dedicated to the codec type and robot hardware version you have.

> Do not forget to **record the codec MAC address**. It will need to be added to the Ava Configuration Interface later on.

Installing the Batteries

> ℹ️ Typically the robot will have shipped with batteries pre-installed. Before installing batteries, please confirm with your Ava representative manager whether the robots already have them installed.

To install the batteries you will perform the following steps:

- Remove the rear half of the trim ring, rear base shell, and front base shell
- Raise the base cowl to the service position
- You can install either two or four batteries

> ℹ️ If you are installing two batteries, they should go on the robot's left side (your right side as you face the front of the robot).

> ⚠️ CAUTION Ava must be disconnected from the charging station and the power rocker switch should be in the Off (0) position.

1. The power rocker switch is to the back right when Ava is on the charging plate (lower left when facing Ava's back). Make sure it is in the Off position.

2. The rear trim ring is held in place by magnets. To remove it, pull it away from the base.

3. Using the 3 mm hex Allen key provided with the Ava, unscrew the two screws holding the rear shell in place until they feel loose. Do not fully remove the screws from the shell as they are captive, meaning they will not fall out of the shell.

4. The rear shell is also held in place by magnets. Firmly pull it away from the robot.

5. The front shell is held in place by four captive thumb screws, loosening them. The screws will move when they are fully detached from the shell. Pull the front shell away from the robot.


6. Hold each side of the bumper and lift the cowl until you hear it click into place. Don't be afraid to lift it firmly, as though you were trying to pick the robot up. The figure shows the cowl first lowered and then raised in its service position.

CAUTION	Please apply caution in performing this step. Abrupt motions can cause the bumper to drop unexpectedly.

7. Ava has a battery compartment on each side. Unlatch one battery compartment by pulling the latch down.

8. Raise the compartment lid. You can tuck the latch into the cowl to hold the lid in place, but be careful not to dislodge the cowl from the service position. The inside divider flap will drop down.

9. Insert the first battery with the connector up and toward the back.

10. Raise the divider flap. You know the battery is correctly placed when you can raise the flap all the way.

11. Insert the second battery with the connector down and toward the back.

12. Lower the battery compartment cover. It will be a stiff fit. If you cannot get it all the way down, one of the batteries may not be correctly seated. Check the connector orientation.

13. Fit the latch loop over the hook in the base and flip the latch up.
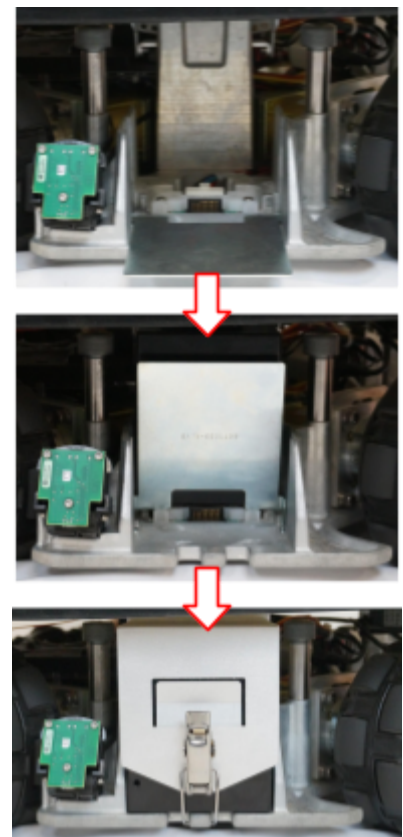
14. Repeat to insert two batteries into the compartment on the other side.

15. Hold the cowl and press down gently to release it to its lowered position.

16. Fit the front base shell into place by inserting the four tapped pins on the shell into the four sockets on the frame (be careful that all wires are behind the shell magnets).

17. Tighten the four thumb screws. The screws have captured the back shell when they can't be pushed in and spring back.
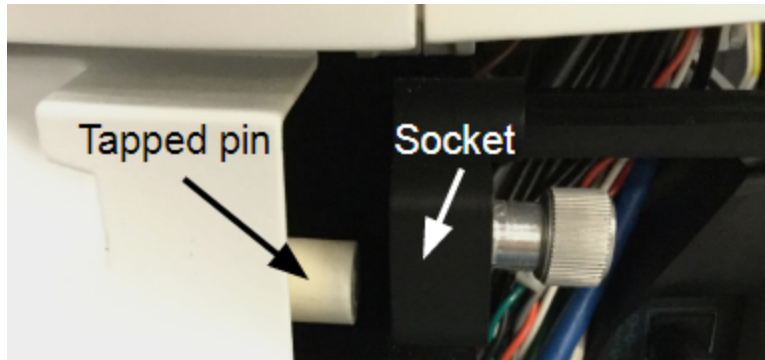
18. Fit the rear base shell into place and tighten the two 3mm screws. Verify you can't pull the shell away from the frame.

> ⓘ You may want to remove the front trim ring so you can pinch the shells together. If you have trouble capturing the front shell, try adjusting the angle of the driver to modify the screw's position.

19. Replace the rear half of the trim ring.

Installing the Charging Station

Ava's charging station is an integral part of the Ava system. The charging station not only charges Ava's batteries but it also serves as Ava's home base. When a session ends, Ava returns to its charging station autonomously.

To install the charging station you will perform the following steps:

- Determine a location
- Install the charging station
- Engage Ava with the station and power Ava on

Location Selection

Please consider the following when determining where the charging station will be placed:

- Access to a power outlet.
- The area must have strong connectivity with the WLAN.
- The area should have limited or normal foot traffic and not be a location where boxes or chairs are placed.
- The location is approximately central to Ava's destinations.
- Should be a location with level floor surface.
- The location should not be inside a room where a closed door might prevent Ava getting to a destination or returning to the charging station.
- Is a few feet away from offices or cubes, so that residents are not disturbed by Ava's travels.
- The location should not be in direct sunlight during Ava's operating hours.

Install the Charging Station

The charging station usually ships pre-assembled inside of the robot's transport box. Installation is straight-foward, but please consult the document "Ava Charging Station (Model AVA-CS) Installation Instructions" for more details and safety information.

Powering Up Ava

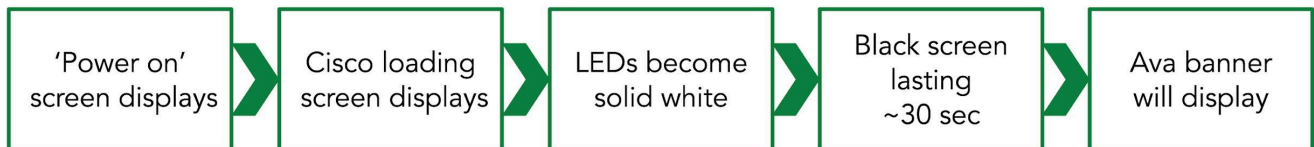Follow these steps to power Ava up:

1. Flip the rocker switch on the back right of the robot (as seen below) to the 'On' position.

2. Connect Ava with the charging station (use the handle when pushing Ava).

3. Ava will power up on its own. You should see base LEDs flash white. When LED's are pulsating in white on alternating sides, Ava will be ready for configuration.

(i) Ava may not power on until it has been engaged with a powered charging station.

While Ava is booting up, the screen will be raised and lowered on its lift and the LEDs will become solid white. During this process you will see the following screen progressions.

| 'Power on' screen displays | > | Cisco loading screen displays | > | LEDs become solid white | > | Black screen lasting ~30 sec | > | Ava banner will display |

During setup, the final display will alternate between *Not connected to management server* and *Assistance required: Not localized on map* and Ava's LEDs will flash red. These faults will clear once Ava is connected to Wi-Fi and the Ava Cloud Service, as described in the next section.

Page 15   © 2024 Ava Robotics

Configuring Ava

Overview

Before configuration, you should have installed batteries and placed Ava on the charging station. The configuration process for Ava is as follows:

- Connect your laptop to Ava's internal network via an Ethernet cable
- Configure Ava to connect to your Wi-Fi Network and to the Ava Cloud Service
- Configure the video codec

> ⓘ Ava uses a static IP address 172.18.0.1. The vast majority of laptops will work without configuration. If this step fails for your laptop, please see Appendix D for how to configure a static IP address on your laptop.

Configure the Network & Ava Cloud Service

This section only describes the parts of the Ava Configuration Interface (ACI) required to connect Ava over your wireless network to the Ava Cloud Service. For details on other parts of the interface see *Appendix A: Ava Configuration Interface Guide*.

1. Remove the front half of Ava's trim ring by pulling it away from the robot.

2. Using an Ethernet cable, connect your laptop to the Ethernet access port. (Do not use the USB ports.)

3. Open the browser on your laptop and enter the address: http://172.18.0.1:82

> ⓘ Ava uses a static IP address os 172.18.0.1. The vast majority of laptops will work without configuration. If this step fails for your laptop, please look at Appendix D to configure a static IP address on your laptop.

4. Enter username admin, password avar0b0t and click **LOG IN**.

5. The ACI opens with a home page, where you can see overall robot status. By the end of the configuration process, all robot statuses will be green.

6. Click **Wi-Fi** on the left to bring up the Wi-Fi page.
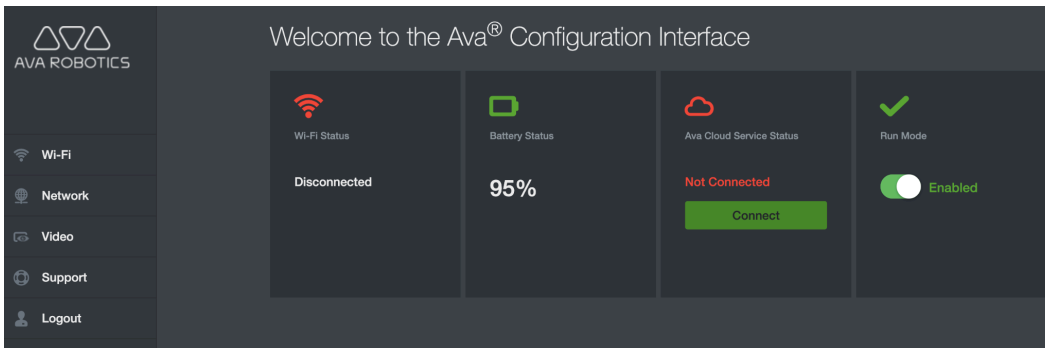
7. On the Wi-Fi page, click **Scan** to bring up a list of available networks.

8. Click **Connect** next to Ava's target network to bring up a parameters dialog.
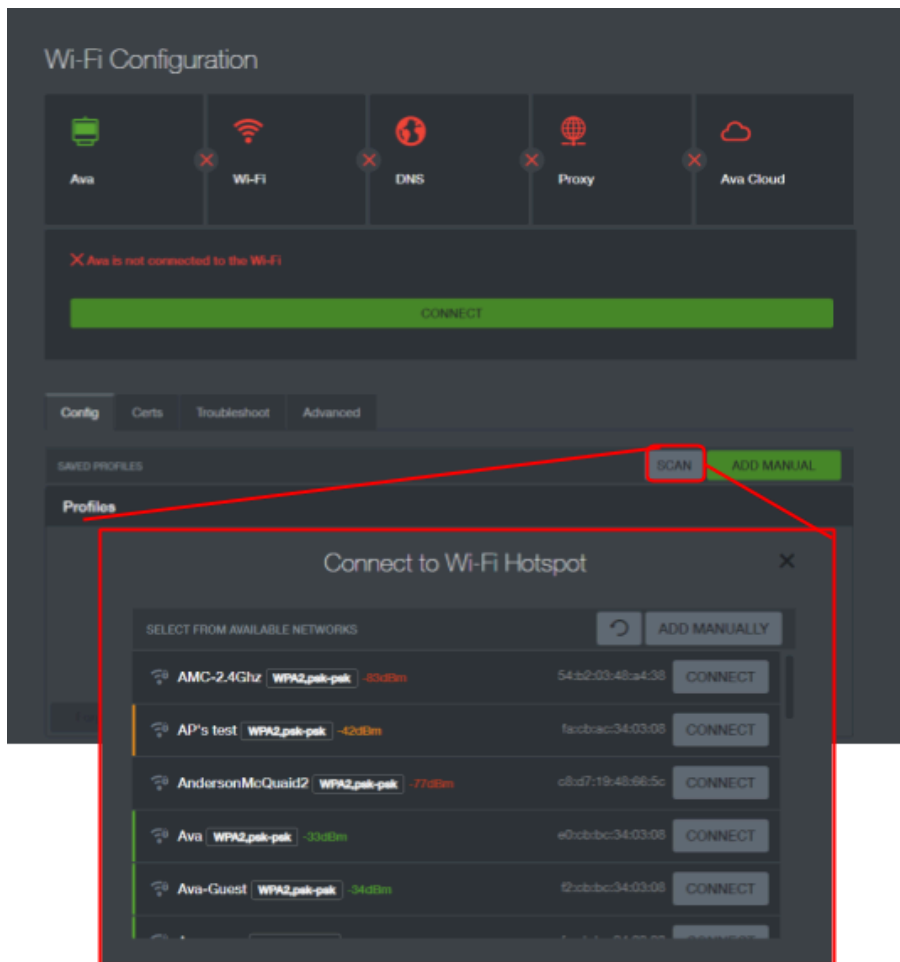
9. Enter the necessary configuration information and click **Connect**. Shown below is WPA2/PSK, see *Appendix A: Ava Configuration Interface Guide* for additional configuration information based on the authentication type and protocol.
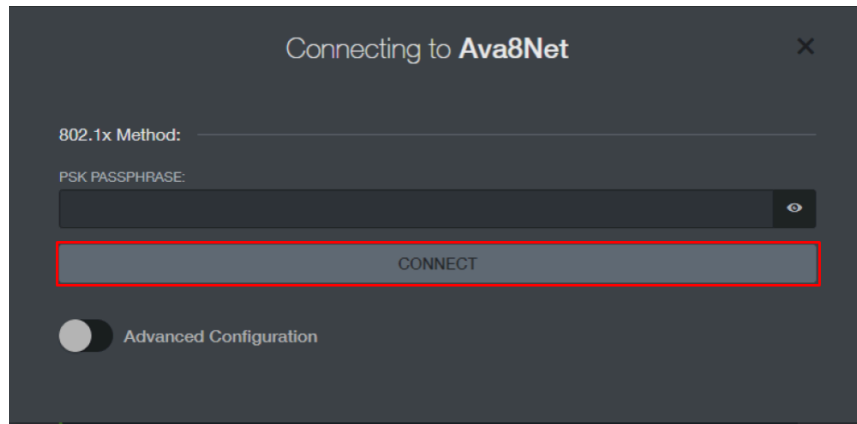
As the system is connecting, the icons will turn green and feedback on the configuration will appear. The parameters you entered are saved as a profile. Depending on the authentication type and wireless network used, it may take up to a minute to obtain the complete connection.
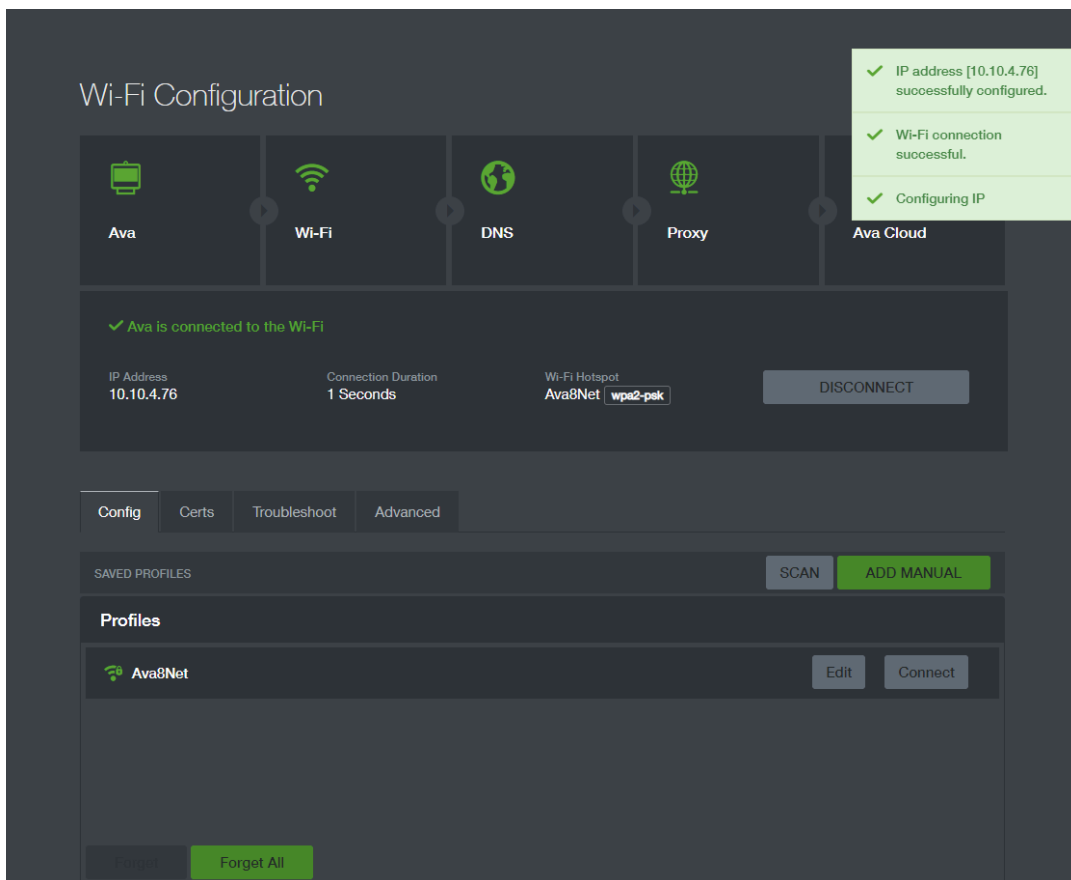
If you do not connect successfully, try clicking **Edit** next to the profile and checking and re-entering the parameters. If you still cannot connect, contact Ava support.

To delete a profile click **FORGET** at the end of the profile list. You may need to scroll down to see the control. Click **FORGET ALL** to delete all profiles.

10. Click **Network** to change to the Network page.
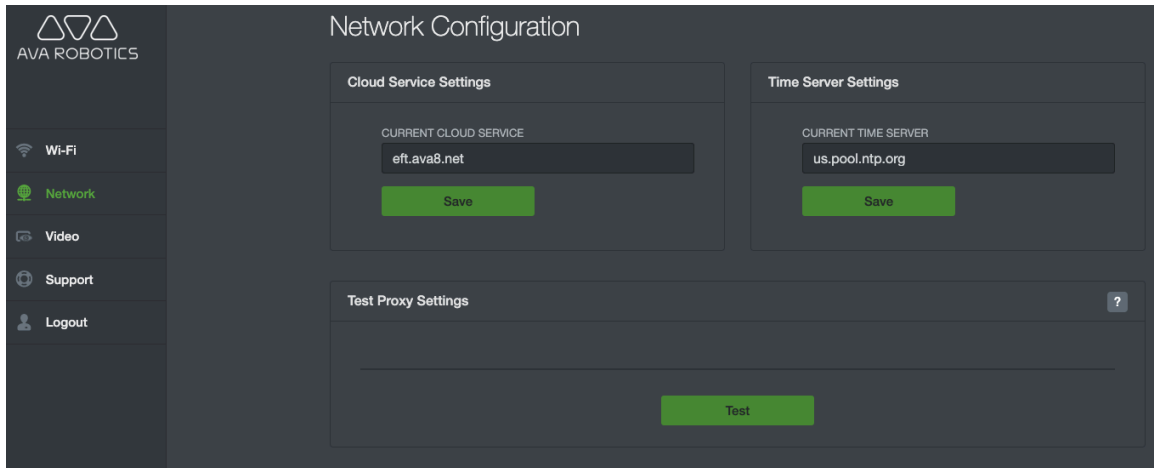
11. On the Network page, enter the name of the Ava Cloud Service instance you received from Ava Robotics (format usually "<ID string>.ava8.net") and click **Save**. You are informed that the update was successful.

12. Click **Wi-Fi** to return to the Wi-Fi page. All connection icons should now be green.
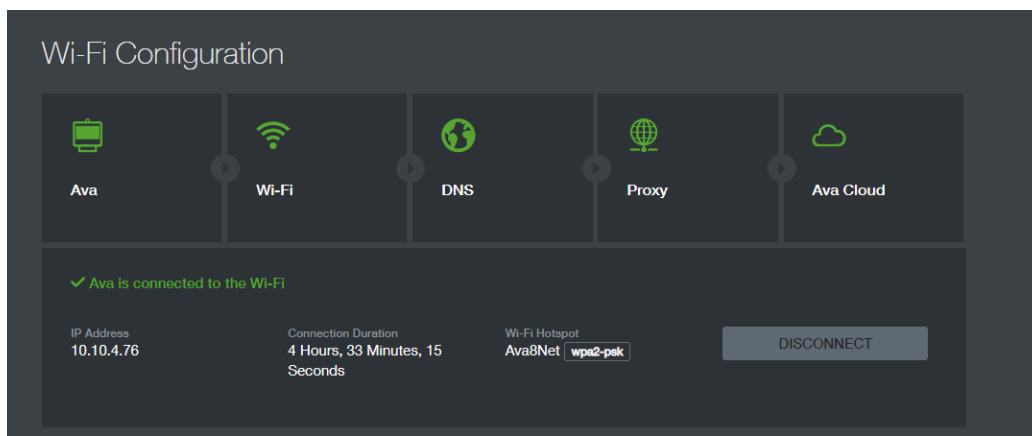
13. Disconnect the Ethernet cable from Ava and reinstall its front trim ring.

Configure the Video Codec

Ava Robots make and receive video calls via a video codec from a third-party manufacturer. Currently supported codecs are the Cisco Webex Codec Plus and the Cisco SX20.

If your robot came with the codec pre-installed, it will likely also have been pre-configured, in which case you can skip this section.

It is not in the scope of this document to cover administrator settings or other configurations at the call control server or Webex Control Hub. Feel free to reach out to your Ava representative if assistance beyond what is covered in this document is needed.

There are three areas in which codec settings and configurations are necessary for proper operation on an Ava:
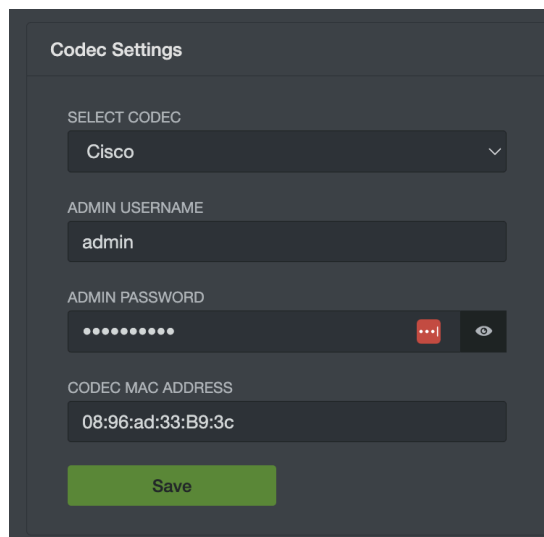
- An admin account must be configured in the codec. The Ava software will use this account to communicate with the codec for health status, call launching and volume control.
- Select settings must be applied so that the codec functions properly within Ava.
- A background png file can be applied that improves the visual effects on screen during call transitions and system power up.

The sections below detail the configurations necessary for each of the types of codecs supported. Depending on the state of the codec (out of box, being reconfigured, etc.) you will need to follow appropriate steps to get access to the codec to apply these configurations.

Connecting Ava to the Codec

For Ava to be able to communicate with the codec, please follow these steps:

1. On the codec, create a "local user" account with Admin and Integrator privileges.
2. On the Ava Configuration Interface, Video tab, select codec type, and enter username, password and the MAC address for the codec:

Note: if you need to have access to the codec's Web UI via Ava before you can have an

account on the codec created, then enter just the MAC address and restart Ava. After the restart, the codec web ui then will be available by browsing to http://172.18.0.50 while connected to Ava via ethernet cable, or remotely via the Ava Administrator Console. You can then come back to the Ava Configuration Interface to complete the configuration.

Applying Settings the Codec

The following are the settings that should be applied to the codec for proper operation when the codec is registered to Webex (for codecs registered to CUCM or VCS, please contact your Ava representative):

Setting	Value for SX20	Value for Webex Codec
Audio /SoundsAndAlerts, RingVolume	10	10
Conference / AutoAnswer, Mode	On	On
Audio / Ultrasound, MaxVolume	0	0
Video / Input, Connector 2, PresentationSelection	Desktop	Desktop
Video / Input, Connector 2, HDCP Mode	-	On
Video / Selfview, OnCall, Mode	Off	Off
Video / Output, Connector 1 Resolution	1920_1080_60	1920_1080_60
Experimental / SystemUnit, RunStartupWizard	False	False
UserInterface / OSD, Mode	Unobstructed	Unobstructed
Peripherals / Profile, Touch Panels	-	0
Peripherals / Profile, Cameras	0	0
UserInterface, NameAndSiteLabels Mode	Hidden	Hidden
Network Services, Websocket	Off	Off

These settings can be applied via the Restore Backup feature on the codec Web UI. Contact your Ava representative for a "backup file".

In addition to the above, there a few more settings that can be configured on a site-by-site basis for a better overall user experience:

- Audio, DefaultVolume: this is the volume to which the codec resets to at the start of each call. The default value is 50, and it is acceptable for most spaces. A value of 40 or 45 may be best for a quiet space, while 65 or 70 may be best for a loud hotel lobby or a factory
- Conference / DefaultCall, Rate (and others related to call rate): these settings can be configured to limit the bandwidth of video calls if the robot is at a site that is known to

have limited internet access

- Time, Zone: configuration of the time zone where the robot is physically located. Setting to the proper time zone assures that any software upgrades are applied off-hours and that call logs reflect local time.

Adding Background Graphics

A background png file can be applied that improves the visual effects on screen during call transitions and system power up. Ava recommends a file named AvaCodecBackground.png. Please contact your Ava representative for access to this file.

On a Webex Codec Plus, load this file as Wallpaper under Personalization, Wallpaper and Halfwake, Wallpaper. Make sure the setting "Dim background image" is disabled.

On an SX20, load this file under Personalization, Custom Wallpaper.

Mapping

Ava learns its operating area and is therefore able to navigate autonomously based on an internal map. This map is learned by Ava when it first arrives at its host site, and can be done in one of two versions: extended mapping or express mapping.

Extended mapping results in a comprehensive map of the entire operation space. This mapping type is performed by trained Service Engineers and can be done on-site or remotely, depending on the agreed deployment service model. Your project manager will work with Ava Robotics to confirm the plan to execute mapping.

Express mapping results in up to nine preset destinations. Ava can then only travel from the charging station to these destinations. Express mapping can only be completed onsite. This method is currently in beta so, if you're interested in express mapping please reach out to support@avarobotics.com and we will provide the appropriate instructions and support.

Finalizing Installation

Finishing an installation consists of the following activities:

- Final system verification
- Check in with project manager
- Clean up the work area

Final System Verification

Final system verification consists of a remote user initiating an ad hoc session with Ava through an Ava App, and Ava successfully initiating a video conference call with the remote user's video endpoint. The remote user in this step may be the installer.

During the video conference the following should be tested:

- Camera tilt and zoom
- Autonomous driving to a destination
- Manual driving for a short distance
- Peripheral cameras
- Audio (both on remote user and installer side)

Work Area Clean-Up

Work area clean-up involves both packing up all tools and materials that were used during installation and disposing of any packing materials. Finally, discuss with the Ava Project Manager if the crate is expected to be shipped back.

Appendix A: Ava Configuration Interface Guide

The Ava Configuration Interface (ACI) provides direct access to Ava's configuration parameters and provides feedback on Ava's current status. This guide provides additional detail not found in the configuration instructions found in the main part of this document.

Configuration typically occurs during installation, when the installer is connected by Ethernet cable to Ava. However, Ava administrators can also access the ACI through the Ava Cloud Service Administrator Console, as long as Ava is connected to the Cloud Service. This reference is intended for Ava administrators, as a supplement to the *Ava Administrator's Guide*.

ACI Home Page

The Ava Configuration Interface Home Page is designed to provide a snapshot of Ava's status.
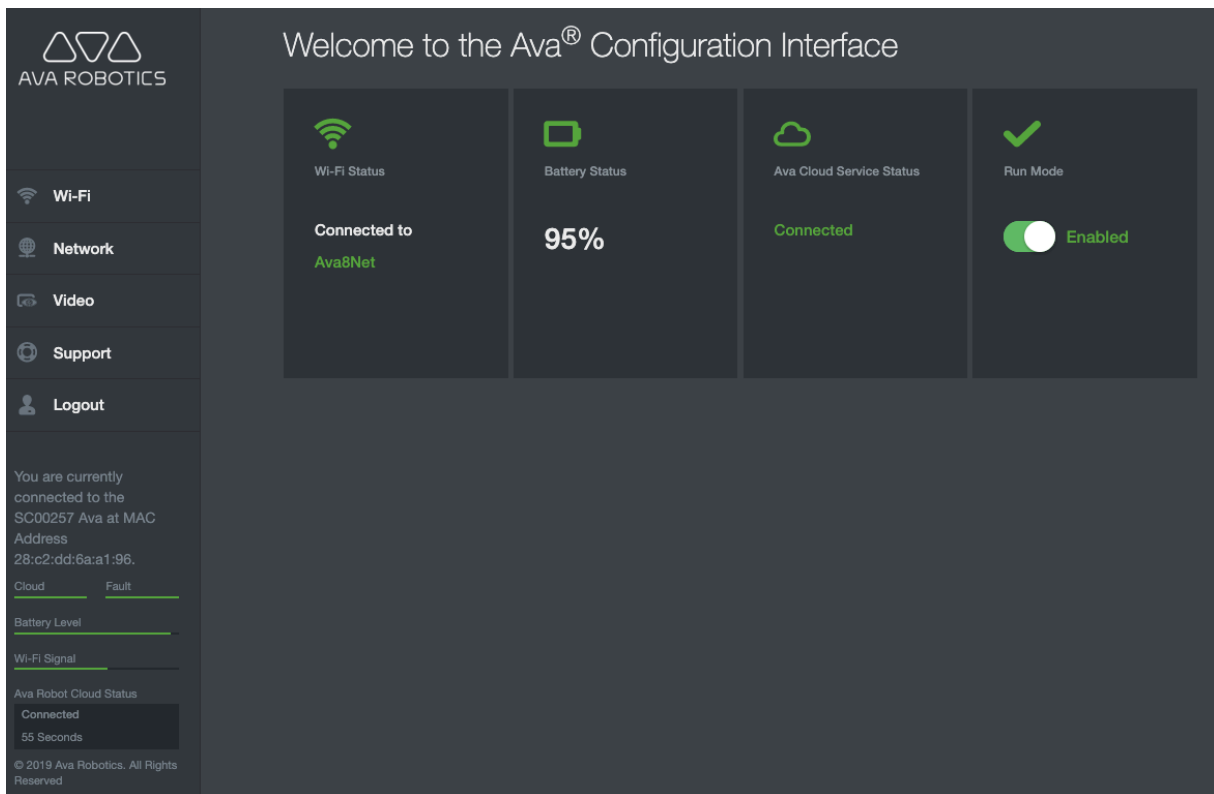
The ACI Home Page contains both information and control over Run mode. Hover over any of the items in the left navigation bar to see additional information.

- Ava identity: Ava ID and MAC address
- Wi-Fi Status: server name (banner) and signal strength
- Battery status: charge level
- Ava Cloud Service connection status and length of connection
- Ava system fault status

Run mode control (default: Enabled): most security on network interfaces. If disabled, the installer can connect to the ACI and the codec configuration interface wirelessly through the IP address assigned to the robot.
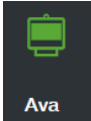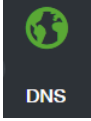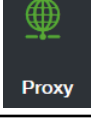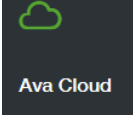
Wi-Fi Configuration

The Wi-Fi Configuration page provides functionality to connect an Ava to a wireless network. The screenshots below show the Wi-Fi Configuration page for a disconnected Ava and the page for an Ava that is completely connected through to the Ava Cloud Service.
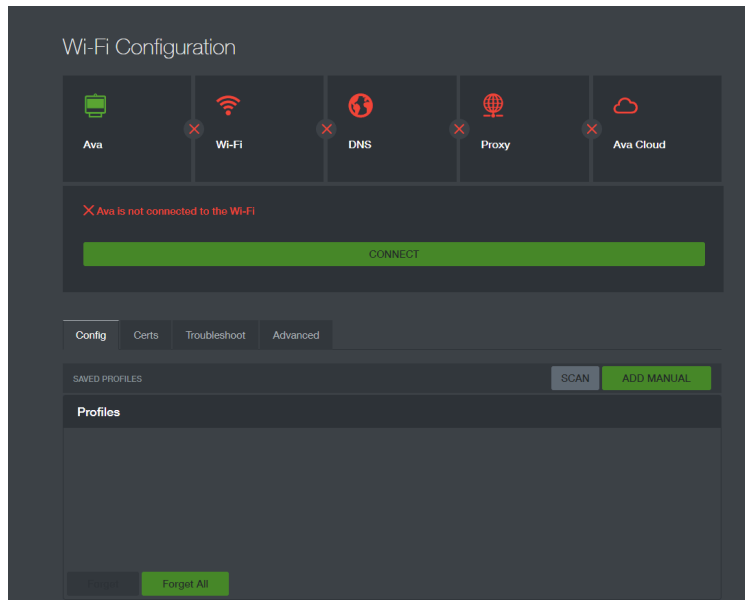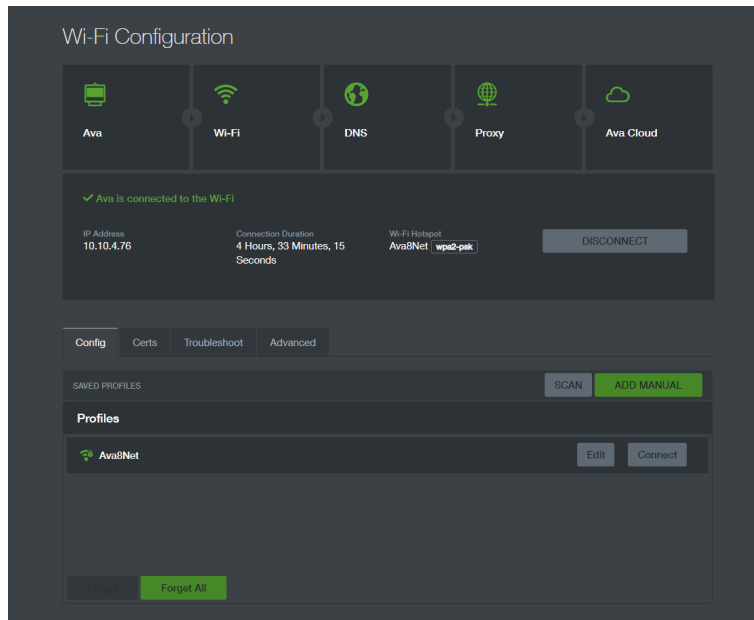
Typically the blocks across the top of the page remain green unless the underlying infrastructure supporting one of the connections changes. The table below shows what each block reports, and possible causes if a block is red and the previous blocks are green. Blocks downstream from a red block will always be red.

		Reports	If Red, Possible Cause
	Ava	Health of Ava's Wi-Fi and internal networking components	An internal problem with hardware.
	Wi-Fi	Connection to wireless infrastructure	Ava has not joined a wireless network. Out of range of signal.
	DNS	Connection to customer's network backbone (green = received an IP address)	Problem with corporate network.
	Proxy	Connection through the customer's firewall and to Internet	Local internet access is down. Proxy configuration (if applicable) is incorrect.
	Ava Cloud	Connection to the Ava Cloud Service	Cloud Service address not yet configured on Ava. Ava not provisioned on Cloud Service. Cloud Service not available.

When Ava is connected additional information is provided across the top of the Wi-Fi page, including connected IP address, connection duration, and Wi-Fi hotspot name and security settings.

Configuration parameters are saved as a wireless network profile once Ava successfully connects using those parameters. There may be a slight delay between connection and the profile being displayed in the list. This is extremely useful when testing Ava on a new network, as you can easily reconfigure Ava to connect to the old network by simply selecting the old profile and clicking **Connect**. You can also edit an existing profile. To delete a profile, click on it and click **Forget**. Clear all profiles using **Forget All**.

The Wi-Fi Configuration page has three tabs:

- **Config:** Used to select a wireless network and configure Ava to connect to it. Advanced parameters on the Config tab are used to configure Ava as a proxy client or assign it a static IP.
- **Certs:** See installed certificates and delete certificates. In this version of the software, new certificates are uploaded from the Config tab, not the Certs tab.
- **Troubleshoot:** Future functionality.

Config Tab

The Config tab below provides functionality to:

- Connect to a WLAN
- Configure Ava as a proxy client
- Configure Ava with a fixed IP address
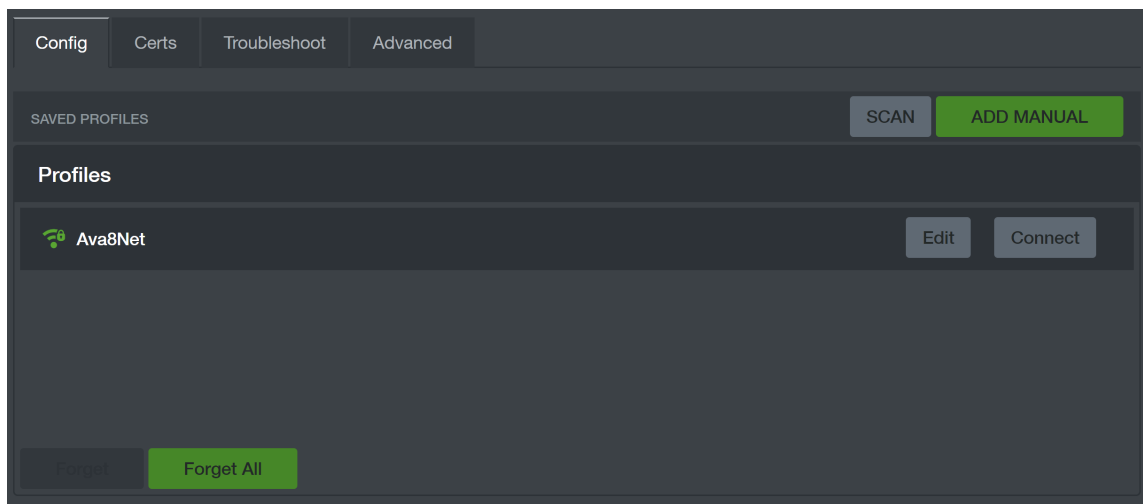
Proxy and Fixed IP parameters are configured by enabling Advanced Configuration on the Certs tab. See the *Advanced Configuration* section for more information about proxy and other parameters.

## Scan vs. Manual Configuration

When adding a new network, you can either:

- Scan to discover available networks, or
- If the network is not discoverable, enter network information manually.

In either case, the parameters depend on the type of network. These examples use PSK security, see the *802.1x Methods* section for more information about parameters for that security type.

To connect to a network available with Scan:

1. On the Config tab, click **Scan** to bring up a list of available networks.
2. Click **Connect** next to the target network to bring up a parameters dialog. Click ⟳ to refresh the list.
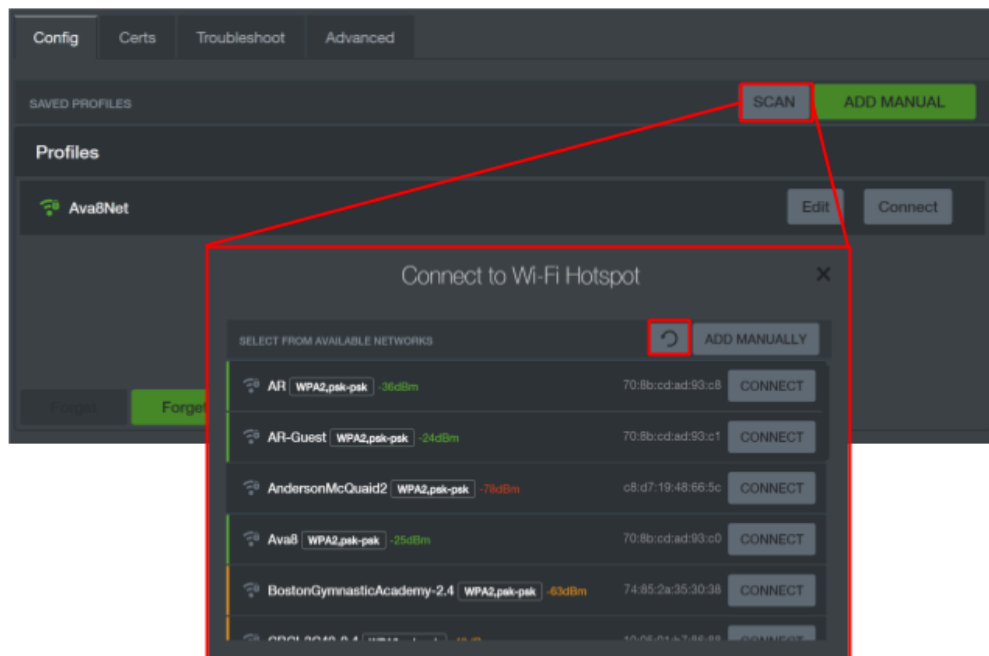
3. You are prompted for required parameters, based on the network authentication method. Enter the parameters and click **Connect**.

To add a network manually:

1. On the Config tab, click **Add Manual** to bring up a parameters dialog.
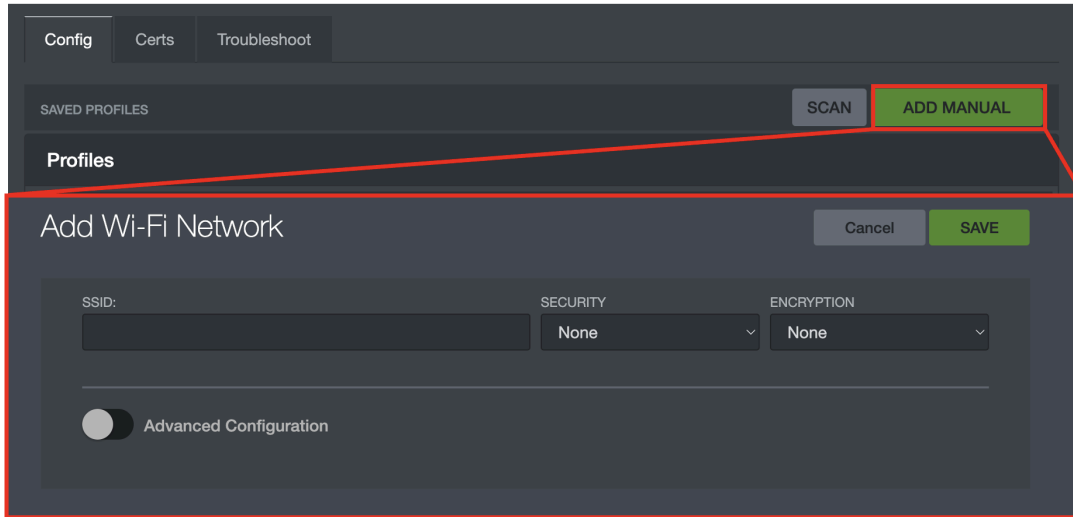
2. Enter the SSID.
3. Select a Security protocol: None, PSK, or 802.1x
4. Select an Encryption Protocol: None, AES, or TKIP
5. You are prompted for required parameters, based on the security and encryption you have selected. Enter the parameters and click **Save**. This SSID will be saved as a Profile. If you don't see it immediately, please refresh the browser page
6. From the Profiles box, click **Connect**

802.1x Methods (Beta)

802.1x authentication is currently in beta; please share your experience with Ava Support at support@avarobotics.com.

> (i) When connecting to a network requiring a certificate, the CA cert must be pre-installed, you cannot yet be prompted for it.

EAP-PEAP

Parameters:

- The username
- The password
- Optional: access to the CA certificate file if one is required (supported formats are pem, der, pkcs#7, and pkcs#12)

1. Make sure that PEAP is selected as the method.

2. Enter the username. Usernames may be case-sensitive.

3. Enter the password. Passwords are case-sensitive – click and hold [👁] to reveal.

4. If you are using a CA certificate:

    a. Click **INSTALLED** (**PROMPT** is reserved for future functionality).

    b. Click [+] at the end of the CA Cert field to open an upload dialog.

    c. Click inside the block, navigate to the file location, select the file, and click **Open**.
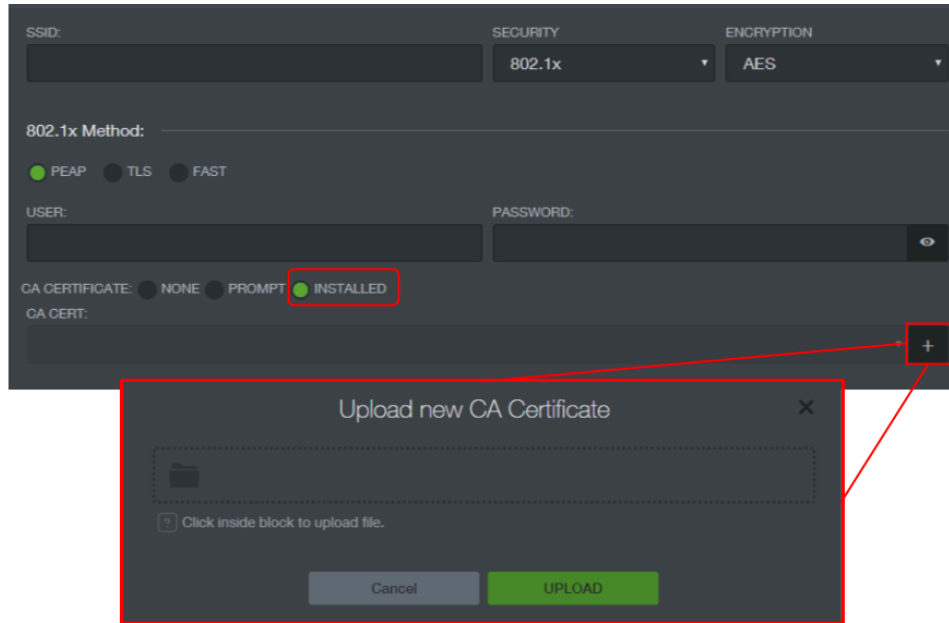
    d. Click **Upload**. The ACI displays a success indicator and then the name is displayed in the CA Cert field.

EAP-TLS

In EAP-TLS, a username is created for Ava, and then a certificate is generated for that identity. Ava uses the user certificate to prove its identity to the network.

Parameters:

- Network SSID (if hidden network)
- The username
- Access to the PKCS#12 (pfx) archive containing the user private key and certificate (and optionally containing a server certificate)
- The password with which the PKCS#12 archive is protected. If not available, contact the person who generated the certificate.

1. Make sure that TLS is selected as the method.

2. Enter the username and user cert.

3. Click [+] at the end of the User Cert field to open an upload dialog.

4. Click inside the block, navigate to file location, select the pfx file, and click **Open**.

5. Click **Upload**. The ACI displays a success indicator and then the name is displayed in the User Cert field.
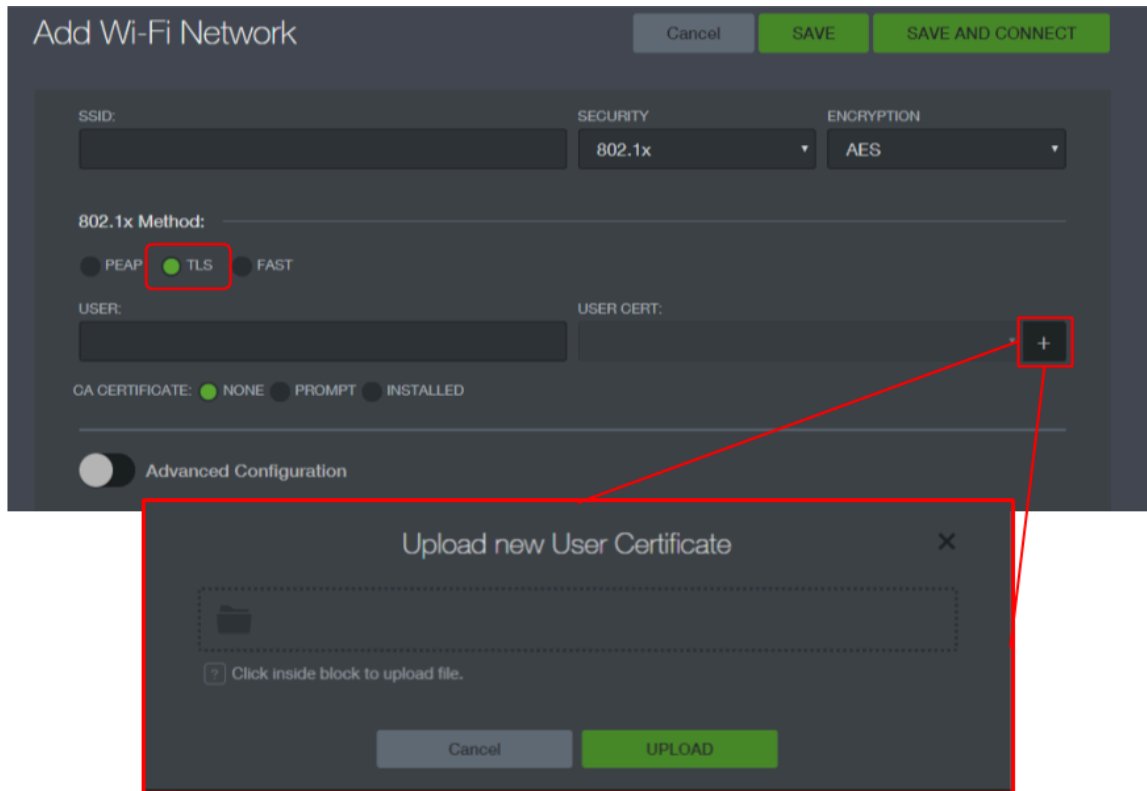
6. Enter the password for the PKCS#12 archive.

7. Leave CA Certificate set to **None**.

8. Hit **Save and Connect**. If Ava connects and then immediately disconnects, a proxy server needs to be added. If Ava remains connected, Wi-Fi setup is complete.

9. To add the proxy server, edit the Wi-Fi Profile. Open Advanced Settings and select **Automatic Configuration** as the proxy type. Type in the proxy URL and hit **Save and Connect**.

EAP-FAST

Parameters:

- Username
- Password

1. Make sure that FAST is selected as the method.
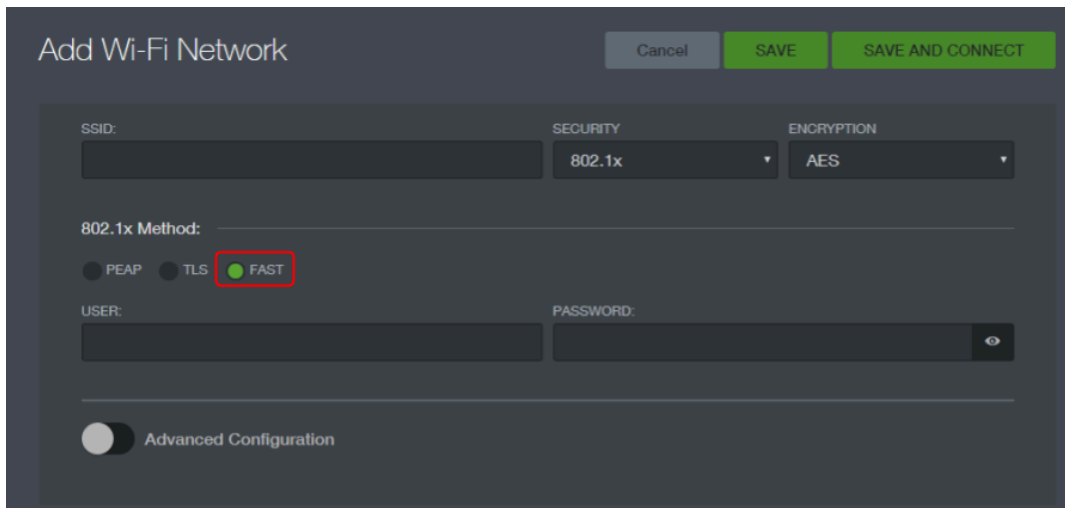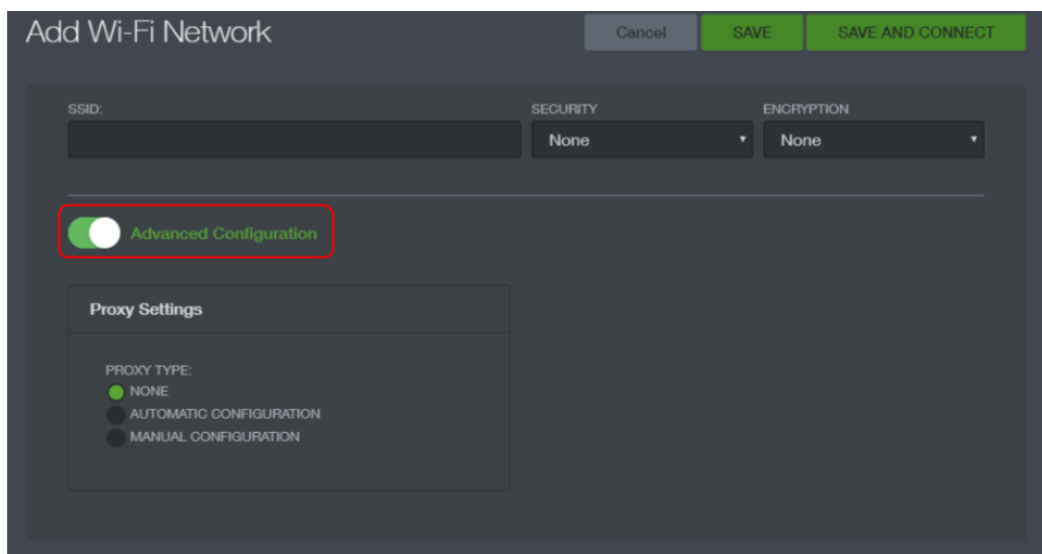

2. Enter the username.

3. Enter the password. Passwords are case-sensitive – click and hold [👁] to reveal.

Wi-Fi Advanced Configuration

To see the Advanced Configuration parameters, on the Config tab enable **Advanced Configuration**.

Proxy Configuration

If your infrastructure includes a proxy server and Ava has not been configured as a client, you will be able to connect Ava to the WLAN but still not be able to connect to the Ava Cloud Service.

> ⓘ If you enter proxy configuration parameters but still fail to connect to the Internet, proxy test functionality is available on the Network tab.

In order to configure Ava as a proxy client, determine which proxy configurations to use:
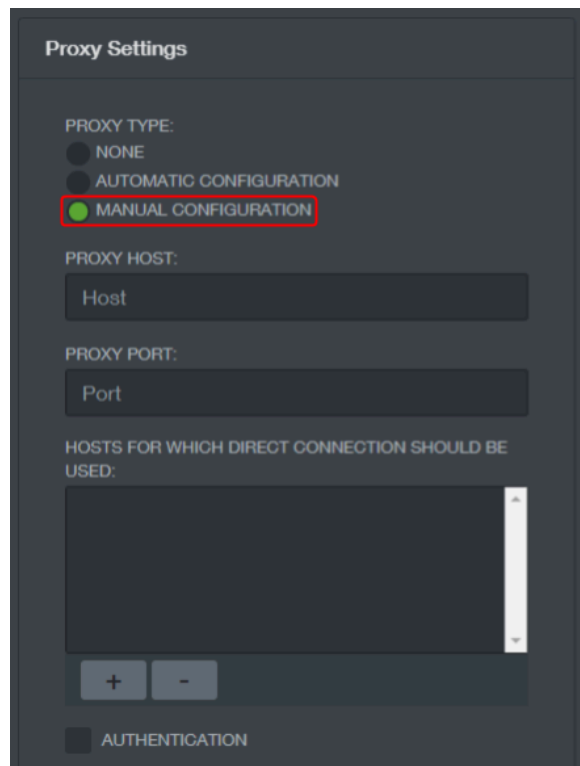
- Automatic proxy configuration using WPAD/DNS.
- Automatic proxy configuration using DNS but specifying the URL to the proxy configuration file.
- Manually configured HTTPS proxy, with exclusions for destination hosts and networks that should be accessed without a proxy server (certain Ava hosts are always specified).
- Optional username/password authentication.

The Ava supports a number of authentication protocols. Protocol selection is automatic. The proxy server presents a list of acceptable authentication protocols, and the robot chooses one and starts the handshake process.

For automatic configuration, optionally enter the URL to the proxy configuration file. Check **Use Authentication** if the proxy server requires a username and password.
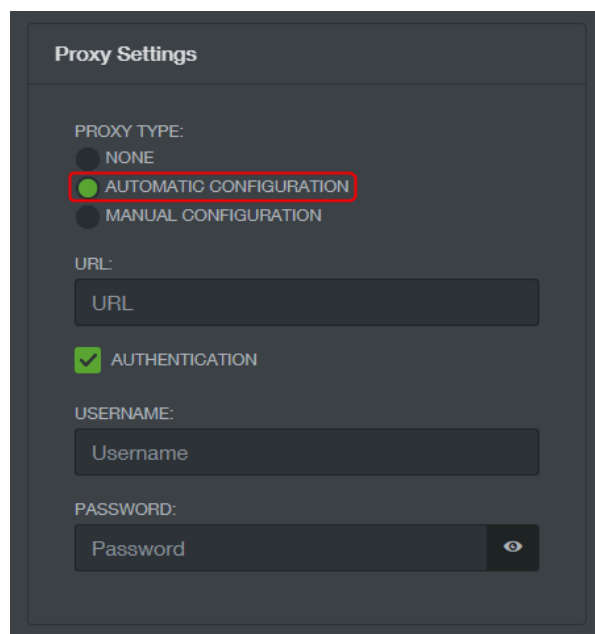
For manual configuration, enter at minimum the **Proxy Host** and **Proxy Port**. Optionally add hosts for which direct connection should be used. Check **Authentication** if the proxy server requires a username and password.

Certs Tab

Use the Cert tab to see and delete certificates.

> ⚠️ Only upload certificates from the Config tab during the configuration process, not from the Certs tab. Although the **Add New** functionality appears to work, the configuration process does not recognize certificates uploaded by this method.
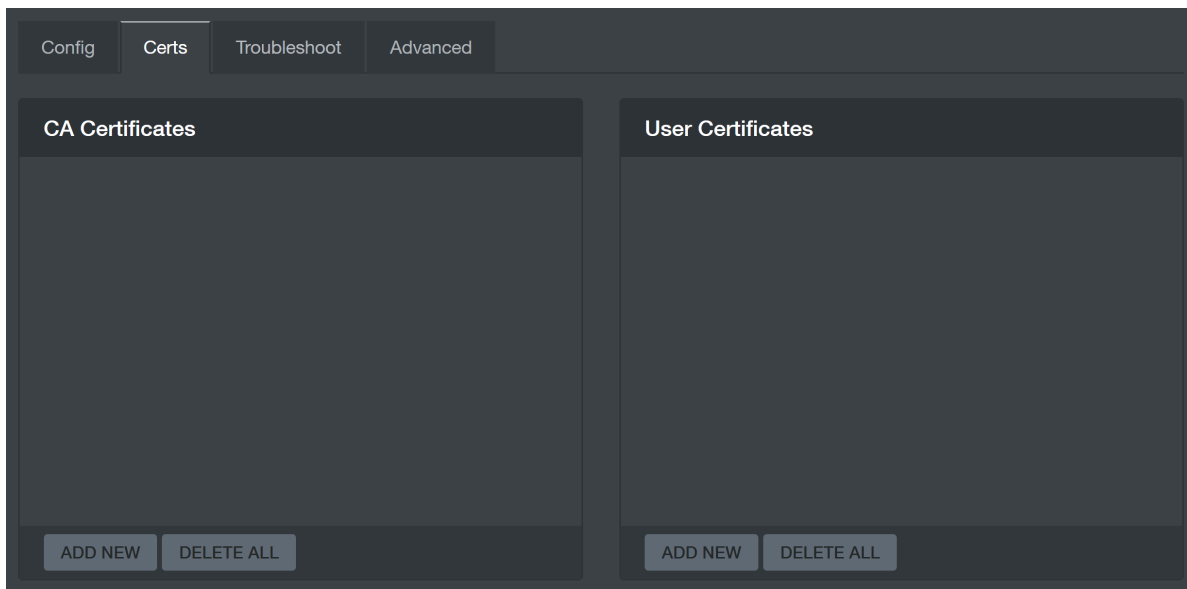
Hover over the certificate see additional function icons:

  Click to delete the certificate.

  Click to see certificate information.

Troubleshoot Tab

The Troubleshoot tab contains settings and logs that can be used in troubleshooting Ava.
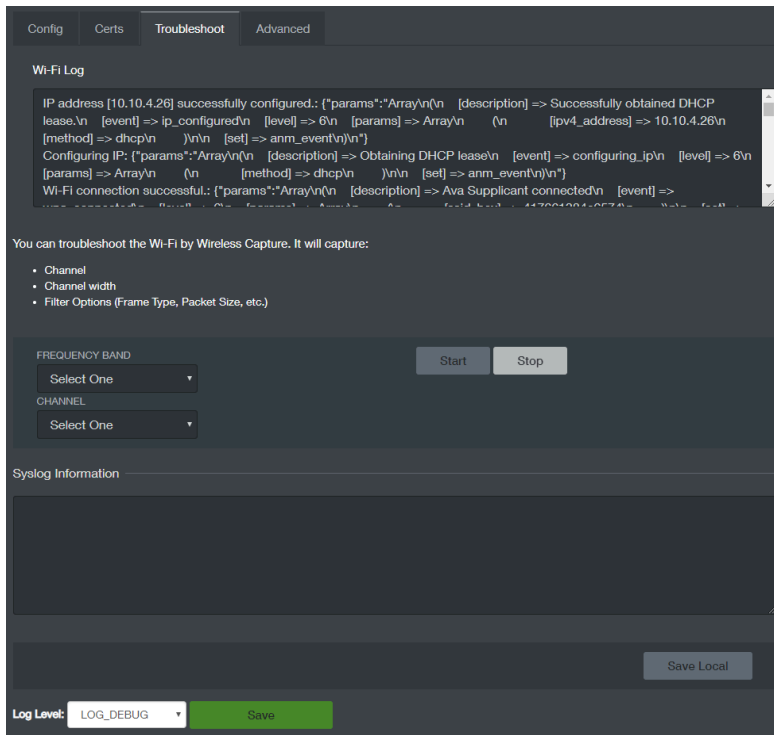
Wi-Fi and Syslog Information

Ava Support will contact you should Wi-Fi logs or Syslog Information be required.

Advanced Tab

The Advanced tab contains settings that affect Ava's roaming, or moving an established signal from one access point to another.

Note: this tab is not present in software configured for Hidden SSID (non-broadcast SSID).
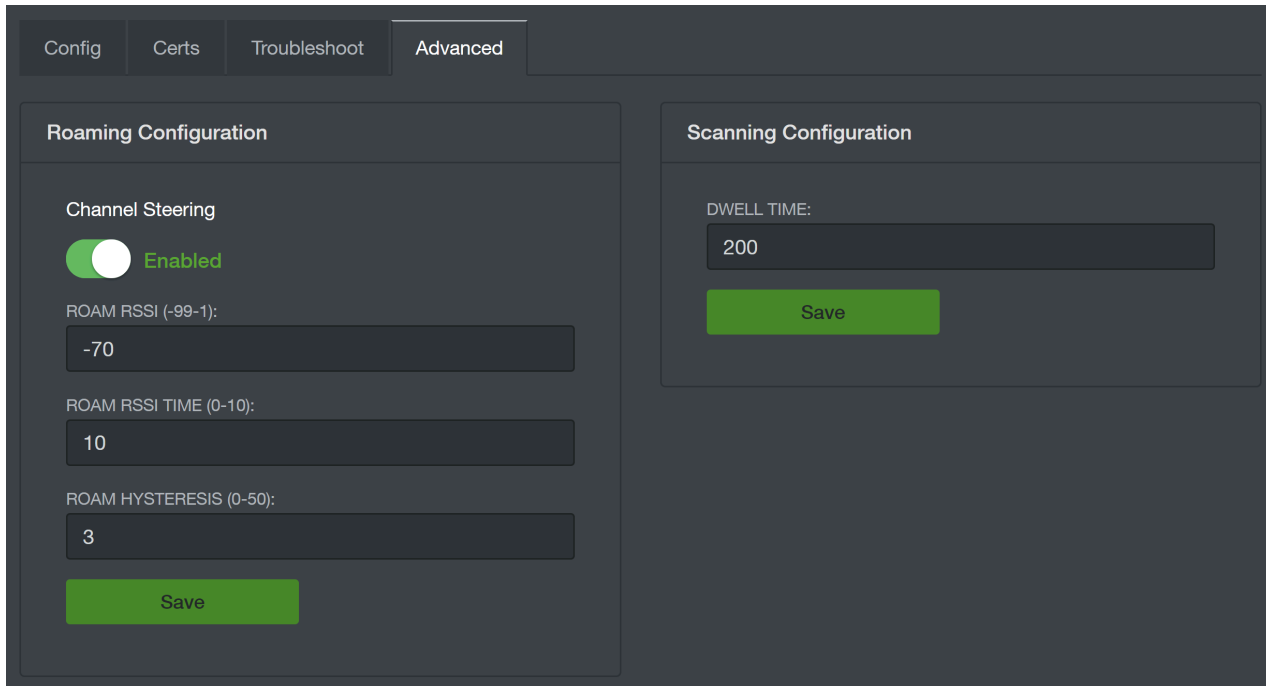
Roaming Configuration

Roaming causes a transient penalty in video quality, so this setting to alter Ava's response to the signal RSSI (Received Signal Strength Indicator) should not be used unless video deterioration or loss is experienced.

Channel Steering (default enabled): determines the order the Ava will use in trying to associate with an AP when roaming is triggered. Most APs operate in both 2.4 GHz and 5 GHz using a distinct BSSID (basic service set identifier) for each band. In general, communication at 5 GHz is preferred. The Ava constantly scans 5 GHz and 2.4 GHz BSSIDs, and ranks the results in a scan results table. With channel steering on, all 5 GHz BSSIDs are ranked higher than 2.4 GHz BSSIDs. With channel steering off, BSSIDs are ranked based only on RSSI, which may result in some 2.4 GHz BSSIDs being ranked higher than, and thus tried before, some 5 GHz BSSIDs. Disable only if you know that Ava is operating in an area where all 5 GHz BSSIDs have poor signal strength.

Roam RSSI (default -70 dBm): affects the aggressiveness of roaming. The higher the value (further from -90 dBm) the more often the roam. Bear in mind that roams could momentarily negatively affect the quality of the video stream. Temporarily set to a lower value if you are

configuring and testing Ava in an area with weak signal strength, to prevent roaming attempts from interfering with video testing. After changing, click **Save** under that setting's column.

Roam RSSI Time (default 10): Future functionality

Roam Hysteresis (default 3dB): Future functionality

Scanning Configuration

Dwell Time (default 200ms): The amount of time to spend on each channel. Increasing dwell time increases the overall scan time. In environments where APs are not sending beacon frames as often as expected and the Ava fails to discover APs known to be present, increasing dwell time can improve the probability of discovering the APs.

Network Configuration

The Network Configuration page provides the interface for changing the Ava Cloud Service address, the Time Server Settings, and also contains proxy test functionality. In general, only change these parameters when instructed by Ava Support.
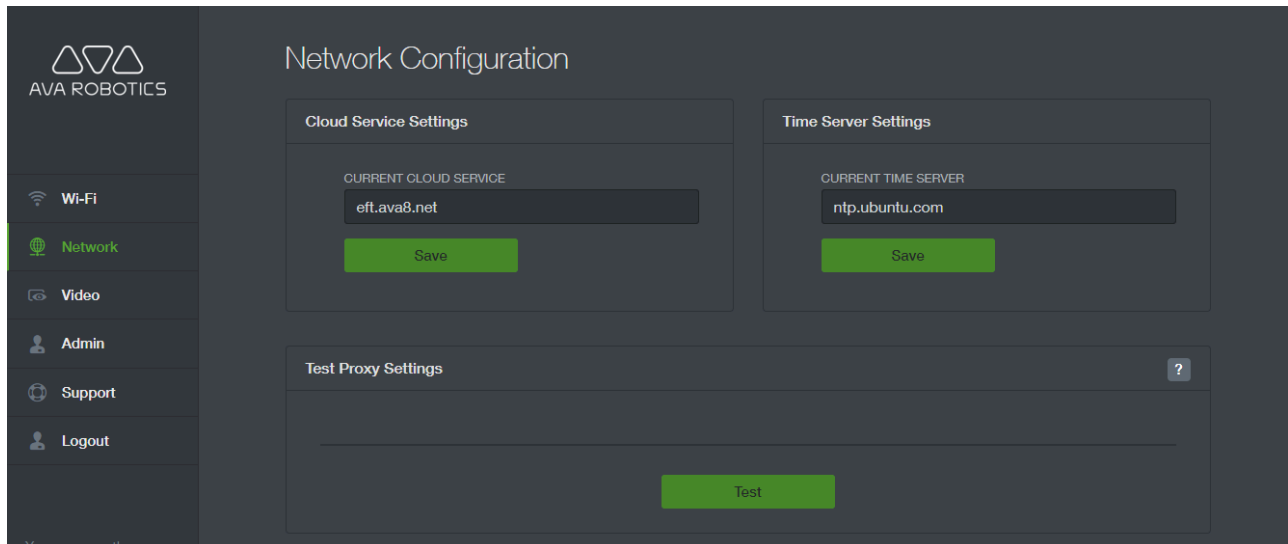
If you are changing more than one parameter, click **Save** for each one.

Cloud Service Settings

Enter the name of the Ava Cloud Service (provided by Ava Support) and click **Save**.

> ⓘ Ava must be connected to the Internet when changing this parameter. Configuration functionality checks for an Internet connection before storing the service name, and generates an error if one is not found.

Time Server Settings

Setting a time server allows the robot to accurately capture the time. This is useful when a user reports a problem so that Ava Support can correlate the user report with robot logs for troubleshooting.

Ava is shipped with a default time server of ntp.ubuntu.com or us.pool.ntp.org. Please make sure to configure Ava for an NTP server that is accessible at the installation site.

Changes take effect after a restart.

Test Proxy Settings

Do not use this functionality unless instructed by Ava Support.

Video Configuration

The Video Configuration page changes settings on the Ava base, not on the video codec. Use the codec configuration interface to change the codec configuration.
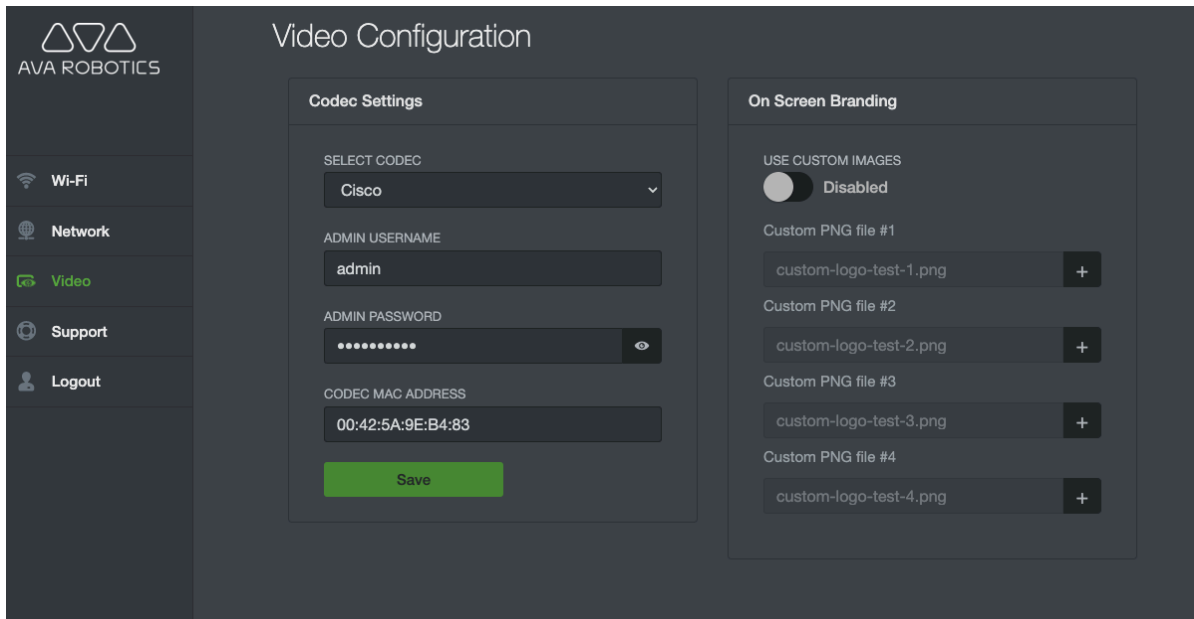
Codec Settings

The Video Configuration page is used to configure the video codec administrator username and password, as well as MAC address, that Ava should use to control the video codec.

Currently, supported codecs are Cisco SX20s and RoomKit Codec Plus. Select "Cisco" in drop-down for either one.

For Ava Robots that have a codec managed by Ava Support, the username and password will be provided by Ava Robotics. If the codec is being managed by a site IT administrator, use the codec default account information to access the configuration page and set the desired username and password. If any changes are made, update them to match in the respective area of the ACI and click **Save** after changing any value.

On Screen Branding

Ava displays on screen branding when not being used in a session. The default branding screens are of the Ava Robotics logo. To create custom on screen branding, four 1920x1080 PNG files are needed. Instructions on how to check the dimensions of an image are at the

bottom of this section. These four files will be played in a loop. Please make sure the file names of the uploaded images contain no spaces. You may use dashes or underscores to separate words.

To customize the branding:

1. Click + at the end of each of the four Custom PNG file fields to open an upload dialog.

2. Click inside the block, navigate to file location, select the PNG file, and click **Open**.

3. Click **Upload**. The ACI displays a success indicator and then the name is displayed in the Custom PNG file field.
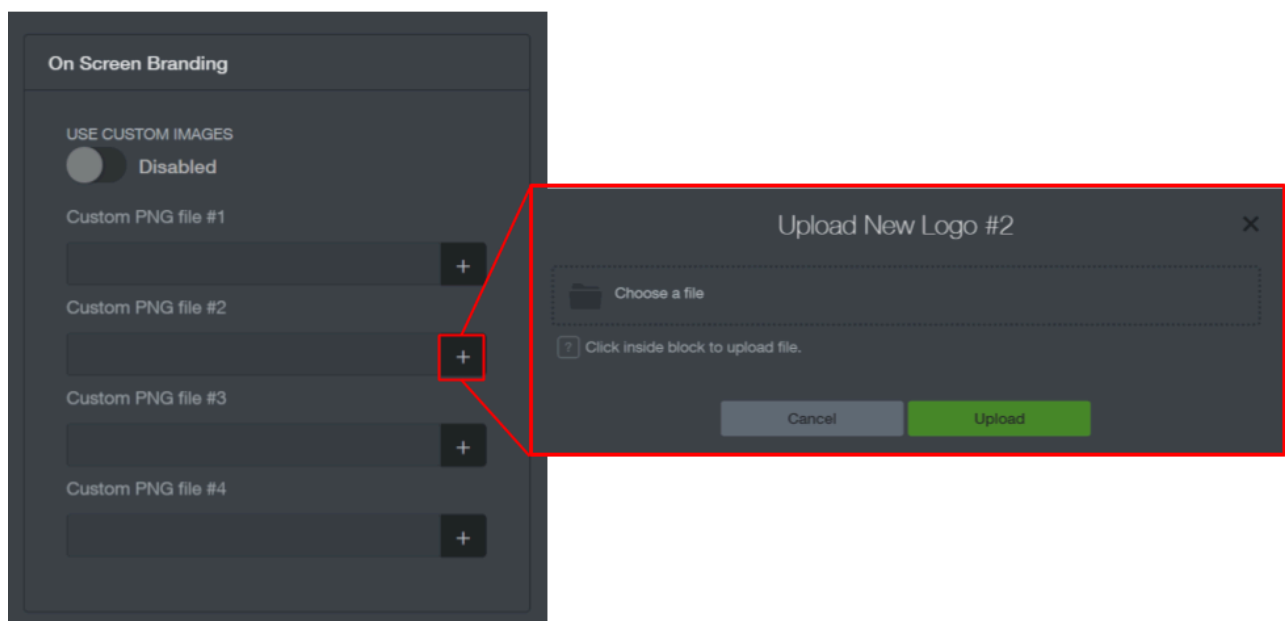
4. Repeat steps 1-3 to upload the 4 PNG files.

5. Click **Upload**. The ACI displays a success indicator and then the name is displayed in the Custom PNG file field.

6. Toggle the switch under Use Custom Images to **Enable**. The toggle will only be usable once **all four** image files have been uploaded.
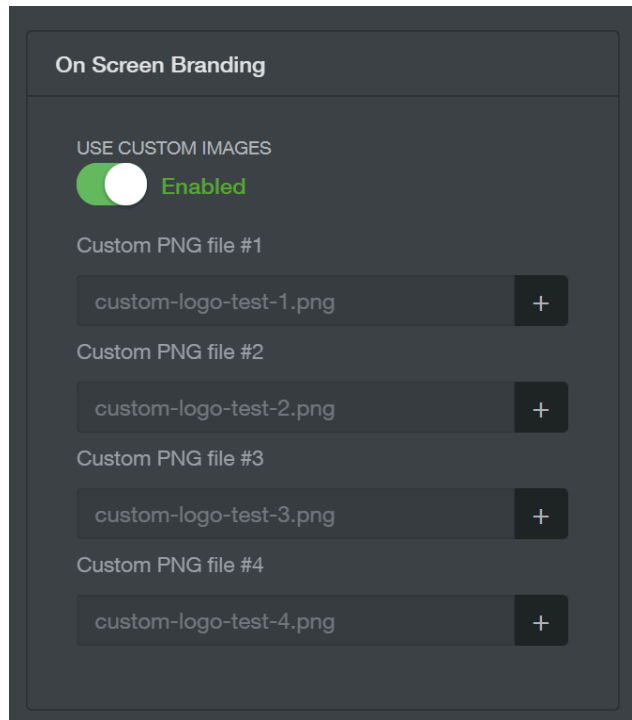
To disable custom on screen branding and enact the standard Ava Robotics branding, toggle the switch to **Disable**.

To check image dimensions:

- On PC, right click on the file and choose "Properties" then "Details". Image size/dimensions should be one of the first attributes on the window that pops up.
- On macOS, right click on the image file and click "Get Info". Then navigate to the "More Info" tab where the size is described in the "Dimensions:" row.

Support

The Support page displays version information for both software and firmware components, as well as presents functions that should be used only as directed by Ava Support.
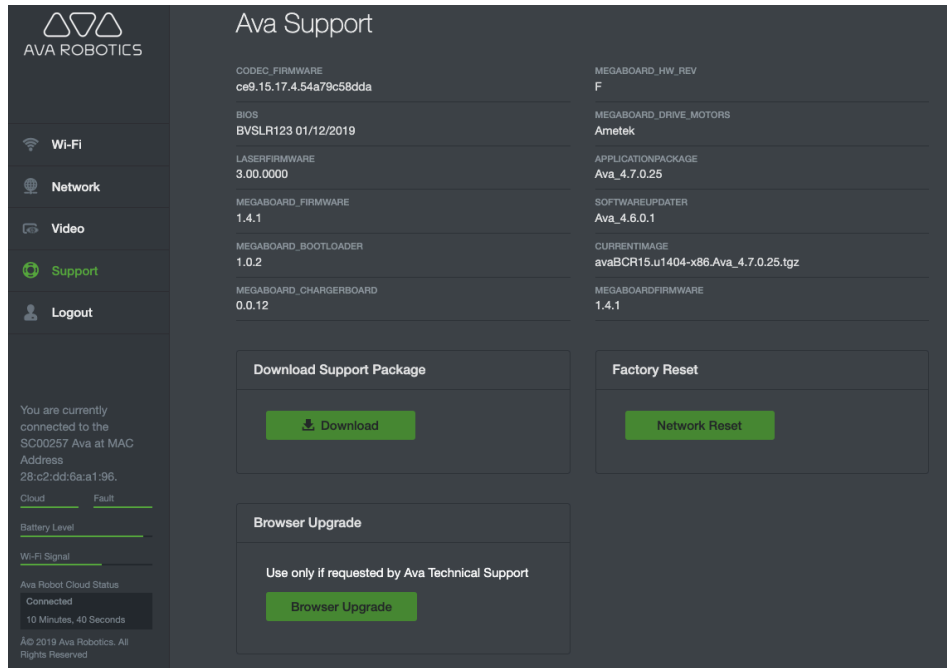
Download Support Package

Generates a support package and then downloads a file named *support.zip* to your computer's download folder. The zip file contains various tables and logs useful for Ava Support to debug problems. Ava Support may ask you to obtain this file if Ava is not connected to the Cloud Service.

Network Reset

Selecting this will reset all configured networksettings. Do not use this functionality unless instructed by Ava Support.

Browser Upgrade

Ava uses Chromium browser to display robot screens. On occasion, this browser will need to be upgraded. Do not use this functionality unless instructed by Ava Support.

Appendix B: Known Issues and Limitations

This section is intended to list known issues with installation and configuration.

General Configuration:

- For the custom branding feature, avoid using special characters (e.g. &) in the file name.

Networking and Wi-Fi:

- Ava does not support WEP wireless security. A network which is using WEP security may show up as open when scanning for networks.
- Ava can have trouble enrolling to SSIDs which contain the character apostrophe (').
- For 802.1x username and password, Ava does not support use of character "&" (e.g. "pass&word"). Please ask the network administrator to change it.
- For codec username and passwords, the character "&" causes problems. Please avoid.

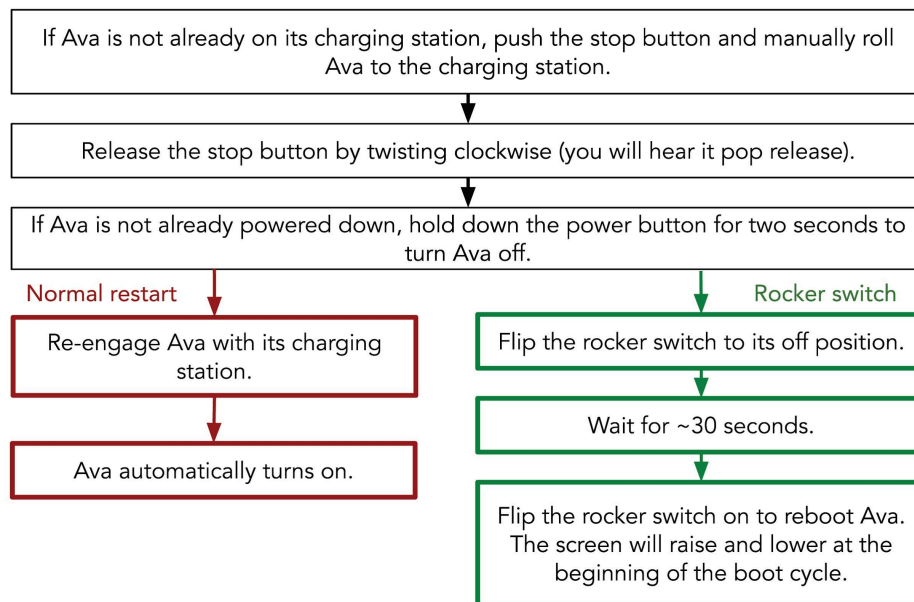Health faults and mechanical actuations:

- If the stop button is pressed while the stand/sit function is in motion, the remote user will be unable to use the stand/sit function until a new session is started after the robot returns to the charging station.

Appendix C: Tips and Troubleshooting

This section is intended to help you quickly solve simple problems. Another source of useful information is the Ava Caretaker Guide.

Rebooting Ava

Some problems in the field can be resolved by rebooting Ava. Do not reboot Ava unless you are asked to. To reboot Ava follow the specified restart type:

```
┌─────────────────────────────────────────────────────────────┐
│ If Ava is not already on its charging station, push the stop │
│ button and manually roll Ava to the charging station.        │
└─────────────────────────────────────────────────────────────┘
                              │
┌─────────────────────────────────────────────────────────────┐
│ Release the stop button by twisting clockwise (you will hear │
│ it pop release).                                             │
└─────────────────────────────────────────────────────────────┘
                              │
┌─────────────────────────────────────────────────────────────┐
│ If Ava is not already powered down, hold down the power      │
│ button for two seconds to turn Ava off.                      │
└─────────────────────────────────────────────────────────────┘
```

Normal restart

- Re-engage Ava with its charging station.
- Ava automatically turns on.

Rocker switch

- Flip the rocker switch to its off position.
- Wait for ~30 seconds.
- Flip the rocker switch on to reboot Ava. The screen will raise and lower at the beginning of the boot cycle.

While the system is rebooting:

'Power on' screen displays → Cisco loading screen displays → LEDs become solid white → Black screen lasting ~30 sec → Ava banner will display
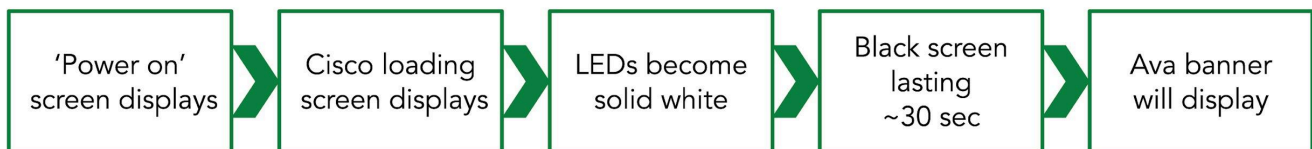
During the reboot you will see transitional screens briefly displayed. If you see these screens, no action is required, the system will complete its reboot in under 3 minutes.

Identifying Key Information About Your Ava

Identifying Ava's Serial Number and MAC Address

You can find your robot's serial number in a label located under the rear collar. The collar is held by magnets. To remove the collar, apply pressure with both hands and pull it out.

If you have access to the Ava Configuration Interface, you can find the serial number in the left panel, in bottom right.

Identifying the IP Address Currently Assigned to the Ava

Open the Ava Configuration Interface, and browse to the Wi-Fi page. The IP address will be in the main panel on top of the page.

Local Symptoms

> **CAUTION** If Ava is smoking or smells bad, immediately power it down with the power button and flip the rocker switch off. If it is engaged with the charging station, manually pull it off. Call Ava Support.

Ava Display Reads "Connection Issues: Not connected to management server"

The display may alternate with "Assistance Required: Not Localized on Map." This problem can have a variety of causes that generally fall into one or more of four areas:

1. A problem internal to the robot, for example the WGB has failed in some way.
2. A problem with the environment, for example the wireless network is down or one part of the site has weak access.
3. A problem with the handshaking or authentication, for example a certificate or a password expires.
4. A problem with the Ava Cloud Service, for example the server is down.

When the installation was designed, the charging station was located in an area with strong wireless connectivity. The charging station can therefore be used as a testing base.

1. Have the Caretaker push the robot back to its charging station and verify that the robot is powered on. Did the problem clear?

   Yes: To verify that the problem is solved, have a remote user drive the robot to a

destination, then end the session. Verify that the robot returns to the charging station. If the fault does not recur, the problem is solved. If the fault recurs, contact Technical Support.
No: Contact Technical Support.

Before contacting Ava Support, you may wish to review the following:

- Verify that Ava's wireless network is up.
- Verify that nothing in the wireless handshaking/authentication chain has changed. Has a password or a certificate expired?
- Verify that the Ava Cloud Service is available by trying to connect through the IT Administrator Console. If unavailable, Cloud Service may be temporarily down.
- If the robot is connected at its charging station, but loses connectivity elsewhere, determine if the problem happens reproducibly at the same location.

Ava Display Reads "Assistance Required: Map not initialized"

This message indicated that the Ava Support team has not yet prepared the robot navigating your space. Contact your project manager or Ava Support.

Ava Display Reads "Assistance Required: Please connect to charging station"

If Ava is off its charging station and displaying this message, Ava probably was restarted off-dock, or got lost in its map.

If Ava is found in this scenario, locate Ava, press the emergency stop button on the back of the robot, and manually push Ava back to the charging station. Once in contact with the charging station, release the emergency stop by twisting the knob clockwise (you will hear it pop release). Wait a few seconds. Did the message go away?

Yes: The immediate problem is solved. If the problem recurs, contact Ava Support.
No: Contact Ava Support.

Ava Display Reads "Assistance Required: Disabled due to a Hardware Fault"

Should Ava have a hardware fault, information on which components have faulted can be found in the Administrator Console. If Ava is in this fault state, contact Ava Support and provide the module reporting the fault from the IT Administrator's Console. You may be asked to reboot the robot before Ava Support goes into a more detailed analysis of the problem.

Follow the instructions in *Rebooting Ava* if a reboot is requested.

Ava Appears to be Without Power

Diagnosing this problem requires determining if Ava's batteries are failing to charge, and if so, if that problem is internal to Ava or with the charging station.

1. Is Ava's charging station plugged into a power outlet?
   Yes: Proceed to 2.
   No: Plug the charging station in and engage Ava with the charging station. Ava should power on. Proceed to 3.

2. Is Ava connected to the charging station and powered on?
   Yes: Contact Ava Support.
   No: Have the Caretaker engage Ava with its charging station and make sure the rocker switch is on. Ava should power on. Proceed to 3.

3. Once Ava appears to have power, after an hour verify that Ava drives to a destination and returns.
   Yes: Ava had run out of power. Problem is solved.
   No: Ava's batteries are failing to charge. Contact Ava Support.

Ava Isn't Connecting to a Saved Network

When changing networks, if Ava isn't connected to a saved profile select the network SSID and click **Forget**. Next, click **Scan**, select the SSID, and enter the password/authentication information. Ava should connect. If Ava does not connect, check with IT to see if the network password has been changed before contacting Ava Support.

Ava's Screen Display Isn't Functioning Properly

Symptom: Ava's default screens are not displaying as they normally do or Ava's screen may be all black.

Check that all codec settings are configured properly. If any settings weren't configured as listed, update the setting. If you are unsure if the codec has been reset to factory settings prior to installation, do a factory reset to enable the default settings. Post rest, follow the instructions for registration and configuration.

## Unable to Reach the Codec Web Interface During Installation

Debugging procedure:

I. Ensure that the MAC address set in the ACI is correct. If incorrect, follow the configuration settings to update the MAC address.

II. Power Ava down for one minute so that Ava is allowed time to re-assign the expected internal IP address to the codec.

III. If you are unsure if the codec has been reset to factory settings prior to installation, do a factory reset. Post rest, follow the instructions for configuring the codec again.

# Appendix D: Laptop Static IP Address Configuration

1. Open Wi-Fi Settings and scroll down to **Change Adapter Options**. (This can also be reached through Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Settings).
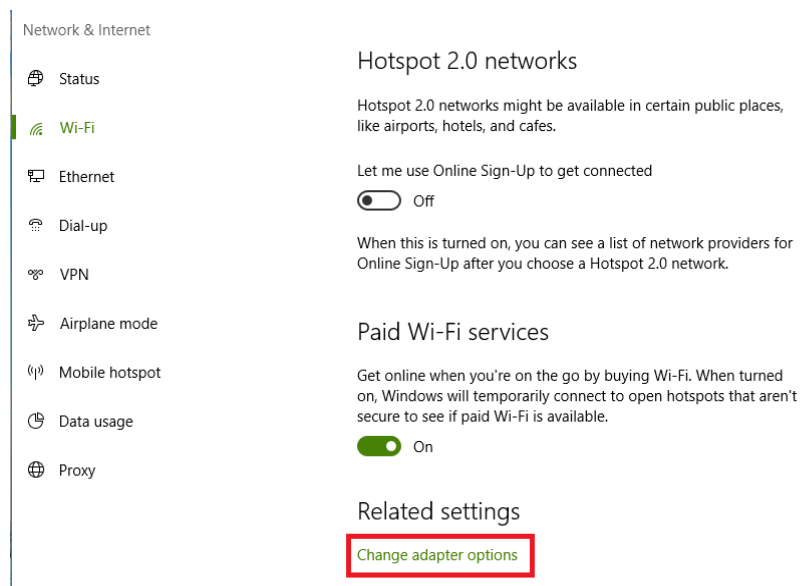

2. In the resulting window, double-click **Local Area Connection**. You will probably have more than one Local Area Connection. Open the first one in the list.
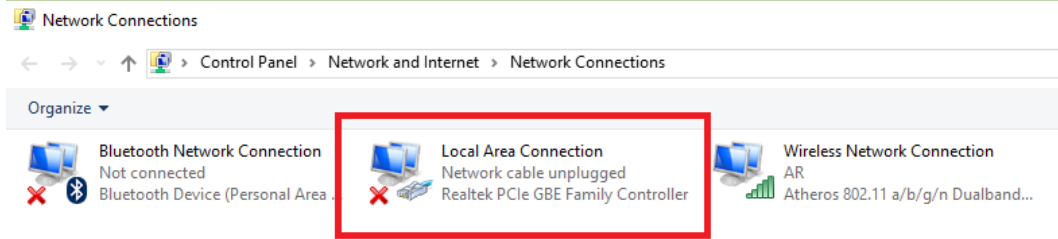
3. In the Local Area Connection window, click **Properties**.

4. In the Properties window click **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties**.
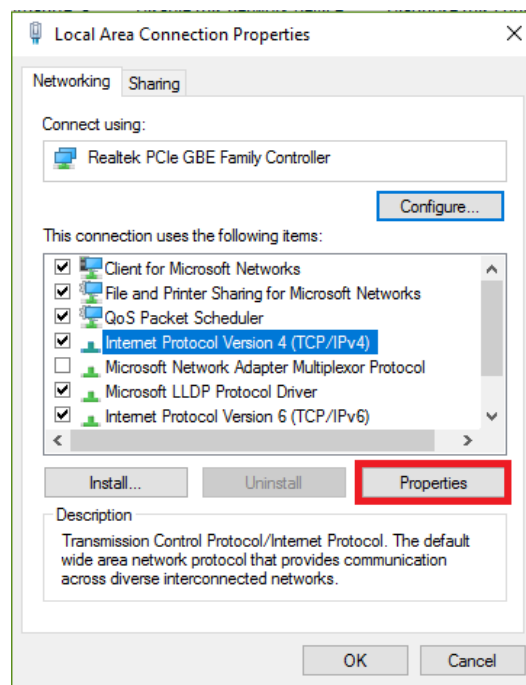
5. In the Properties window, click **Use the following IP address:** and enter 172.18.0.2. Click on the subnet mask field. Change the value to 255.255.255.0. Click **OK**.
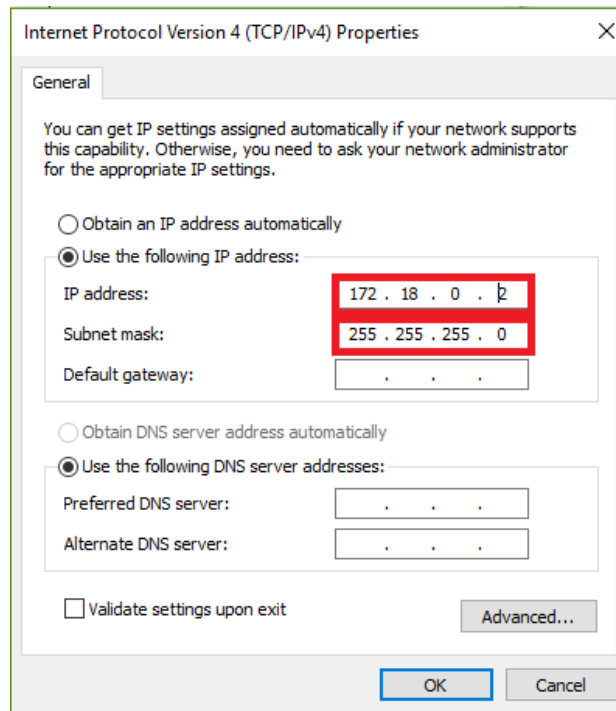
6. Click **Close** in the Local Area Connection Properties window.

7. Click **Close** in the Local Area Connection window.