Hubitat Elevation® Z-Wave™ User Manual

Hubitat Elevation® is a Z-Wave Plus™ central static controller which may be included in any Z-Wave™ network to operate Z-Wave certified devices from other manufacturers in your home. Regardless of vendor, all AC mains powered nodes within the network will act as repeaters to increase reliability of the network.

A Z-Wave repeating device is a non-battery-operated Z-Wave device within the network. Battery powered Z-Wave devices do not repeat signals, and are referred to as end devices, whereas Z-Wave repeating devices are referred to as routers. When a security-enabled Z-Wave device is added to the Hubitat Elevation® network, its communication will utilize 128-bit AES secure encryption.

About Z-Wave™ technology

The Z-Wave™ protocol is a low powered wireless interoperable RF communications technology designed specifically for control, monitoring and status of residential and light commercial Internet of Things devices. It supports full mesh networking and may be used with or without a coordinator node (Hub). Z-Wave operates in the sub-1GHz band and is impervious to interference from Wi-Fi and other wireless technologies in the 2.4 GHz range such as Bluetooth® and ZigBee.

For a more information about Z-Wave technology, please visit www.z-wave.com

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Supported Command Classes

This device functions as a static controller based on the Z-Wave Controller Library. It controls devices using the following Z-Wave Command Classes.

Command Classes		Secure Command Classes	
ZWAVEPLUS_INFO	v2	VERSION	v3
TRANSPORT_SERVICE	v1	NETWORK_MANAGEMENT_INCLUSION	v3
CRC_16_ENCAP	v1	NETWORK_MANAGEMENT_PROXY	v2
APPLICATION_STATUS	v1	NETWORK_MANAGEMENT_BASIC	v2
SUPERVISION	v1	POWERLEVEL	v1
INCLUSION_CONTROLLER	v1	MANUFACTURER_SPECIFIC	v2
TIME	v2	NETWORK_MANAGEMENT_INSTALLATION_MAINTENANCE	v2
MULTI_CMD	v1	INDICATOR	v3
SECURITY	v1	NODE_PROVISIONING	v1
SECURITY_2	v1	FIRMWARE_UPDATE_MD	v6
		ZIP_GATEWAY	v1
		ZIP_ND	v1
		ZIP_PORTAL	v1
		MAILBOX	v1
		INCLUSION_CONTROLLER	v1
		MULTI_CMD	v1
		ASSOCIATION	v3
		ASSOCIATION_GROUP_INFO	v3

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Controlled Command Classes

The table below lists the controlled command classes and their function.

Controlled Command Classes	Function
ZWAVEPLUS_INFO	Request node Z-Wave Plus information
TRANSPORT_SERVICE	Encapsulate commands
CRC_16_ENCAP	Encapsulate commands
APPLICATION_STATUS	Status of the node
SUPERVISION	Sending node application-level delivery confirmation from receiving node
INCLUSION_CONTROLLER	Query receiving node to perform specific steps of inclusion/ bootstrapping
TIME	Read current time from supporting nodes
MULTI_CMD	Multi commands in one encapsulation command
SECURITY	Encapsulate secure commands
SECURITY_2	Encapsulate secure commands
VERSION	Query supported Command Class version
NETWORK_MANAGEMENT_INCLUSION	Assign return route
NETWORK_MANAGEMENT_PROXY	Request the node cache information
NETWORK_MANAGEMENT_BASIC	Reset the controller
POWERLEVEL	Defines RF transmit power controlling commands
MANUFACTURER_SPECIFIC	Manufacturer specific functions for devices supporting them
NETWORK_MANAGEMENT_INSTALLATION_ MAINTENANCE	Manipulate priority routes and request network statistics recorded by the node
INDICATOR	List of defined Indicator and Property IDs
NODE_PROVISIONING	Manage list of unique nodes for Smart Start
FIRMWARE_UPDATE_MD	Firmware Update Meta Data for over-the-air updates
ZIP_GATEWAY	Allow internet Z/IP clients to contact/control network nodes
ZIP_ND	Allow Z/IP translation between IPv6 and Z-Wave NodeID
ZIP_PORTAL	Configuration and management communication between Z/IP portal server and a Z/IP gateway through a secure connection
MAILBOX	Allows mailbox capable device to make itself into a Mailbox Service, or utilize another Mailbox Service in the network
ASSOCIATION	Inform a Z-Wave device to send updates to another device
ASSOCIATION_GROUP_INFO	Provides info about association groups of a Z-Wave Plus device

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Association Group Information

This static controller supports Association Group 1 (Lifeline) with a maximum of 1 node. This controller will send Command Class DEVICE_RESET_LOCALLY to the Lifeline before performing default factory reset.
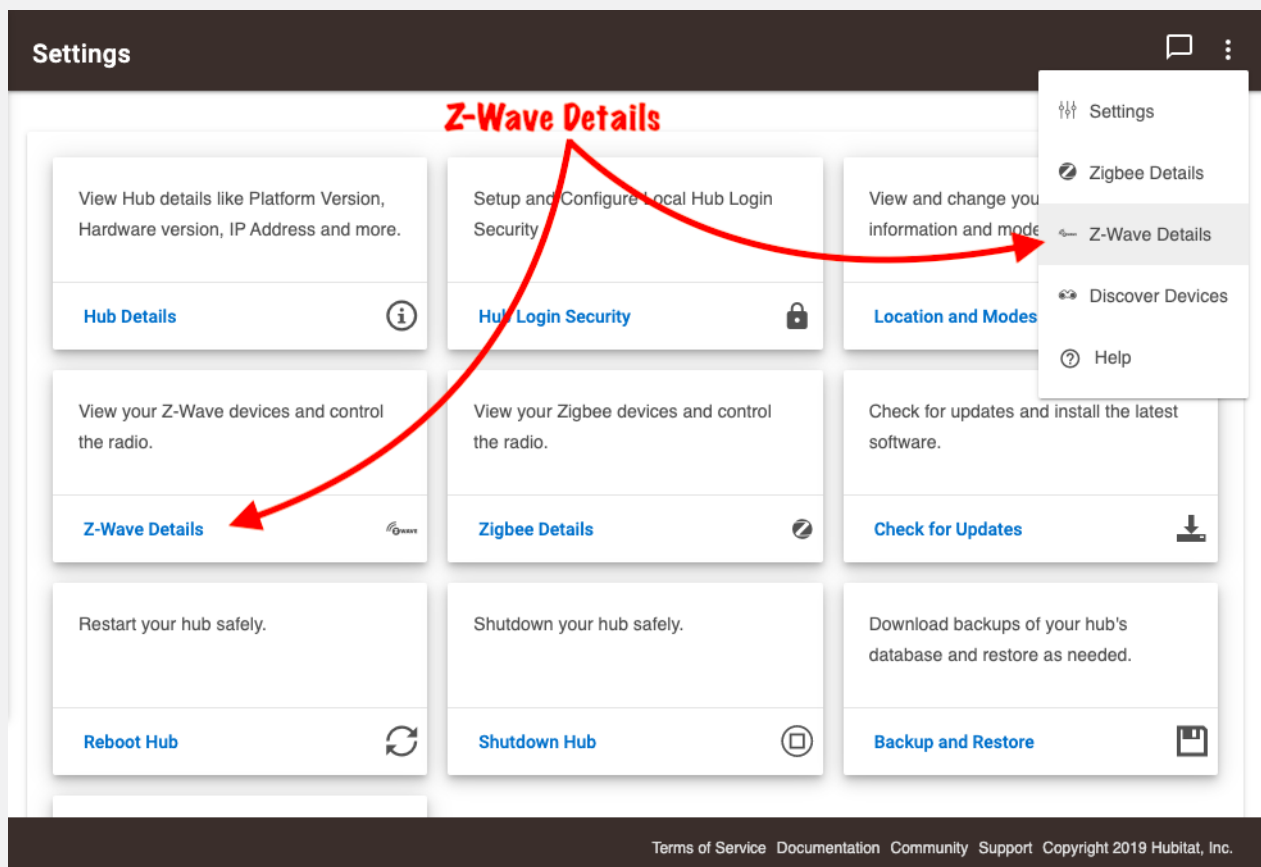
Group ID	Group Profile Name	Profile	Maximum Nodes	Description	Endpoint ID	Commands
1	Lifeline	0x0001	1	Z-Wave Plus Lifeline	1	0x5A01

Remove a Z-Wave device from the network
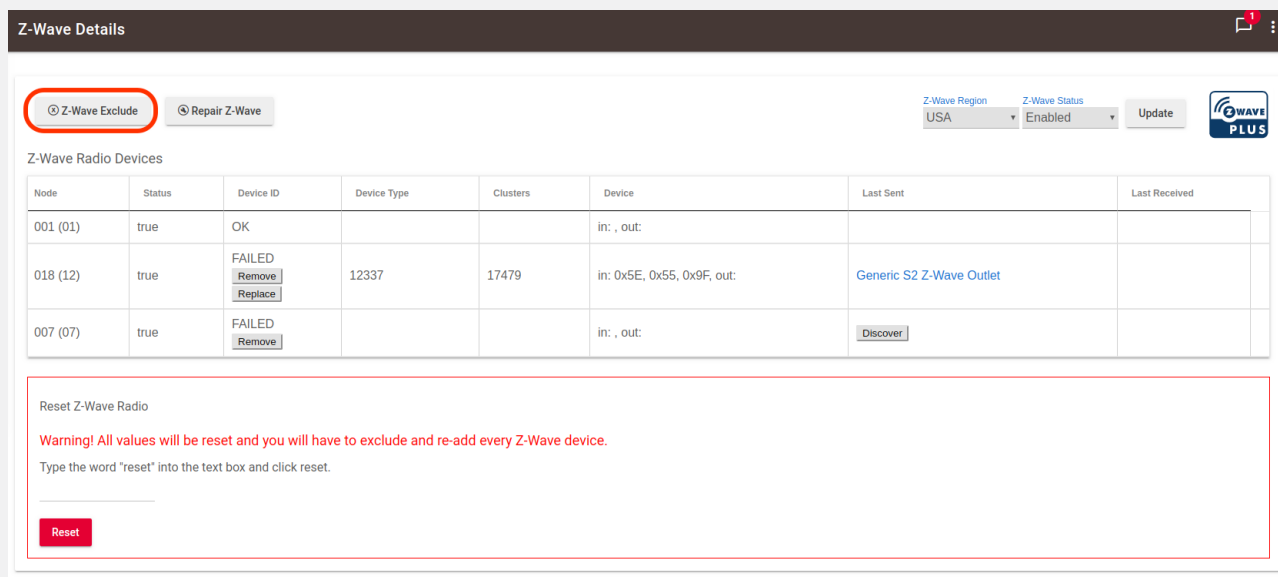
Prior to adding devices to the Z-Wave network of your hub, it is required that you first **Exclude** the device from any previous networks it has joined. This may be accomplished by performing a Z-Wave Exclude to remove the device from the Z-Wave network of the controller it formerly joined. However, it is not required that you perform this step using the previous controller. If the previous controller is unavailable or it is not convenient to perform Z-Wave Exclusion using the former controller, a **General Exclusion** may be performed from the Hubitat Elevation® hub.

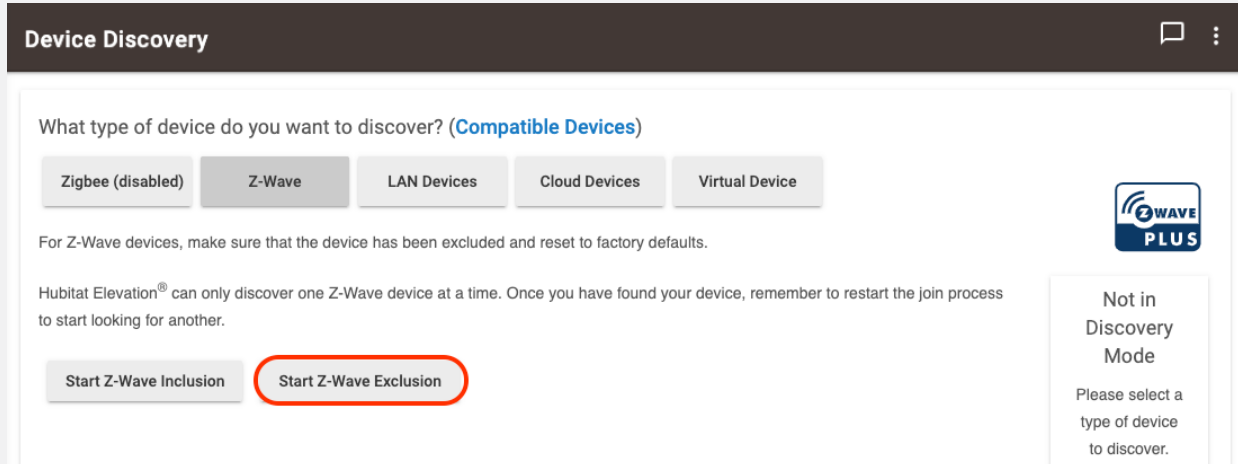**| Z-Wave General Exclusion - Remove devices from a previous hub connection**

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.

2. Select the **Z-Wave Exclude** button.

3. Hubitat Elevation® will enter **Z-Wave Exclude mode** for 30 seconds. A green banner at the top of the page will indicate that exclusion mode has been initiated.

4. Place your device into Z-Wave Exclusion mode. This is typically the same procedure used to place your device into Z-Wave Inclusion mode in order to join the Z-Wave network. Refer to the Hubitat Elevation® Join and Reset Instructions page, or your original device manufacturer instructions for further detail.

5. Upon successful exclusion, the Hubitat Elevation® hub will display the message "Unknown Z-Wave device successfully excluded".

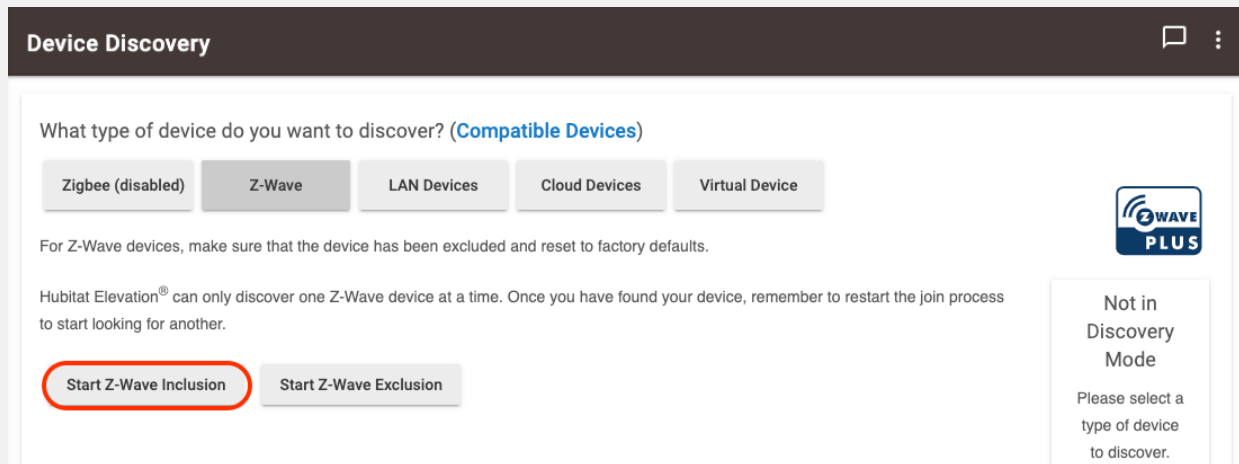## Z-Wave Exclusion - Remove devices from your Hubitat Elevation® hub

1. Choose the **Discover Devices** button on your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
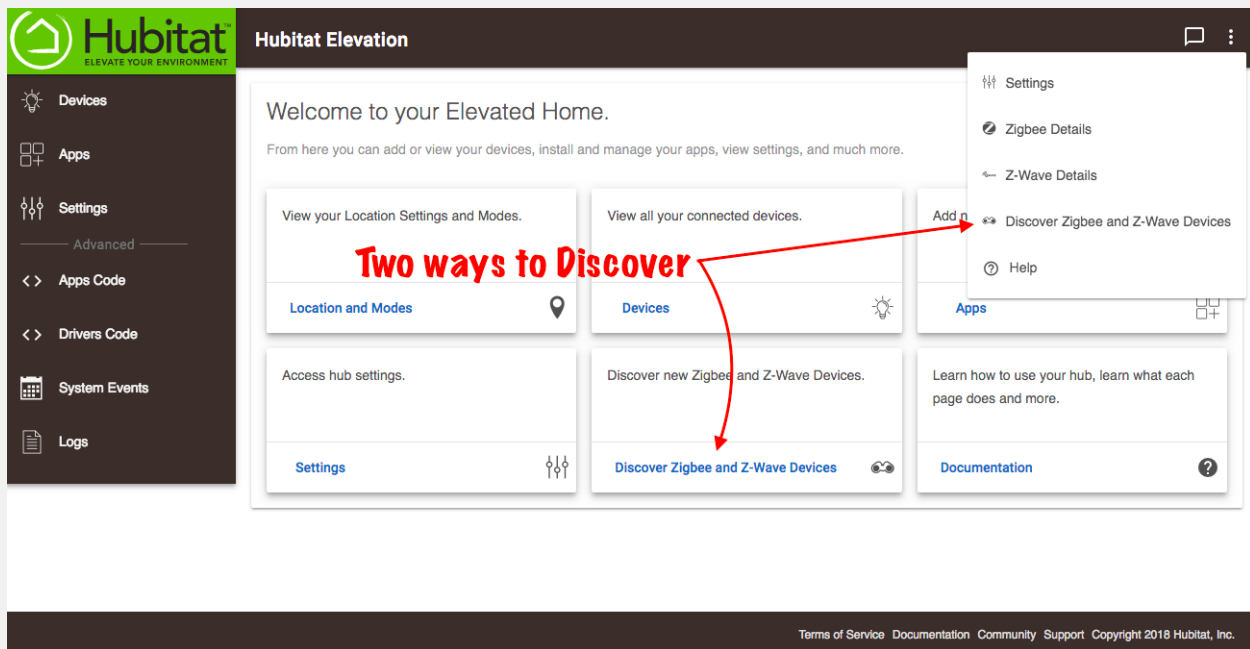
2. Select the **Z-Wave** button.
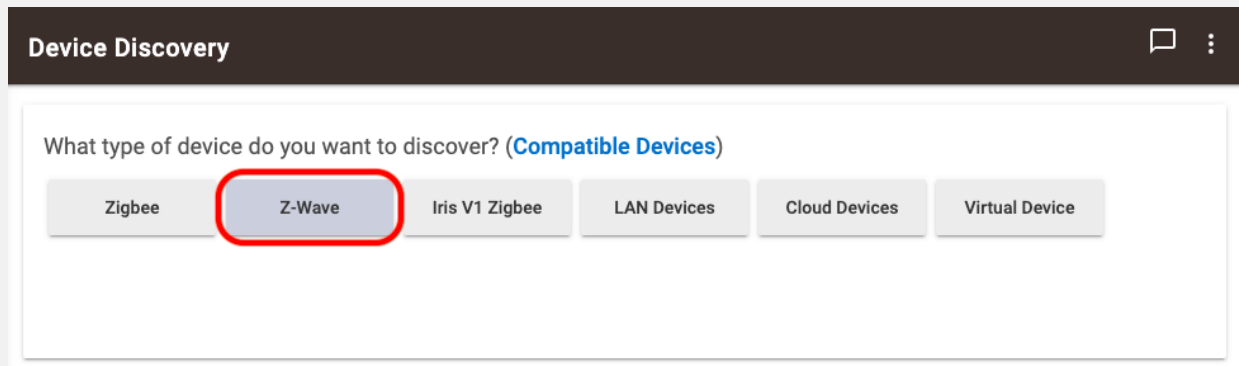
3. Press the **Start Z-Wave Exclusion** button.

4. The Hubitat Elevation® hub will enter **Z-Wave Exclude mode** for 30 seconds.

5. Place your device into Z-Wave Exclusion mode. This is typically the same procedure used to place your device into Z-Wave Inclusion mode in order to join the Z-Wave network. Refer to the Hubitat Elevation® Join and Reset Instructions page, or your original device manufacturer instructions for further detail.

6. Upon successful exclusion, the Hubitat Elevation® hub will display the message "Z-Wave device **[Device Name]** excluded and removed".

Add a Z-Wave device to the network

| **Z-Wave Inclusion - Add devices to your Hubitat Elevation® hub**

1. Choose the **Discover Devices** button on your Hubitat Web Interface home page, or from the 3-dot menu at the top right.

2. Select the **Z-Wave** button.

3. Press the **Start Z-Wave Inclusion** button.

4. Place your device into Z-Wave Inclusion mode. This is typically the same procedure used to place your device into Z-Wave Exclusion mode in order to leave the Z-Wave network. Refer to the Hubitat Elevation® Join and Reset Instructions page, or your original device manufacturer instructions for further detail.

5. Z-Wave S2 capable devices that are added using this **Classic Inclusion** method will prompt for security keys to be used.

   NOTE: Although the user can force non-secure inclusion for some Z-Wave S2 capable devices, access control devices will always reject non-secure inclusion methods.

Add New Device

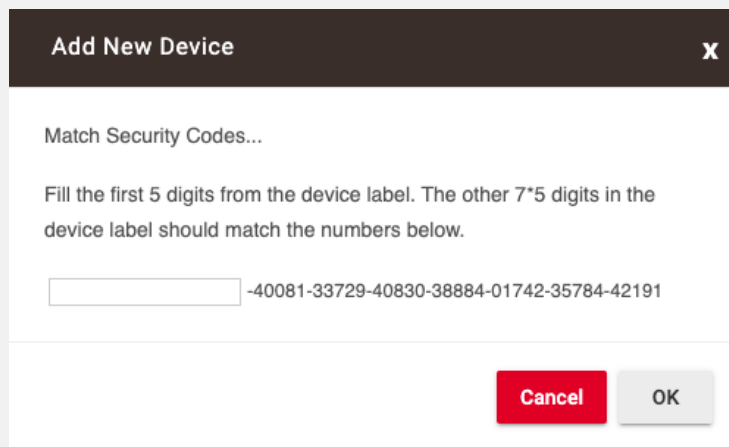The device has requested the following security keys. Click OK to grant access or Cancel to decline.

Warning: Only an experienced user, who understands the concept of Z-Wave security classes, should change these settings.

☐ Security 2 Class 2 - Access Control
☑ Security 2 Class 1 - Authenticated
☑ Security 2 Class 0 - Unauthenticated
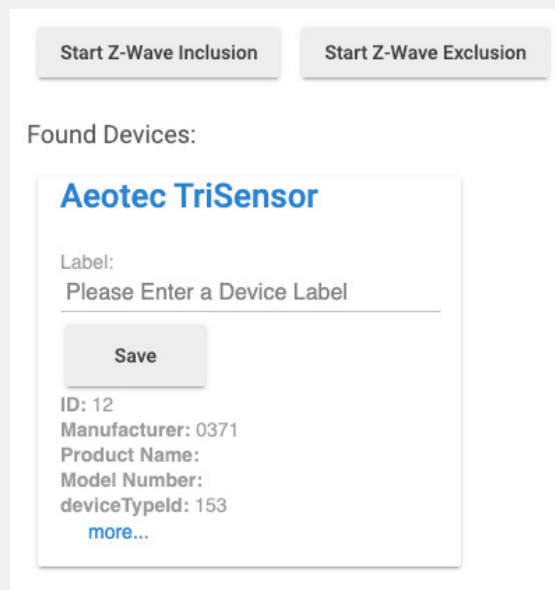☑ Security 0 - Unauthenticated

Cancel   OK

6. When adding **S2** devices with authentication, enter the first 5 digit segment of the **DSK** (Device Specific Key) into the dialogue box that appears and press **OK**.

   NOTE: After entering the **DSK**, it may take up to a minute for the inclusion process to finish.

   Add New Device　　　　　　　　　　**x**

   Match Security Codes...

   Fill the first 5 digits from the device label. The other 7*5 digits in the device label should match the numbers below.

   [   ] -40081-33729-40830-38884-01742-35784-42191

   Cancel　　**OK**

7. Upon successful device inclusion, the Hubitat Web Interface will display the **nodeId**, **Manufacturer**, **Product Name**, **Model Number** and **deviceTypeId**. Selecting the **more...** link below **deviceTypeId** in the Hubitat Web Interface will display the available **inClusters** and **outClusters**.
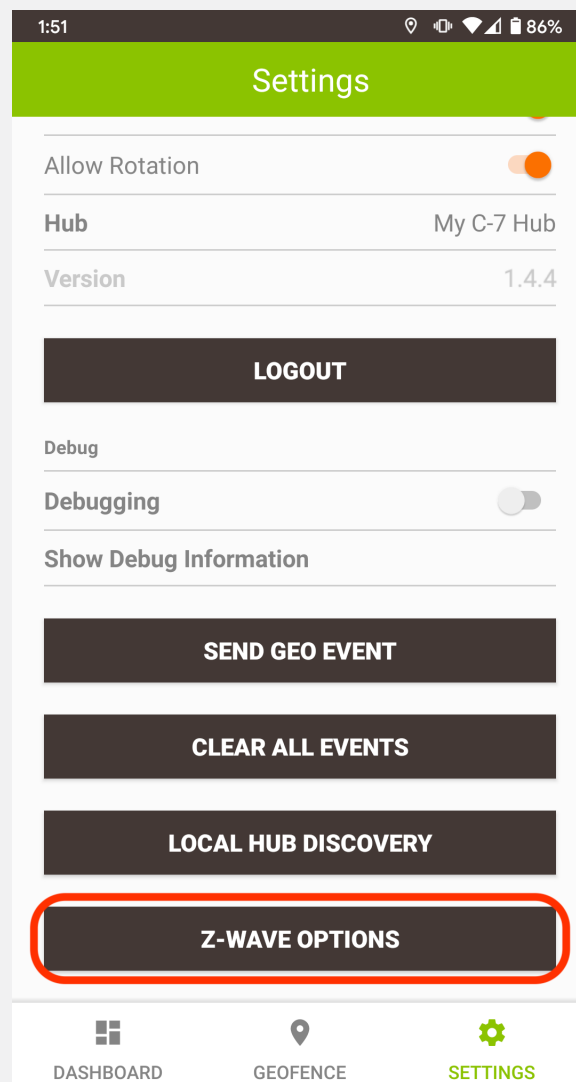
   Start Z-Wave Inclusion　　　Start Z-Wave Exclusion

   Found Devices:

   Aeotec TriSensor

   Label:
   Please Enter a Device Label

   Save

   ID: 12
   Manufacturer: 0371
   Product Name:
   Model Number:
   deviceTypeId: 153
   more...

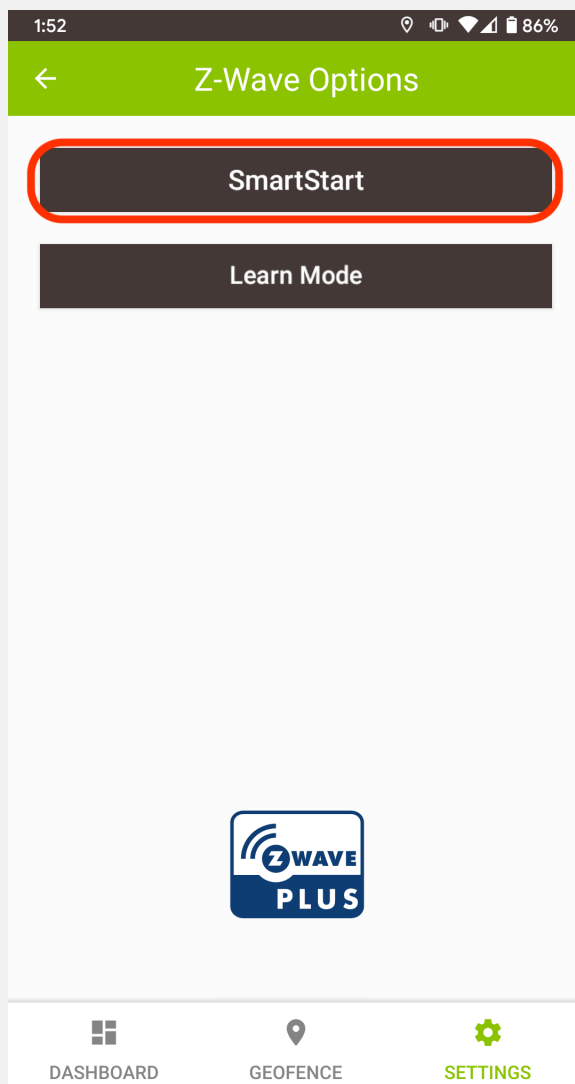# Z-Wave Plus SmartStart devices on the network

| Z-Wave SmartStart - Add Z-Wave Plus SmartStart compatible devices to the hub

SmartStart compatible Z-Wave products, regardless of brand or type, can easily be added to the hub by simply scanning a QR code on the SmartStart compatible device, or by manual entry. The devices will be automatically included in the Z-Wave Plus network and the connection secure encrypted with Z-Wave S2 security framework.

1. Using the Hubitat Elevation® mobile app, navigate to **Settings** and press the **Z-Wave Options** button.
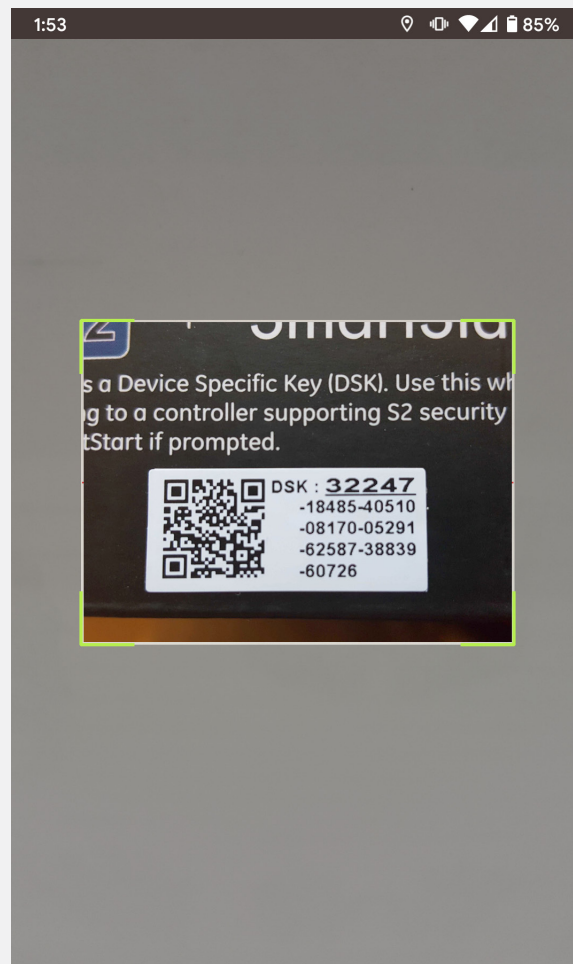
2. Tap the **SmartStart** button.

3. Tap the QR code icon to use your device camera to scan the QR code of the SmartStart compatible device.

NOTE: If this is the first time you have used the Hubitat Elevation® app on your mobile device, you will be prompted to allow access to the device camera.
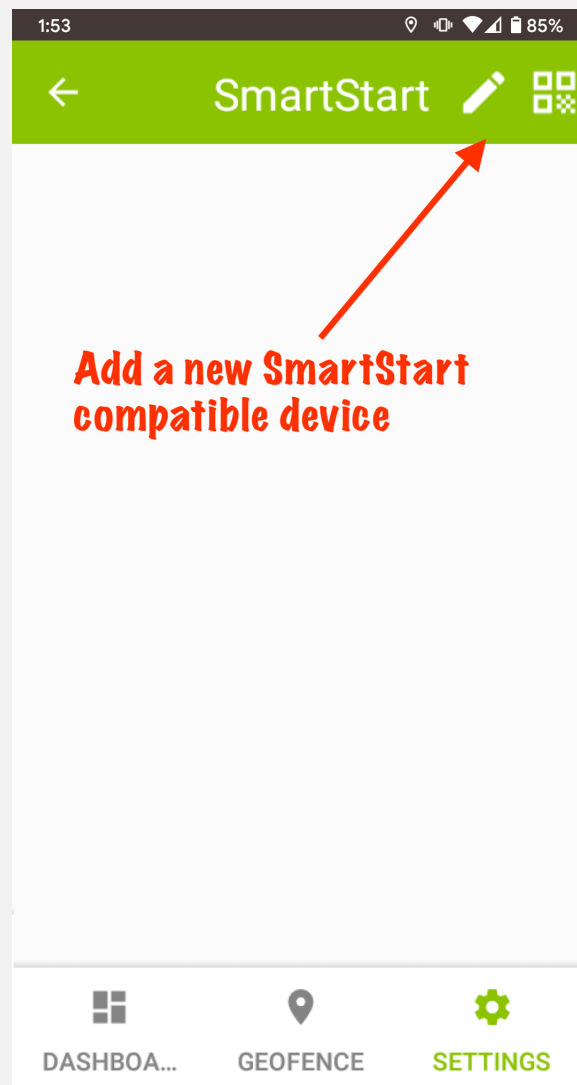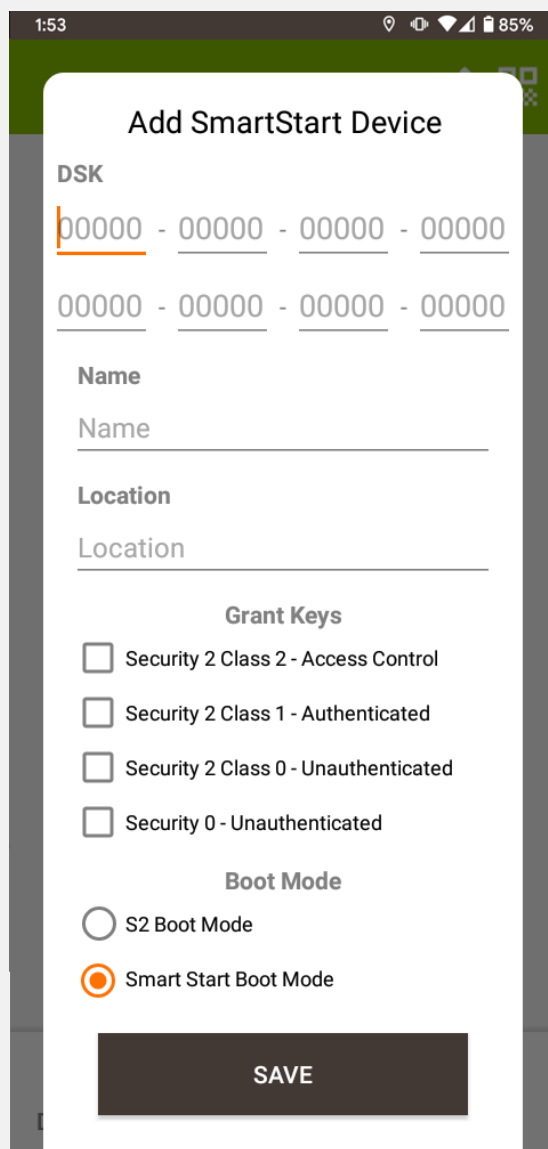

Add a new SmartStart compatible device

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4. Scan the device QR code.

5. Pull the battery tab, or remove and replace the device battery to initiate automatic joining to the Hubitat Elevation® hub. Within 10 minutes, the device will be automatically added to the hub.

6. If you are unable to scan the QR code, the Device Security Key (DSK) may be manually input by tapping on the pencil icon.

Add a new SmartStart compatible device

7. You must enter the entire Device Security Key (DSK) and select which security keys to use.

   NOTE: Ensure you have selected the SmartStart Boot Mode button. For S2 compatible devices without SmartStart, consult the original manufacturer documentation.

8. Pull the battery tab, or remove and replace the device battery to initiate automatic joining to the Hubitat Elevation® hub. Within 10 minutes, the device will be automatically added to the hub.

9. Continue adding additional S2 SmartStart devices. Each device's unique Device Security Key (DSK) will be stored in the hub, but will not be included in the Z-Wave network until they are powered on. The Hubitat Elevation® app will indicate the device status in the Z-Wave network.

    • **Pending** - The node will be added when it issues SmartStart Inclusion requests.
    • **Passive** - The node is unlikely to issue SmartStart Inclusion requests.
    • **Ignored** - SmartStart Inclusion requests are ignored unless changed by controller.
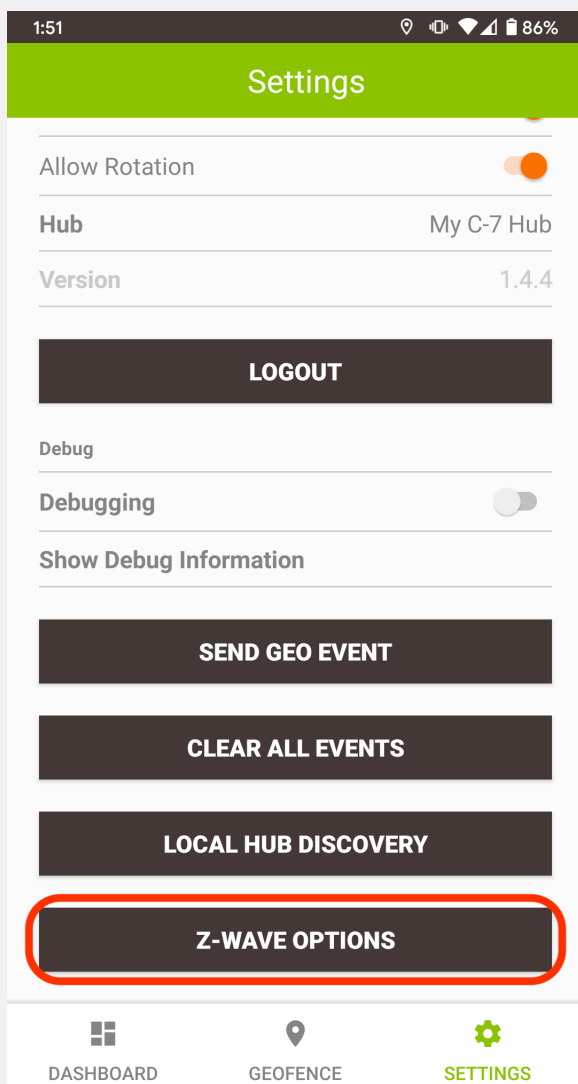
    The device DSK is cross-referenced against the provisioning list and the device is included if authenticated. Within 10 minutes, the device will be automatically added to the hub.
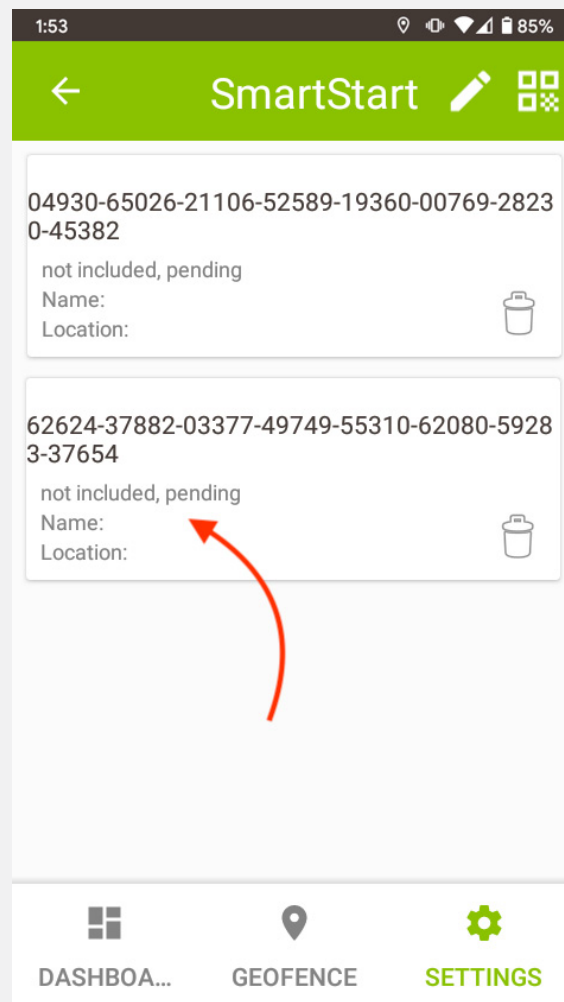
| Z-Wave SmartStart - Removing Z-Wave Plus SmartStart devices from the hub

Removal of a Z-Wave Plus SmartStart device is a two step process. First remove the device from the app, then remove it following the device manufacturer instructions to exclude it from the Z-Wave network, or perform a factory reset on the device.

1. Using the Hubitat Elevation® mobile app, navigate to **Settings** and press the **Z-Wave Options** button.
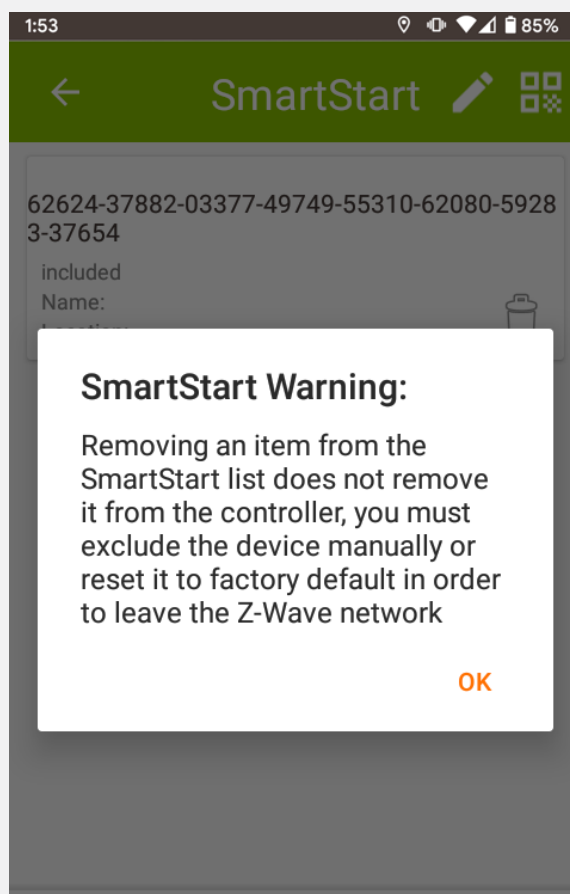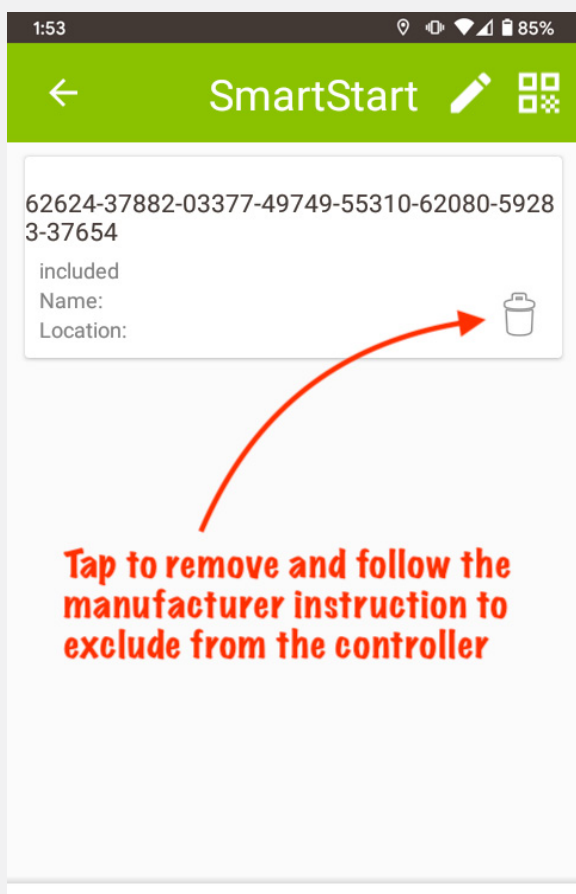
2. Tap the **SmartStart** button.

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3. Tap the trash can icon to remove a device from the provisioning list. Removing an item from the SmartStart provisioning list does not remove it from the hub. You must also follow the manufacturer instructions to manually exclude the device or factory reset it, so it will no longer be part of the Z-Wave network.

Keeping devices in the provisioning list allows them to be factory reset or excluded, and they will automatically be included in the Z-Wave network again, as long as they have power.
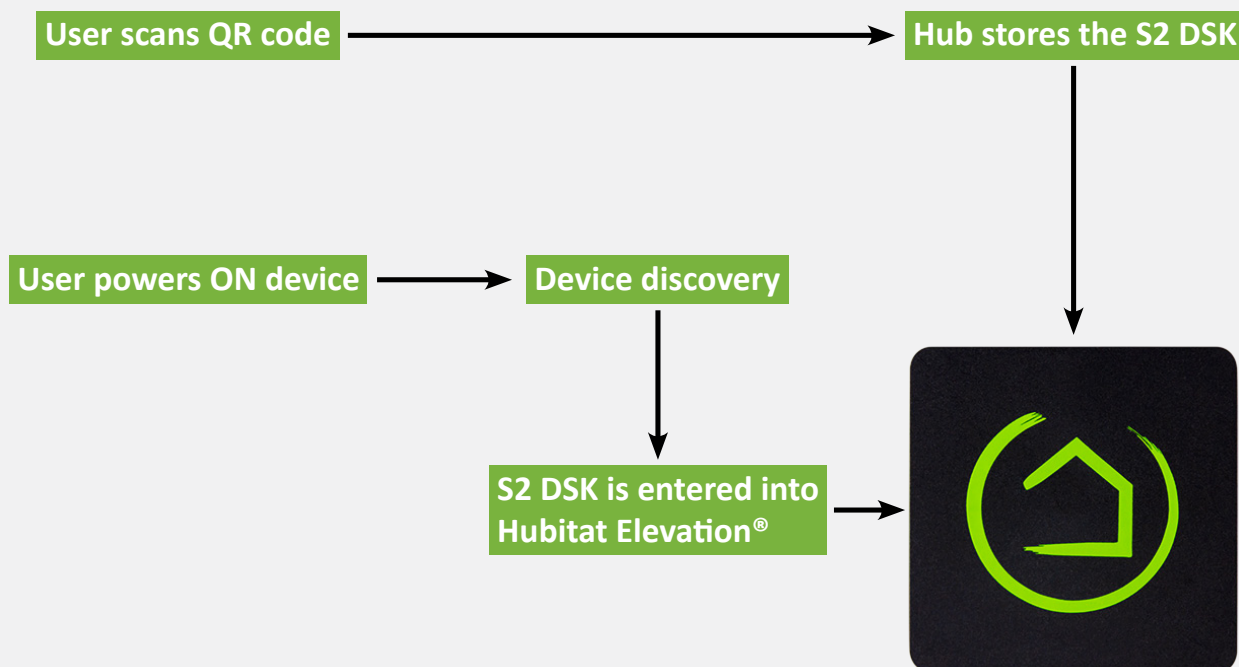
NOTE: Any device that has been removed from the provisioning list, but has not been factory reset or excluded from the Z-Wave network, will be automatically included again if it has power, and it will repopulate the provisioning list showing the **Included** status.
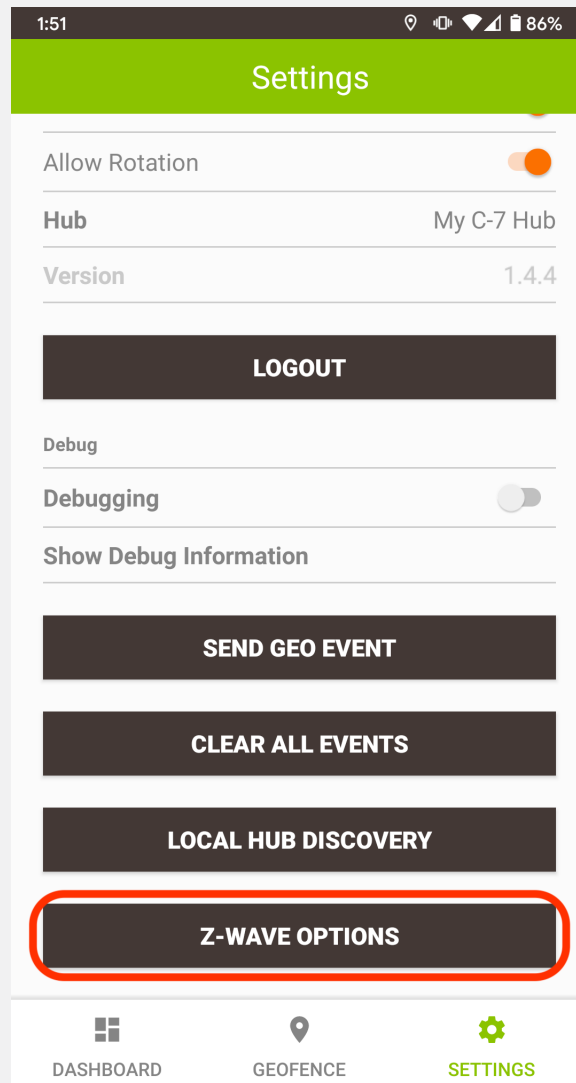
| Z-Wave SmartStart - Managing devices in the SmartStart Provisioning List

Z-Wave SmartStart simplifies and significantly reduces setup time by allowing out of the box device installation, without the need for an instruction manual or complicated button and power-on sequences. With a quick scan of a QR code, SmartStart is designed to facilitate the inclusion of multiple devices simultaneously by storing unique Device Security Keys (DSK) in the hub. This ensures that the Hubitat Elevation® hub is ready for error-free, and uniform inclusion across all device types and brands with secure S2 security framework, before the device is even powered on for the first time.

For added convenience, the order in which the devices are powered is irrelevant and Hubitat Elevation® will include them as long as they are on the provisioning list and powered on. This also enables devices that are on the provisioning list to be factory reset or removed with classic exclusion, and they will automatically be included in the Z-Wave network again as long as they have power.

User scans QR code ⟶ Hub stores the S2 DSK

User powers ON device ⟶ Device discovery

S2 DSK is entered into Hubitat Elevation® ⟶

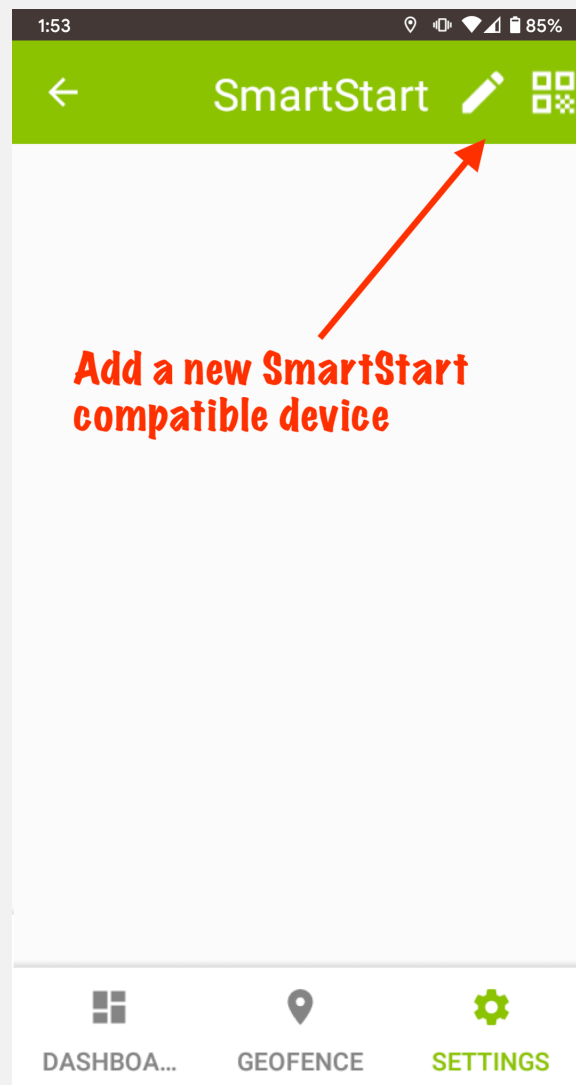1. Using the Hubitat Elevation® mobile app, navigate to **Settings** and press the **Z-Wave Options** button.
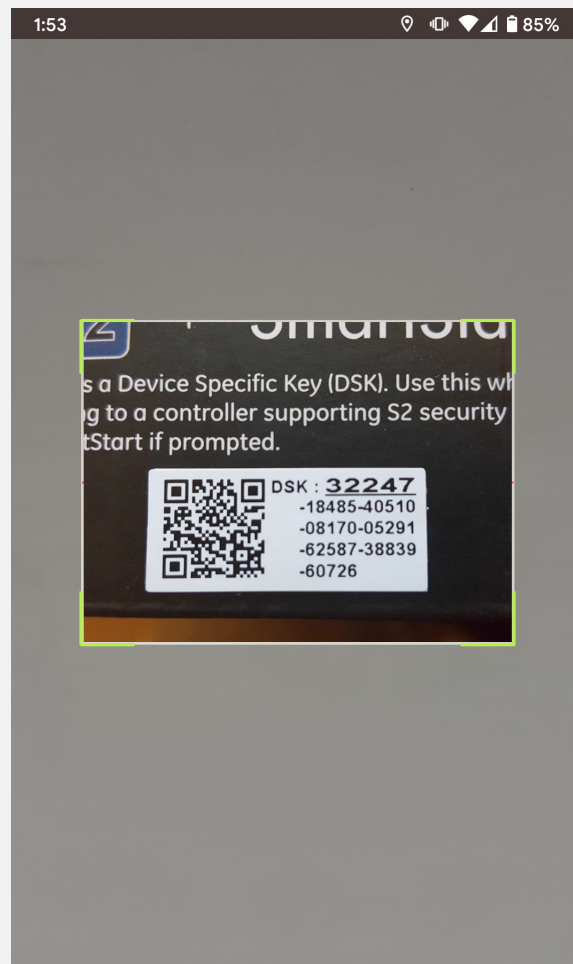
2. Tap the **SmartStart** button.

3. Tap the QR code icon to use your device camera to scan the QR code of the SmartStart compatible device.

NOTE: If this is the first time you have used the Hubitat Elevation® app on your mobile device, you will be prompted to allow access to the device camera.
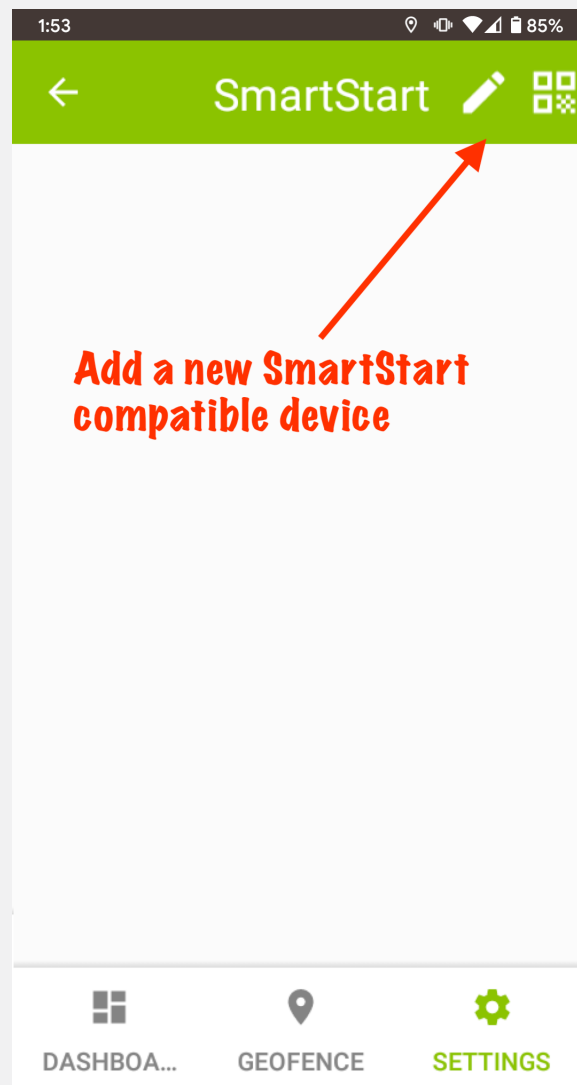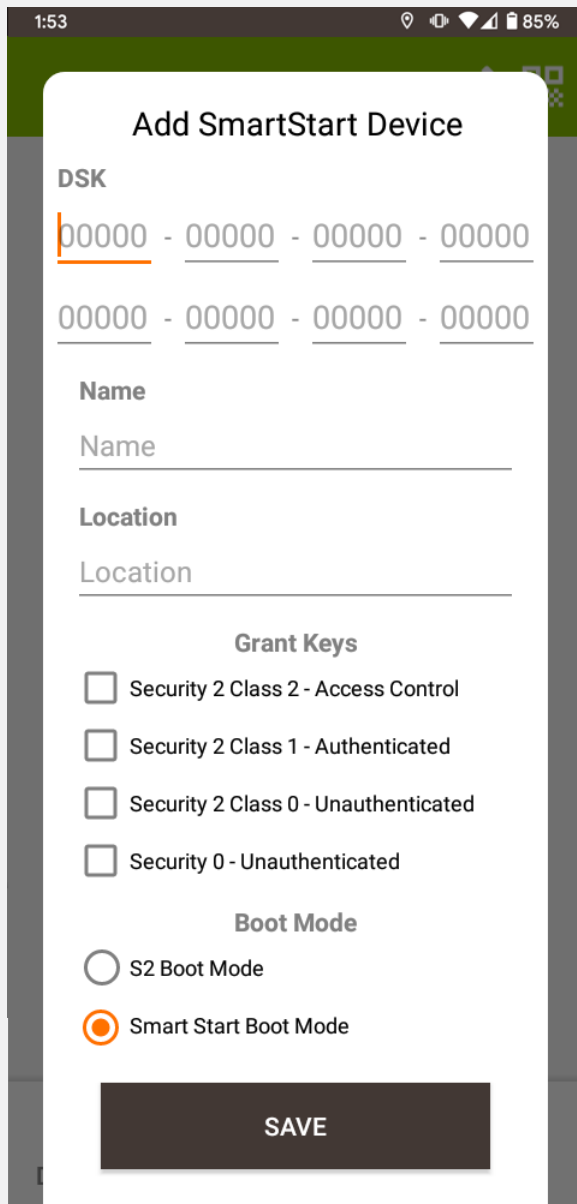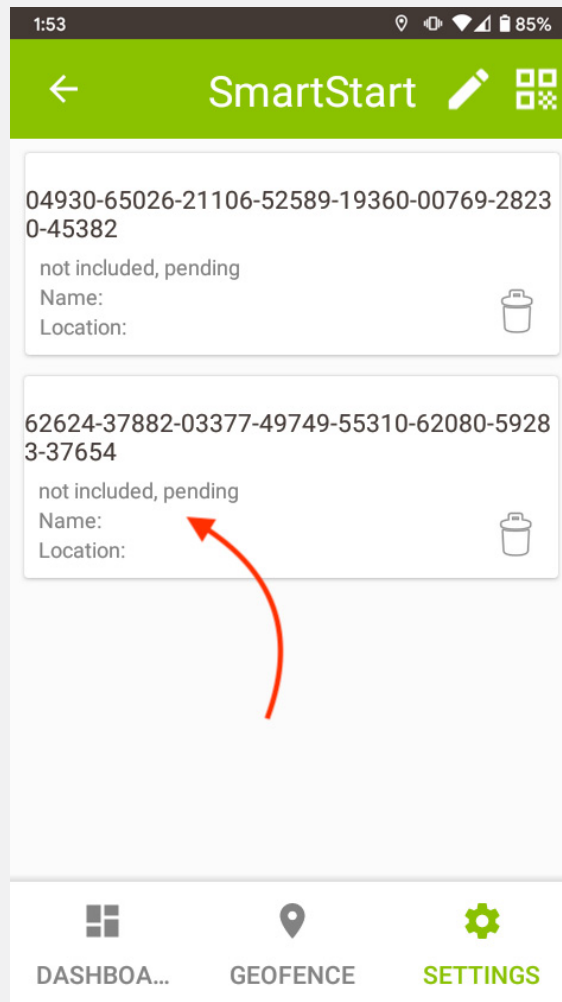

Add a new SmartStart compatible device

4. Scan the device QR code.

5. Pull the battery tab, or remove and replace the device battery to initiate automatic joining to the Hubitat Elevation® hub. Within 10 minutes, the device will be automatically added to the hub.

6. If you are unable to scan the QR code, the Device Security Key (DSK) may be manually input by tapping on the pencil icon.

Add a new SmartStart compatible device

7. You must enter the entire Device Security Key (DSK) and select which security keys to use.

    NOTE: Ensure you have selected the SmartStart Boot Mode button.

8. Pull the battery tab, or remove and replace the device battery to initiate automatic joining to the Hubitat Elevation® hub. Within 10 minutes, the device will be automatically added to the hub.

9. Continue adding additional S2 SmartStart devices. Each device's unique Device Security Key (DSK) will be stored in the hub, but will not be included in the Z-Wave network until they are powered on. The Hubitat Elevation® app will indicate the device status in the Z-Wave network.

   The device DSK is cross-referenced against the provisioning list and the device is included if authenticated. Within 10 minutes, the device will be automatically added to the hub.
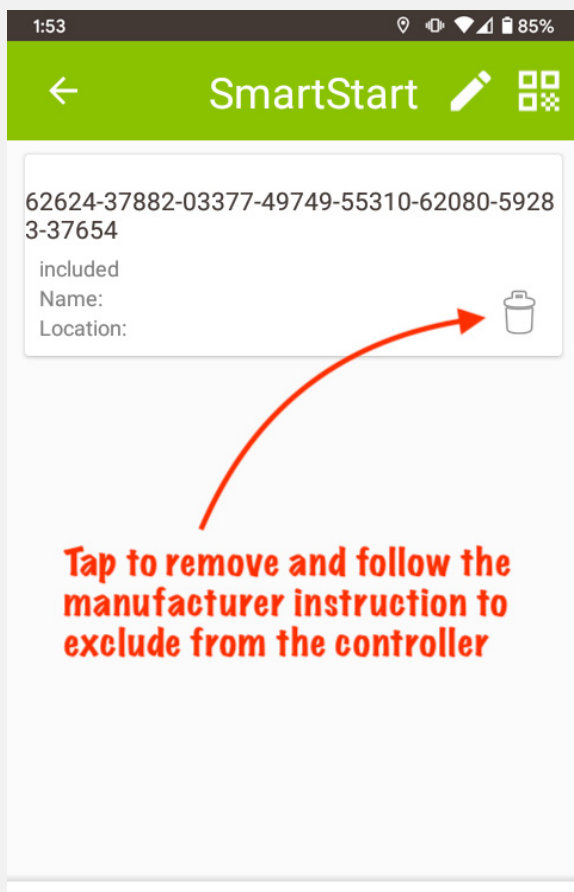
10. Tap the trash can icon to remove a device from the provisioning list. Removing an item from the SmartStart provisioning list does not remove it from the hub. You must also follow the manufacturer instructions to manually exclude the device or factory reset it, so it will no longer be part of the Z-Wave network.

    Keeping devices in the provisioning list allows them to be factory reset or excluded, and they will automatically be included in the Z-Wave network again, as long as they have power.

    NOTE: Any device that has been removed from the provisioning list, but has not been factory reset or excluded from the Z-Wave network, will be automatically included again if it has power, and it will repopulate the provisioning list showing the **Included** status.

Tap to remove and follow the manufacturer instruction to exclude from the controller

SmartStart Warning:

Removing an item from the SmartStart list does not remove it from the controller, you must exclude the device manually or reset it to factory default in order to leave the Z-Wave network

OK

Copy Z-Wave network information

| **Z-Wave Replication - Copy network information from the Hubitat Elevation® hub to a secondary Z-Wave controller**
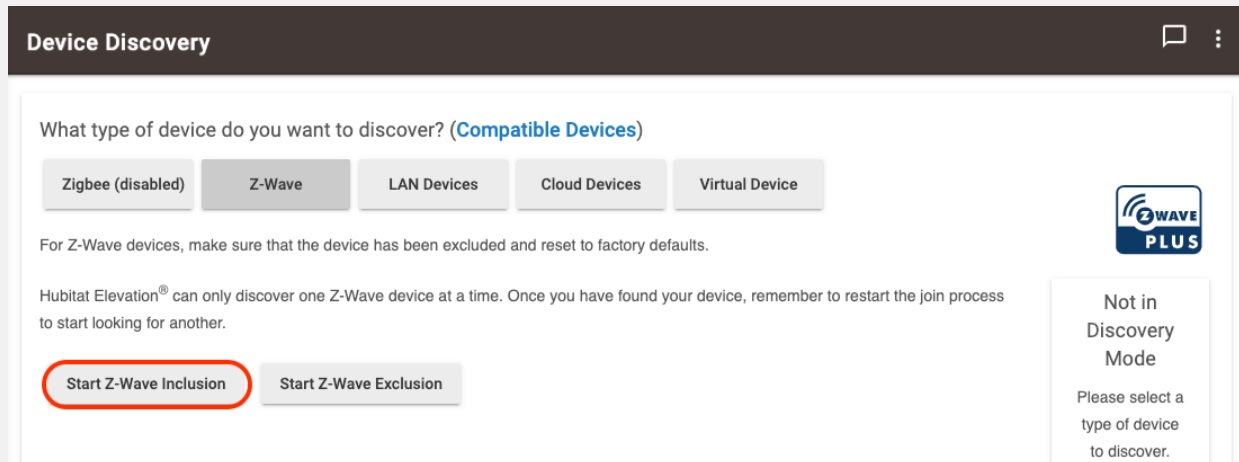
1. Choose the **Discover Devices** button on your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
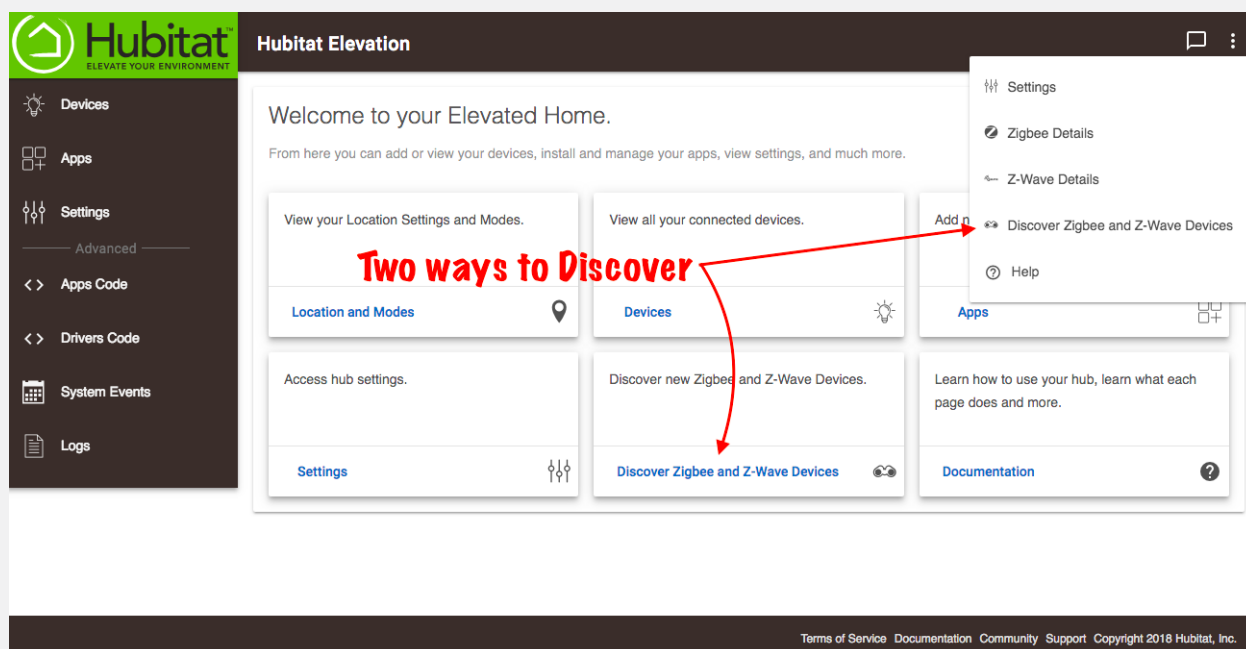
2. Select the **Z-Wave** button.
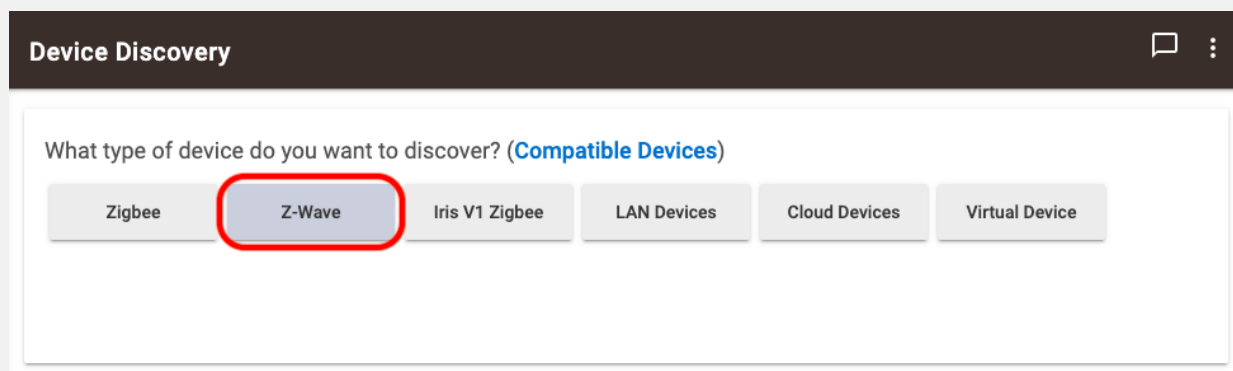
3. Press the Start **Z-Wave Inclusion** button.

4. Enable Learn Mode on the hub that will be the Z-Wave secondary controller.

5. When successfully added, network information from the Hubitat Elevation® hub will be replicated on the secondary controller.

Refresh a Z-Wave node
| Z-Wave Refresh - Query the Z-Wave radio to refresh the status of the node

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
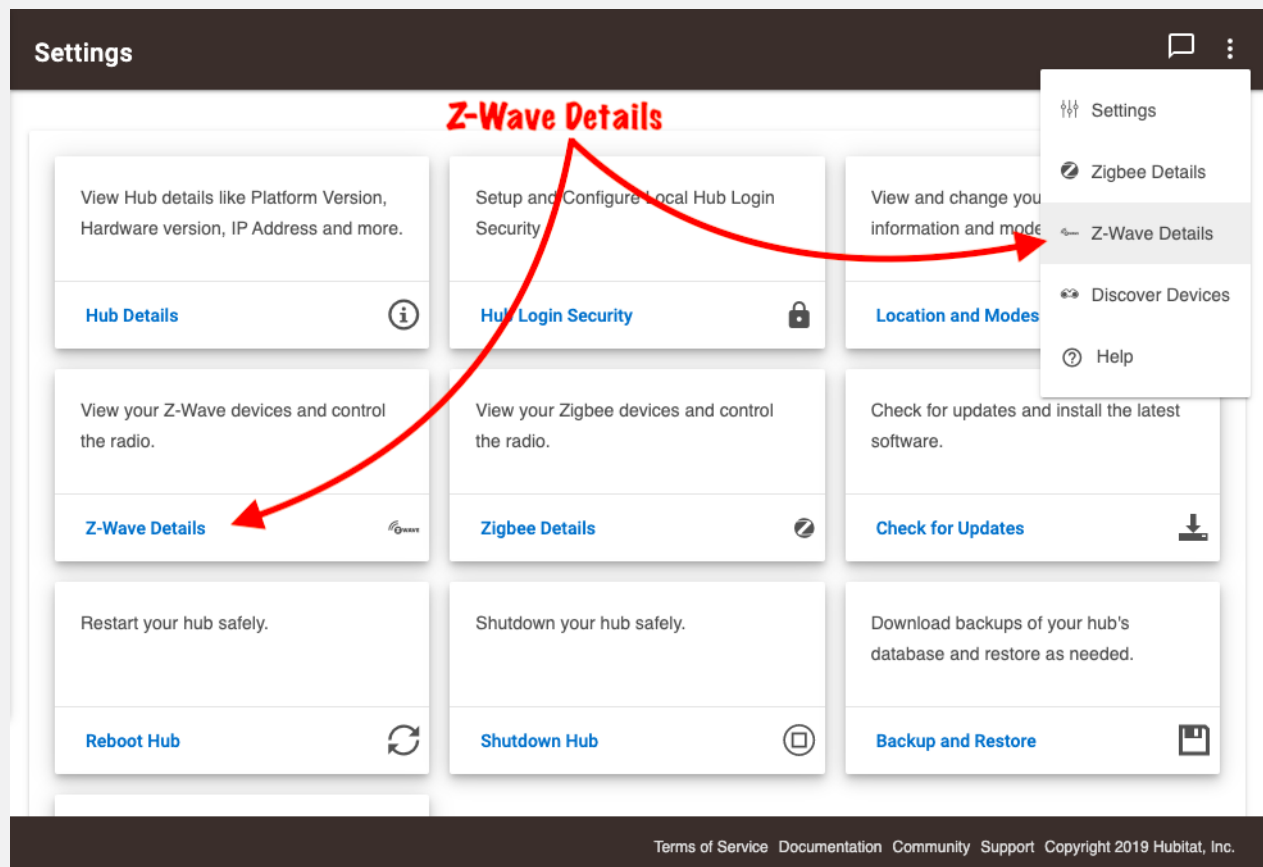
2. Selecting the **Refresh** button will update the status of the node from the Z-Wave radio. The returned result may be **OK**, **UNKNOWN** or **FAILED**. The user may then take corrective action if necessary.

   NOTE: A node that shows the status **FAILED**, may be the result of a sleepy device that is temporarily offline to reduce battery consumption. Simply activating the device may transition it back to **OK** status.

Repair Z-Wave

Each Z-Wave device builds a neighbor table to keep track of which router devices are its closest neighbors. When you initiate the **Repair Z-Wave** function, you are instructing each Z-Wave device on the network to re-establish which routing devices are its closest neighbors, and therefor the most efficient route back to the hub. This also tells each device to forget about router devices that no longer exist on the Z-Wave network, or are now out of range and no longer able to be used for routing.

Z-Wave Repair - Rebuilding the Z-Wave Routing Tables

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
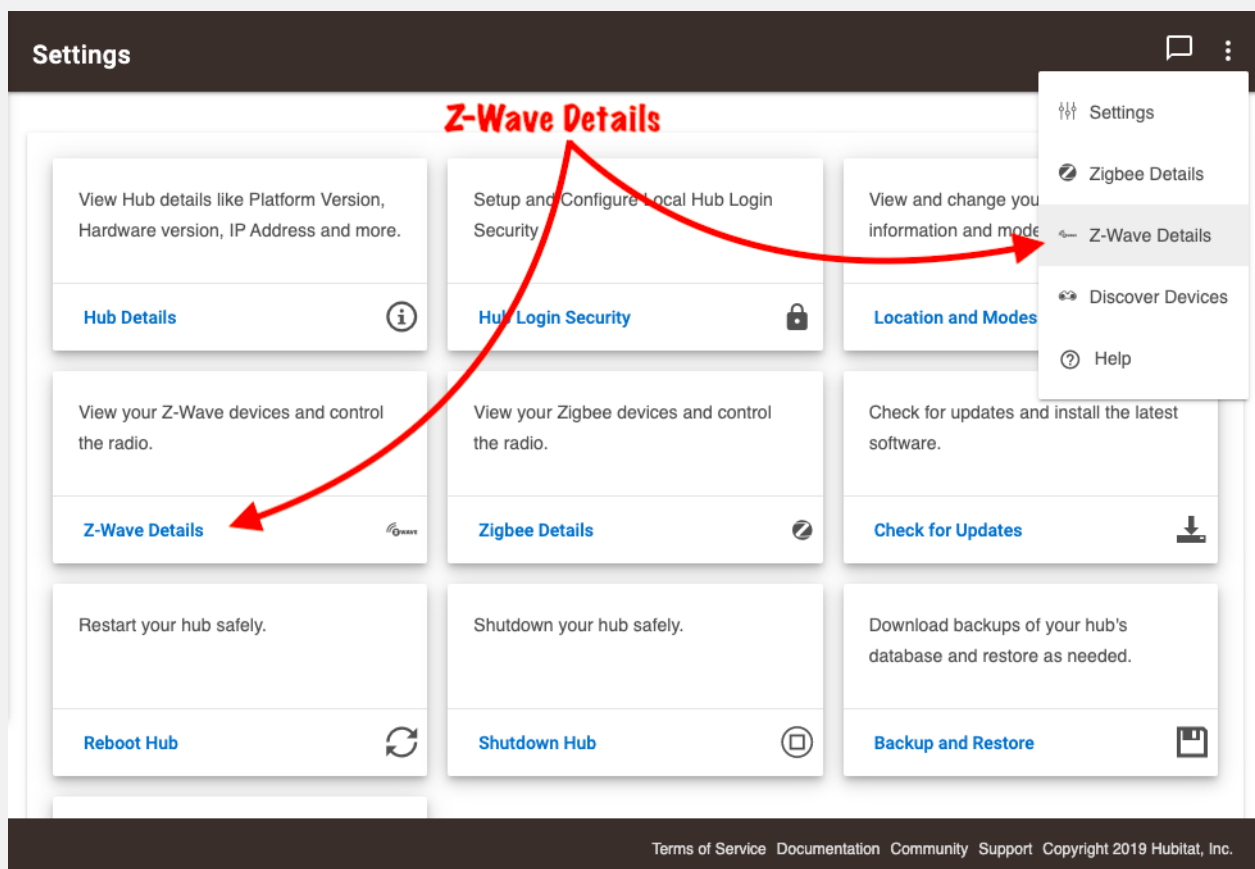
2. Select the **Repair Z-Wave** button.

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Z-Wave Learn Mode

| Z-Wave Plus S2 Learn Mode - Receive network information from another Z-Wave Plus S2 compatible controller
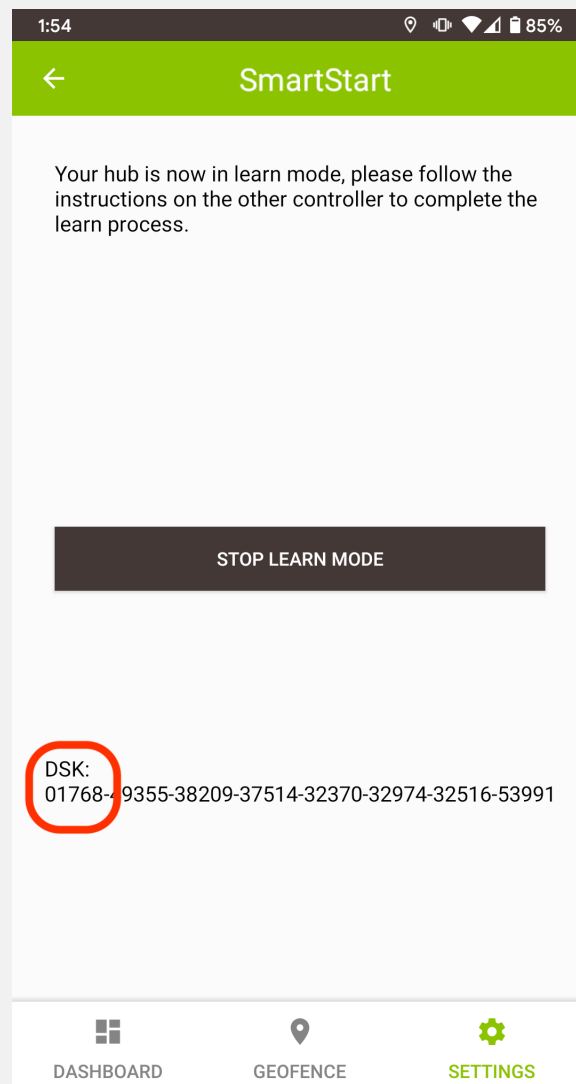
1. Start by enabling Z-Wave Inclusion mode on the Z-Wave Plus S2 primary controller, so devices may be added its network.

2. Using the Hubitat Elevation® mobile app, navigate to **Settings** and press the **Z-Wave Options** button.
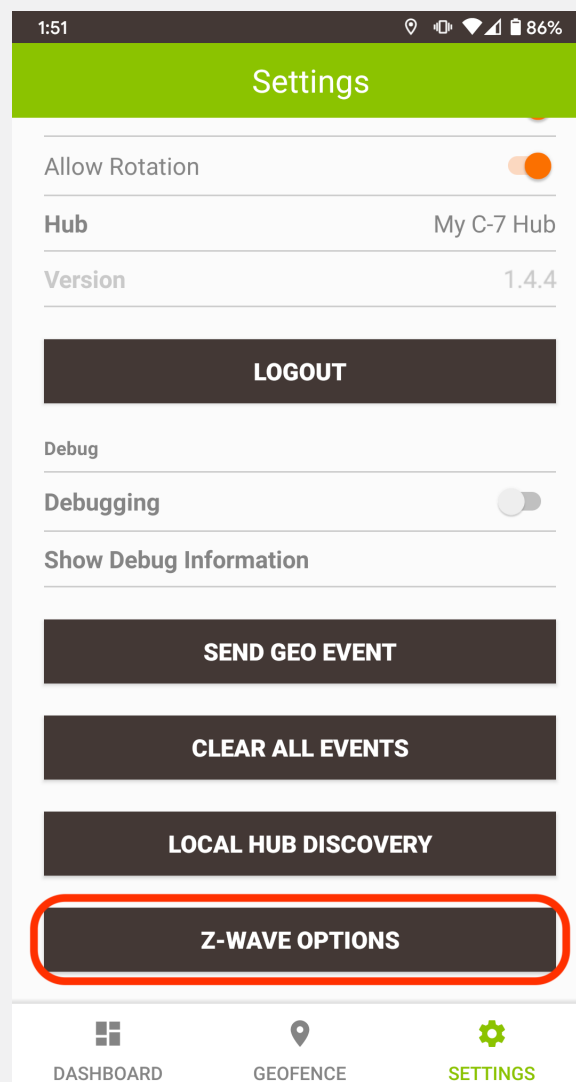
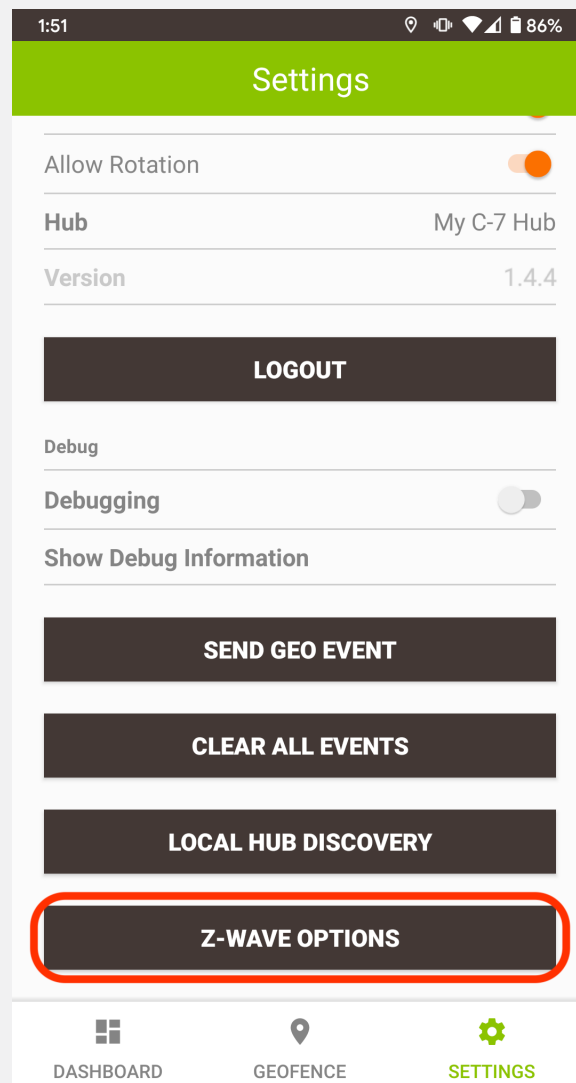3. Tap the **Learn Mode** button, then **Start Learn Mode**.
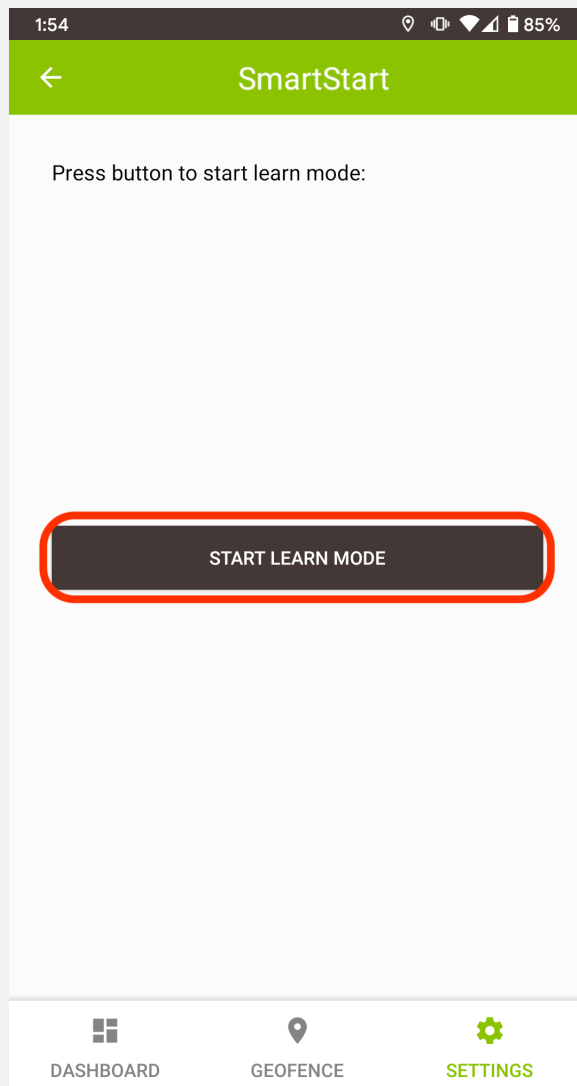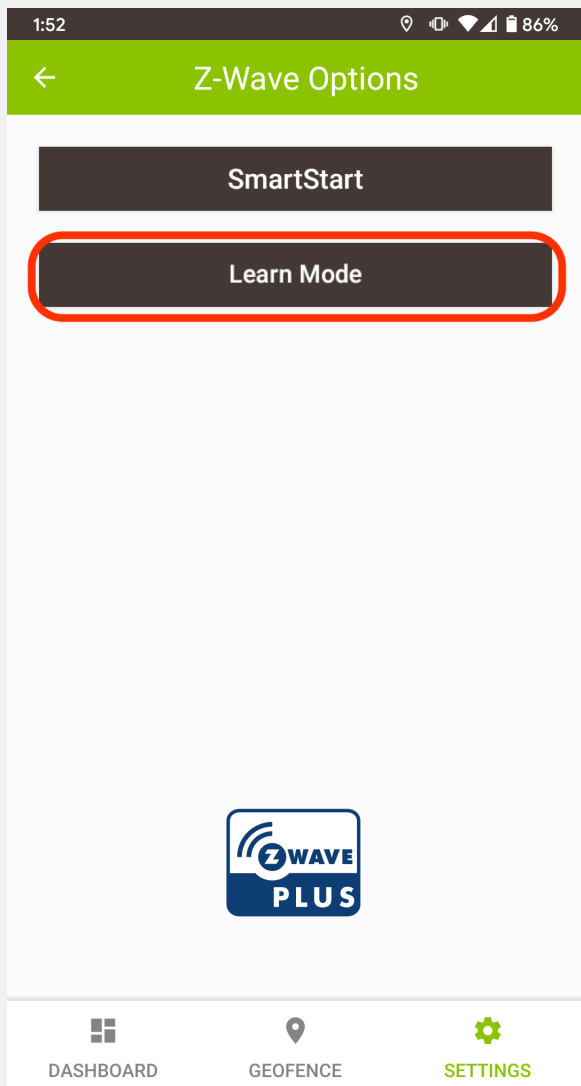
4. Leave all security modes enabled on the primary Z-Wave Plus S2 controller.

5. The primary controller will prompt the user for the first segment of the **DSK** (Device Specific Key) from the Hubitat Elevation® mobile app.

6. Enter the first 5 digit segment shown in the mobile app, into the primary controllers user interface when prompted.
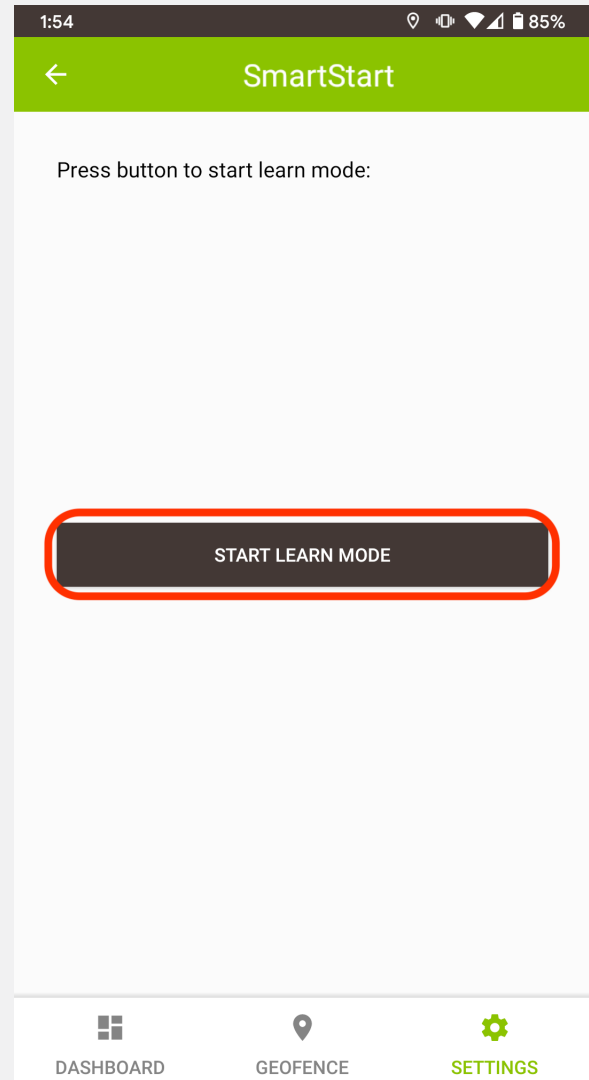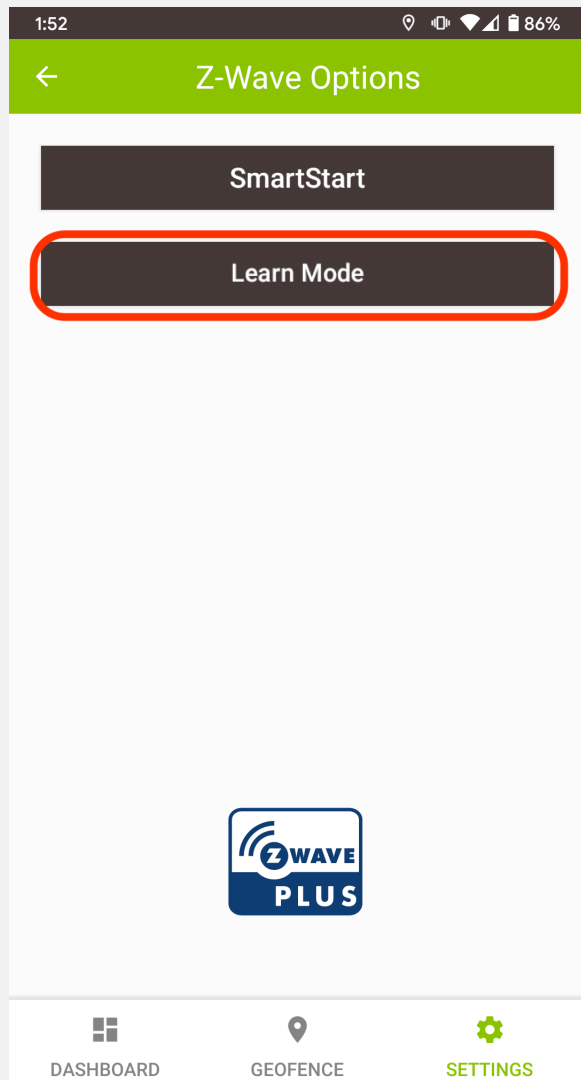

7. When successfully added, network information from the primary controller will be replicated on the Hubitat Elevation® hub.

| Z-Wave Learn Mode (for non-S2 capable Z-Wave radios) - Receive network information from another Z-Wave controller which does not support S2 secure encryption

1. Start by enabling **Z-Wave Inclusion** to add devices to the network of the Z-Wave primary controller.

2. Using the Hubitat Elevation® mobile app, navigate to **Settings** and press the **Z-Wave Options** button.

3. Tap the **Learn Mode** button, then **Start Learn Mode**.

1:52 ⚲ 📳 ▼◢ 🔋86%	
← Z-Wave Options	

SmartStart

Learn Mode

Z-WAVE PLUS

DASHBOARD   GEOFENCE   SETTINGS

1:54 ⚲ 📳 ▼◢ 🔋85%	
← SmartStart	

Press button to start learn mode:

START LEARN MODE

DASHBOARD   GEOFENCE   SETTINGS

4. The primary controller should indicate a device has joined its Z-Wave network.

5. When successfully added, network information from the primary controller will be replicated on the Hubitat Elevation® hub.

Replace a failed Z-Wave node

If a device becomes unresponsive or is no longer available, the Hubitat Elevation® hub has advanced user functions to Replace, or Remove the failed node.

| Z-Wave Capability Rediscovery - Replacing a failed node on the network

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
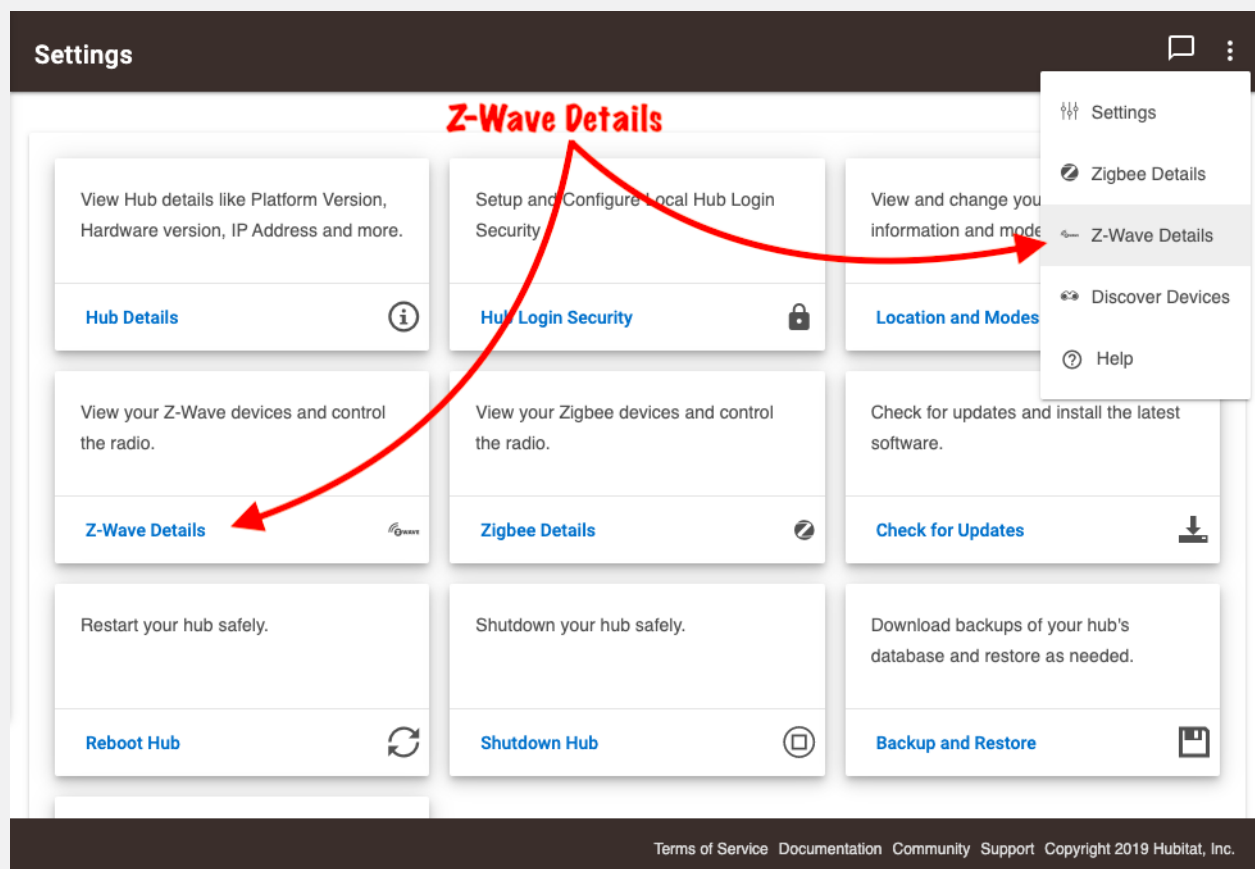
2. If the device is marked **FAILED** in the Device ID column of the Z-Wave Radio Details page, a **Replace** button will be available. Selecting this button will initiate **Inclusion Mode** so the user may add a new device or the previously joined device. It will be joined to the Hubitat Elevation® hub with the same **nodeId** as the failed device.

Remove a failed Z-Wave node

Any node the Hubitat Elevation® hub cannot reach using routing and explorer frames is considered to be failed or non-responsive. Sleeping node types such as motion and contact sensors can be considered as failing after missing more than 2 consecutive Wake Up periods. Users may choose to remove the failed node.

| Remove Failed Node - Removing a failed node on the network

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
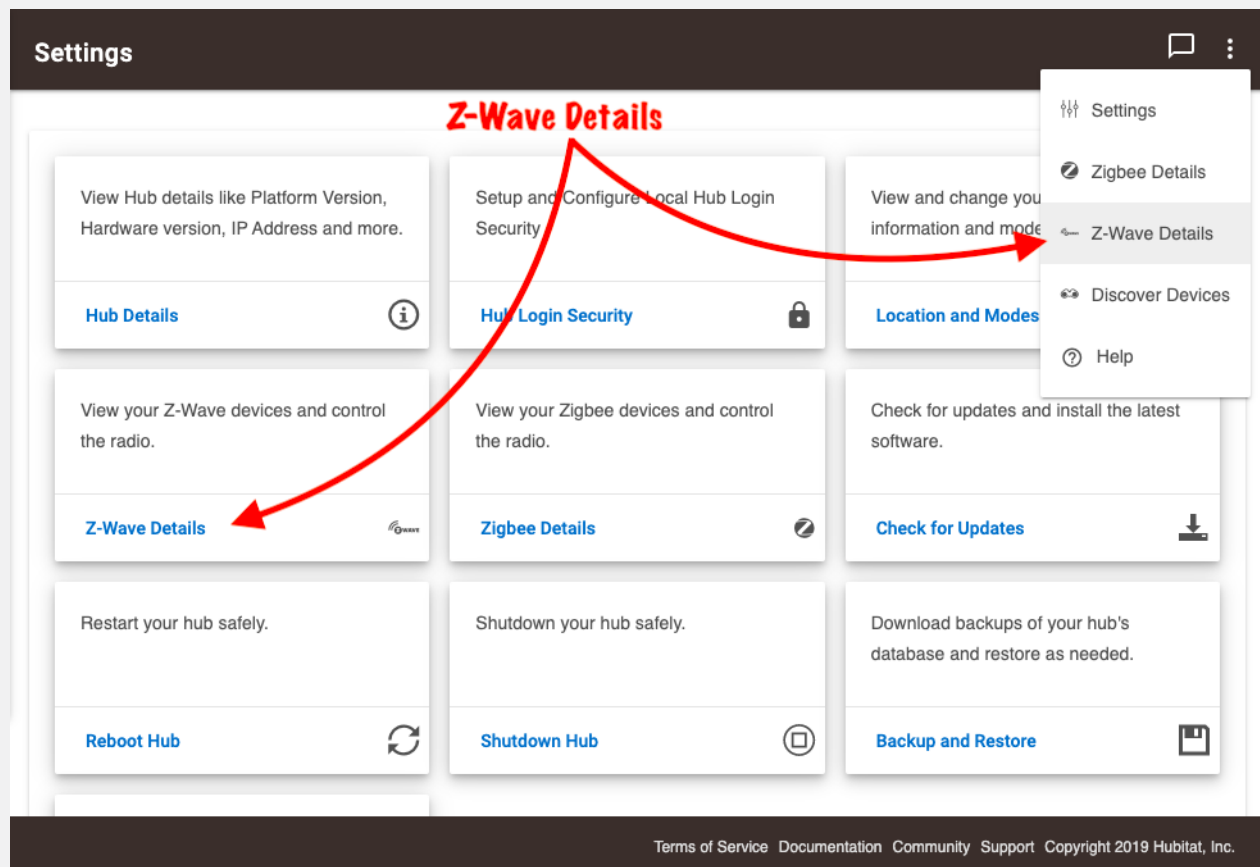
2. Pressing the **Remove** button where available, will remove a node marked **FAILED** from the Hubitat Elevation® Z-Wave network.

   NOTE: Only nodes that have failed will display the **Remove** button.

3. A node that has an entry in the hub database, but is non-responsive may be **Force Removed** from the Hubitat Web Interface **Device details** page. However, if a device is **Force Removed**, it will leave a node entry in the Hubitat Elevation® Z-Wave Radio Devices list.

   NOTE: Automatic daily maintenance will remove entries that have no association in the hub database. The user may choose to manually remove the "ghost" entry by following **steps 1-2** above.

Rev R
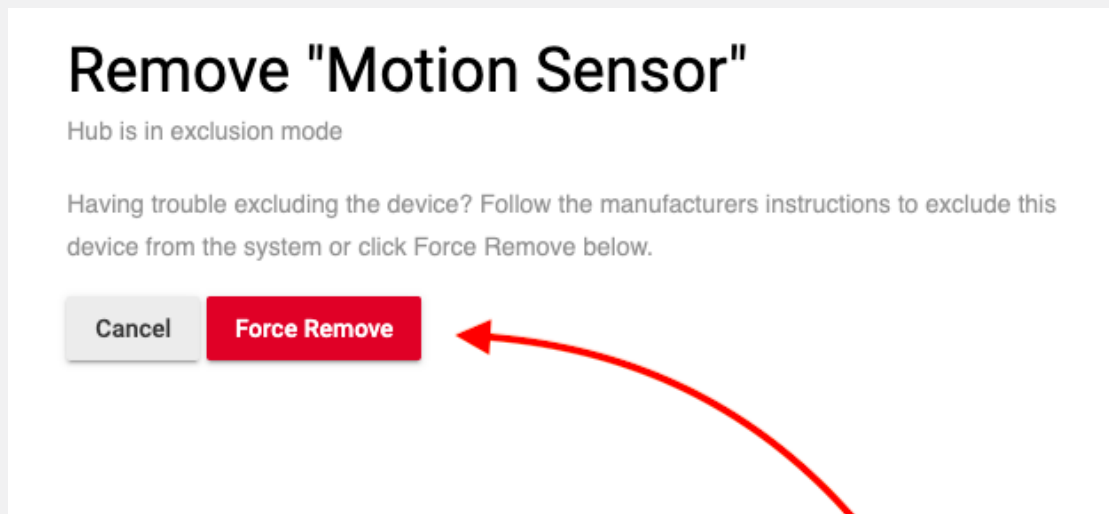
Repair a Z-Wave node database entry

If a Z-Wave device node entry remains, but there is no matching database entry, a **Discover** button will appear in the Hubitat Web Interface to allow the device to be added back into the hub database.

| **Repair a Z-Wave database entry - Adding a node back to the hub database**

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
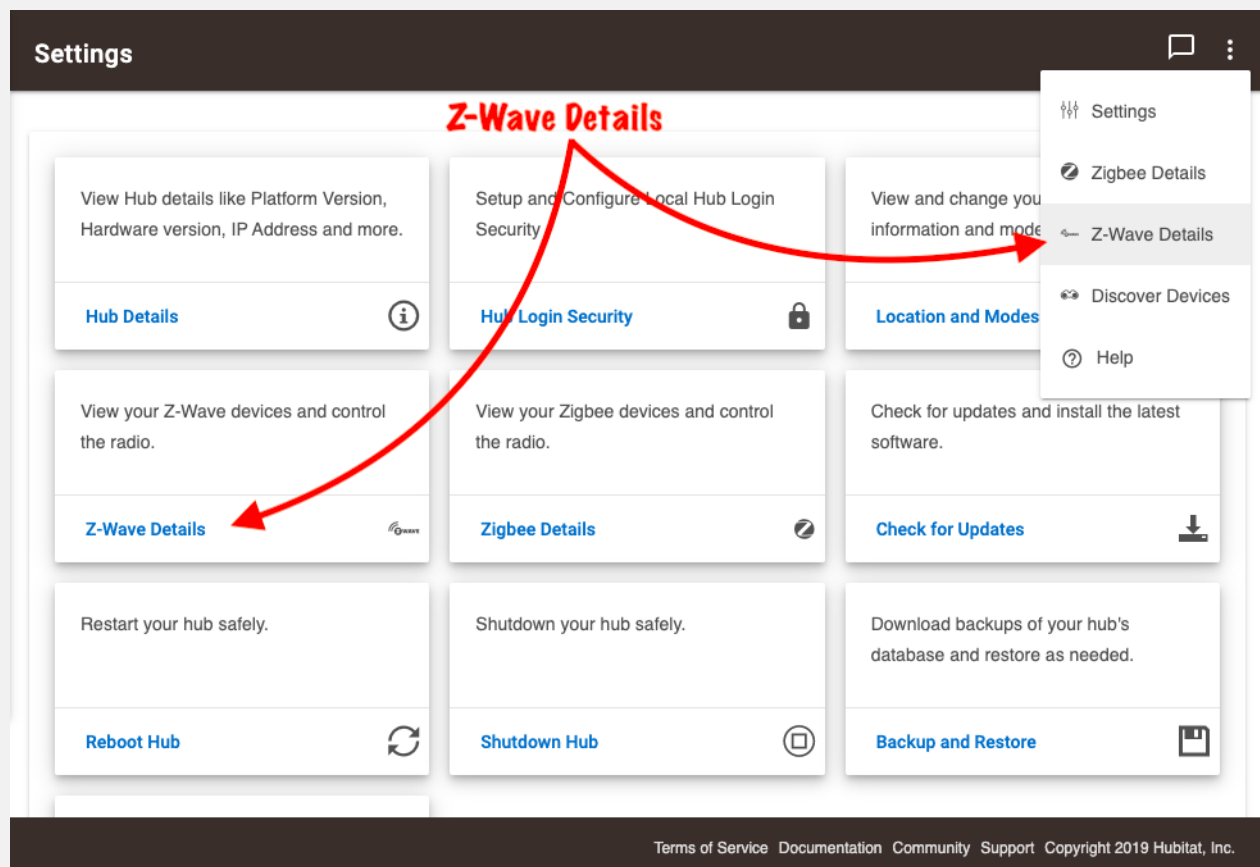
2. Pressing the **Discover** button where available, will interrogate the device, assign it a driver, and add the node into the Hubitat Elevation® database. The device will again appear in the **Devices** list.

   NOTE: The Discover button will only appear when there is no device in the hub database that matches the Z-Wave node entry.

Z-Wave Region Selection

Selecting the **Z-Wave Region** drop-down menu will allow the user to specify which licensed Z-Wave frequency, applicable for their country, should be used by the hub for Z-Wave radio communication. Only devices licensed to operate in your country should be used. It is not possible for the hub to operate on more than one Z-Wave frequency at a time.

| **Z-Wave Region - Select the applicable region for your country and licensed Z-Wave frequency compatible with your devices.**

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.

2. From the **Z-Wave Region** drop-down menu, select your country and press the **Update** button.

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3. Select **Settings** in the Hubitat Web Interface sidebar to the left, and select **Shutdown Hub**. It is not adequate to reboot the hub, since the Z-Wave radio is not powered down during a reboot. You must shutdown for Z-Wave Region changes to take effect.
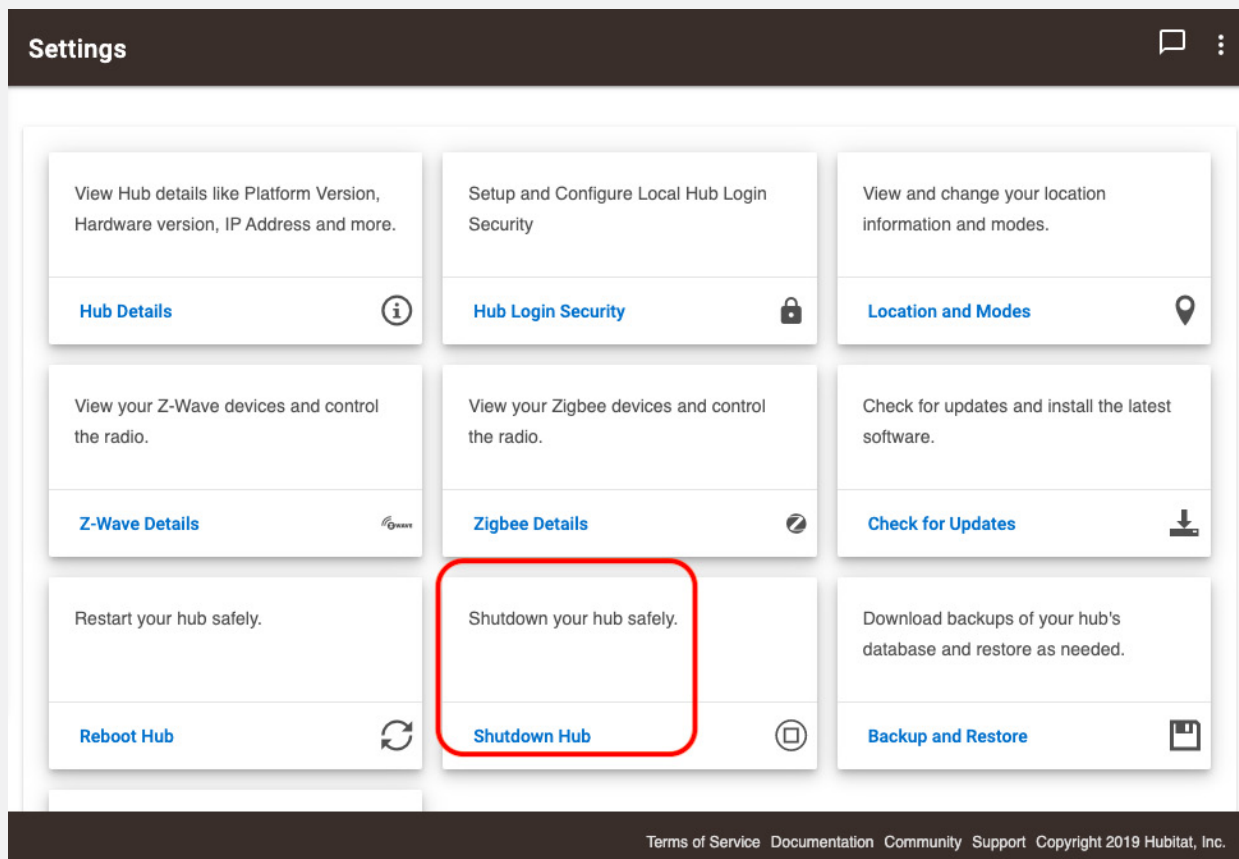

4. Wait **30 seconds**, then power cycle the Hubitat Elevation® hub to begin booting.

Z-Wave Radio Power

The Z-Wave radio may be **Enabled** or **Disabled** by selecting the desired state from the drop-down menu. This may be useful if you have a Z-Wave device that has become unresponsive, but does not have a **FAILED** status. You can set the Z-Wave status to **Disabled**, press the Update button, and then **Enabled** and press the **Update** button, rather than shutting the hub down to power off the Z-Wave radio.

| **Z-Wave Status - Select Enable or Disable to control the output of the Z-Wave radio**

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
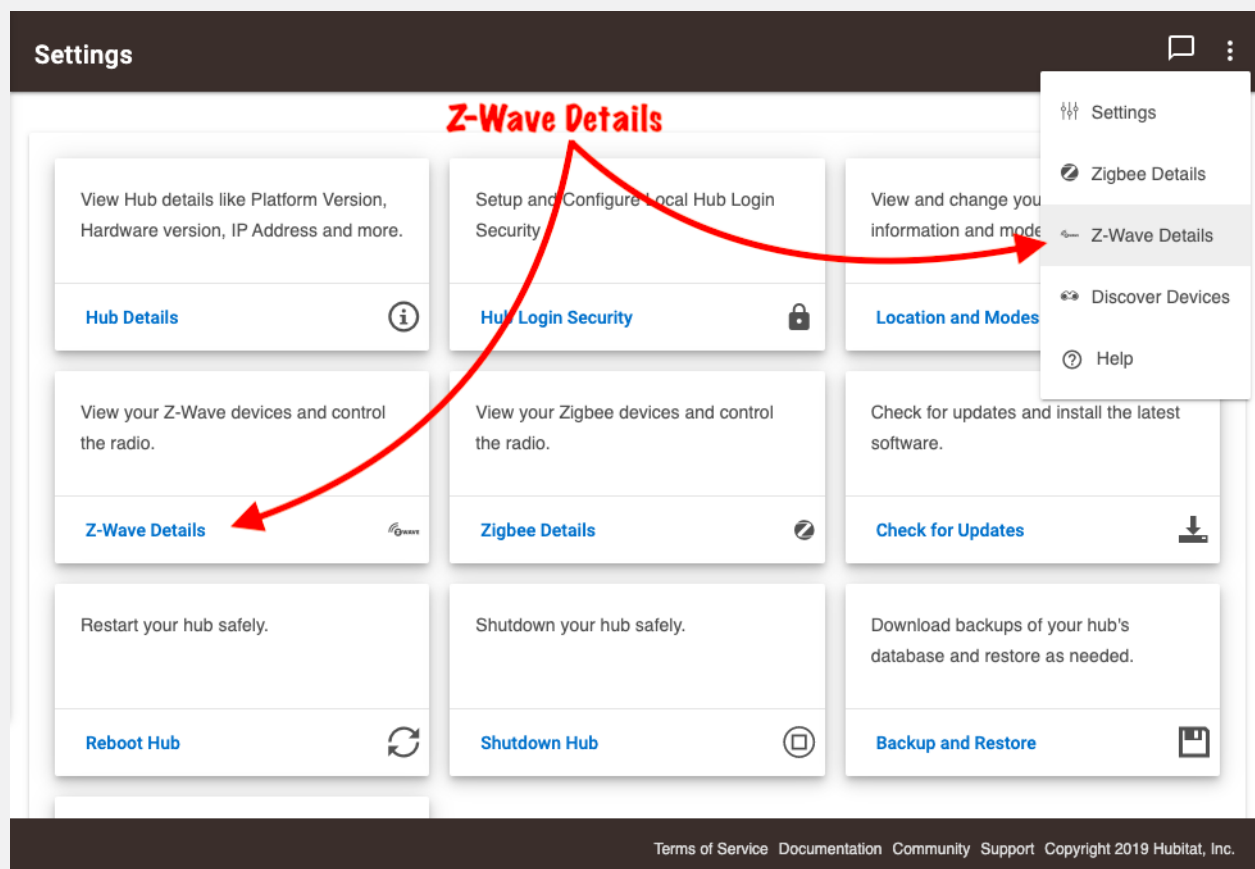
2. From the **Z-Wave Status** drop-down menu, select your desired status and press the **Update** button.

Rev R

Factory Reset

| Z-Wave Factory Default Reset - Restoring the Z-Wave radio to factory default settings

1. Choose the **Z-Wave Details** button from your Hubitat Web Interface home page, or from the 3-dot menu at the top right.
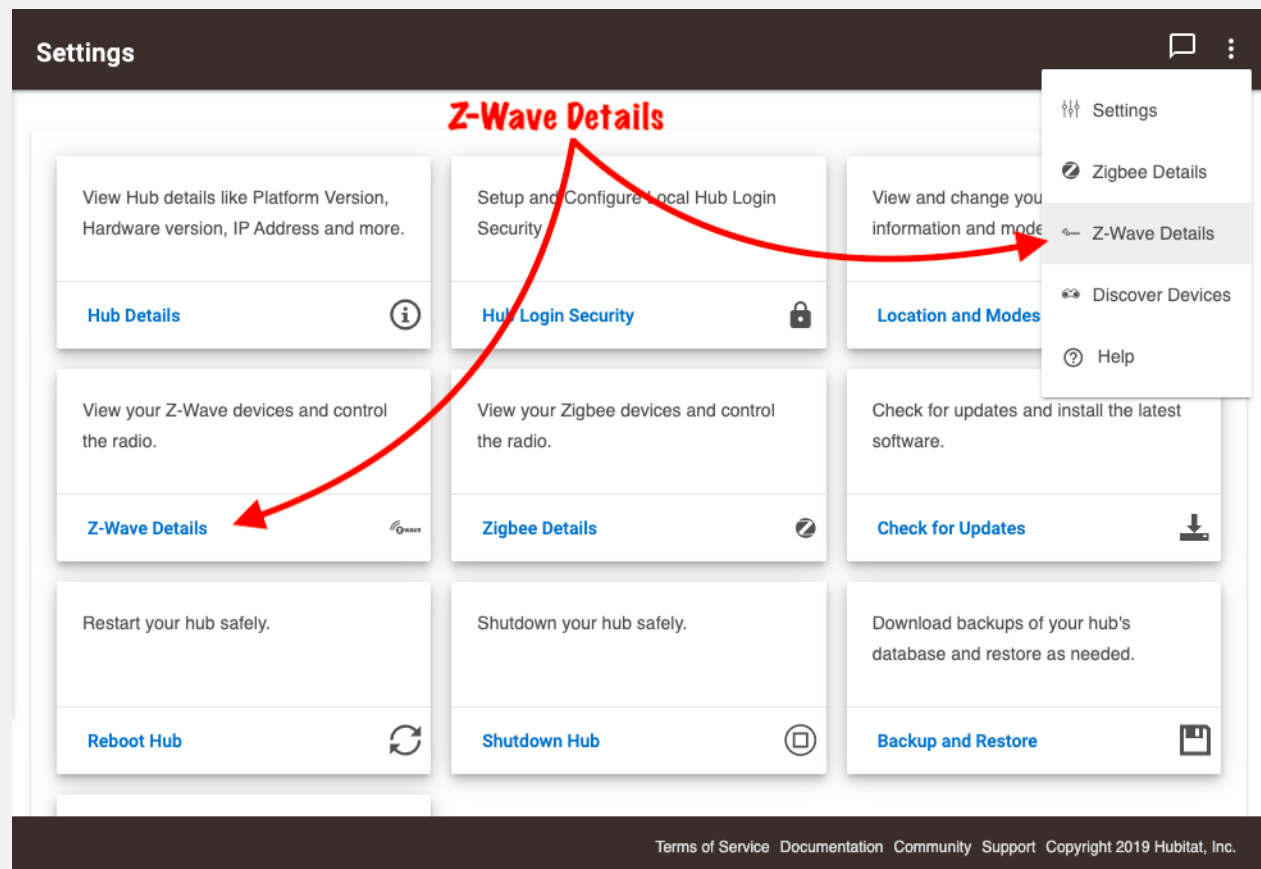
2. Type the word "reset" into the box just above the red **Reset** button and then press the **Reset** button.

Warning!

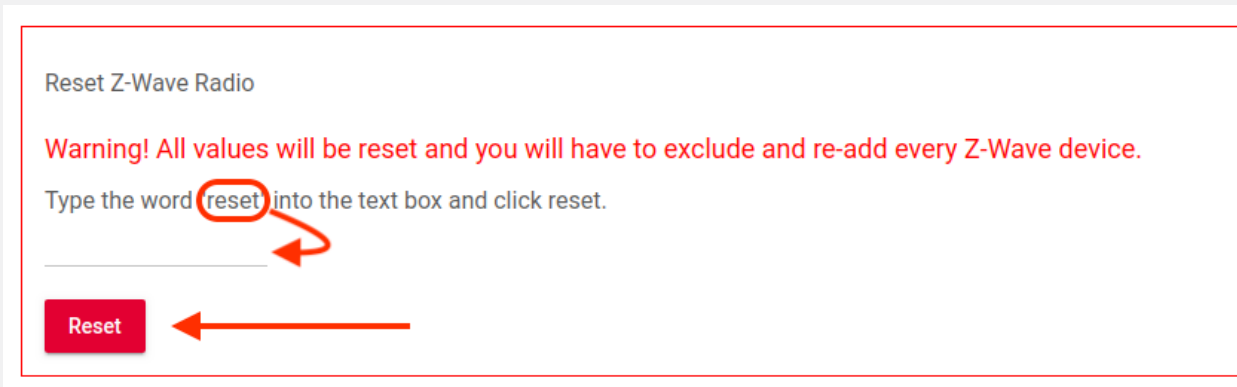Resetting the Z-Wave radio to factory default values will remove all devices from the list of Z-Wave Radio Devices.

- The hub Devices list, automation apps, and all Hubitat Elevation® Rule Machine® rules that included Z-Wave devices will have to be repaired or rebuilt.

- All Z-Wave devices will have to be excluded and re-added to the hub.

| Hubitat Elevation® hub Full Reset - Completely restoring the hub factory default

1. Navigate to **http://[Your hub IP address]:8081**
   (i.e. http://192.168.1.10:8081)

2. Select the **Full Reset** button.

Restore Previous Version

Set Hub Date and Time
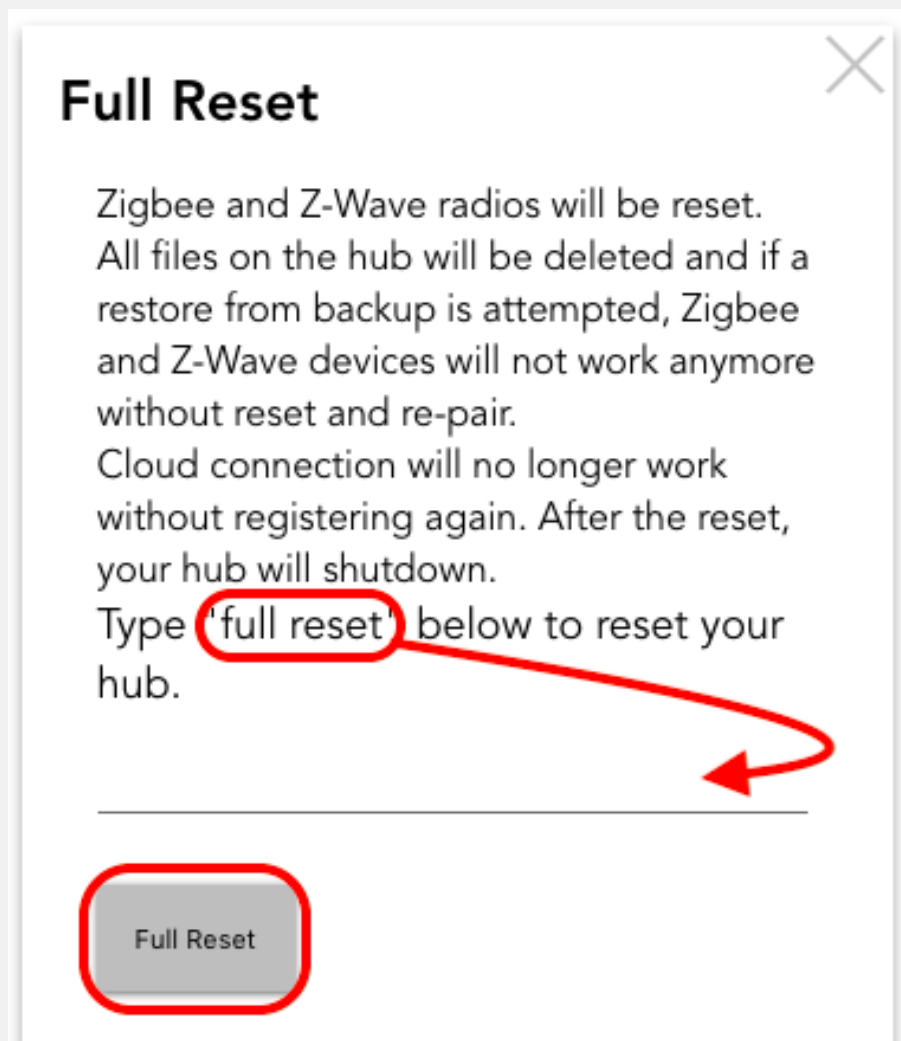
Reboot Hub

Shutdown Hub

Enable Safe Mode

Soft Reset

Full Reset

Logout

3. Type the words "full reset" into the box just above the **Full Reset** button and then press the **Full Reset** button.

4. After the Full Reset, the hub will automatically shutdown.

   See **Warning** on next page!

Rev R

Warning!

Resetting the Hubitat Elevation® hub to factory default values will delete all installed device connections, apps and user code from the hub. All devices connected to your hub will have to be reset or excluded before they can be re-connected. If this controller is the primary Z-Wave controller for your network, resetting it will result in the nodes in your network being orphaned and it will be necessary after the reset to exclude and re-include all of the nodes in the network. If this controller is being used as a secondary Z-Wave controller in the network, use this procedure to reset this controller only in the event that the network primary controller is missing or otherwise inoperable.

- A database backup may be restored, but it will not remove the requirement to reset, exclude and re-pair all devices.

- All automation apps and all Hubitat Elevation® Rule Machine® rules that included Zigbee and Z-Wave devices will have to be repaired or rebuilt.

- The hub cloud connection will no longer be valid and will require the user register the hub again.