



Installing and Configuring the Voice UPB Bridge updated 15-Oct-2023

Getting Ready

There are several steps you should take to get ready to install and configure the UPB Voice Bridge.

1. There are several hardware products needed. These are:
 - a. The PIM-R available from PCS. The PIM-U can't be used. This PIM will be used 24/7 by the Voice Bridge, so if you have one you use for programming your UPB devices we urge you to get another that can be dedicated to this use.
<https://pcswebstore.com/products/pulseworx-powerline-interface-module-rs232>
 - b. The automation hardware product called Hubitat. This is available from many different resellers or from the Hubitat company directly. The newer – and so more expensive – C8 receives and transmits at a longer range but that may not matter to you. The communications between the Hubitat and the serial network adapter are over a network connection so if you don't plan on using ZWave devices with the Hubitat – which is usually what it is used for - the C7 will work fine.

<https://hubitat.com/products>
 - c. A serial to network adapter. This is available from Global Cache and is called the “iTach Flex – IP Version”. You also need the “Serial RS232 Flex Link Cable”. Be careful when purchasing this as they have different versions. You want the version that connects to your network using a RJ45 cable. We have not tested with the wireless model so don't recommend it. We have not tested with the POE version and, as you will have to plug in the PIM and Hubitat, that wouldn't offer much benefit.
<https://www.homecontrols.com/Global-Cache-iTach-Flex-IP-GCFLEXIP>
<https://www.homecontrols.com/Global-Cache-Flex-Link-Serial-Cable-GCFLEXRS232>
2. As part of these instructions, you will have to login to your Amazon account (Alexa) or Google account (Google Assistant) that you use with your voice assistants, so have the email address and password associated with that account ready.
3. You will need a UPB file that contains all your UPB devices. If you don't have that you can create one for your installation using UPStart. The UPStart application can be downloaded from the

PCS website at no charge.

4. You will need to know the IP address of the Hubitat, the iTach Flex, and the IP address of the computer you will install the configuration software on.

You must use whatever features are available in your network router to make sure those IP addresses don't change in the future. You do not have to use a static IP address as most modern routers have a way to ensure a device is assigned the same IP address each time. Some routers call this DHCP Reservations. Look around in the router settings and it will be in some setting area.

5. **If** you used an older version of the UPB voice bridge, there are two tasks to do: Removing the old bridge managed devices and the old Bridge skill.

This task will be annoying so prepare yourself. You must use the Alexa mobile app and remove all the old Bridge created devices. We know of no faster method to do this.

- a. In the Alexa main page at the bottom is an icon labeled "Devices". Tap on that.
- b. At the top of page shown is "All Devices". Tap on that.
- c. Tap on a device created by the old UPB Voice Bridge model.
- d. Tap on the "Gear" icon at the top of the page that opens.
- e. Look on the page at the type and it will say it was from UPB Voice Bridge. This tells you that this is one of the older model bridge created devices.
- f. Tap on the garbage can icon at the top of the page that opens.
- g. A popup asks if you want to go ahead. Tap on "Delete". You are returned to the listing of all devices.
- h. Find and remove the next device.

The second task must also be done using the Alexa mobile. From the "Devices" bottom menu choice, click on "Your Smart Home Skills" button. Locate the UPB Voice Bridge skill in the enabled section and tap on it to open. Then disable it.

For Google Assistant a similar procedure exists to remove what Google calls an "Action" (like an Amazon "Skill" but with a different name).

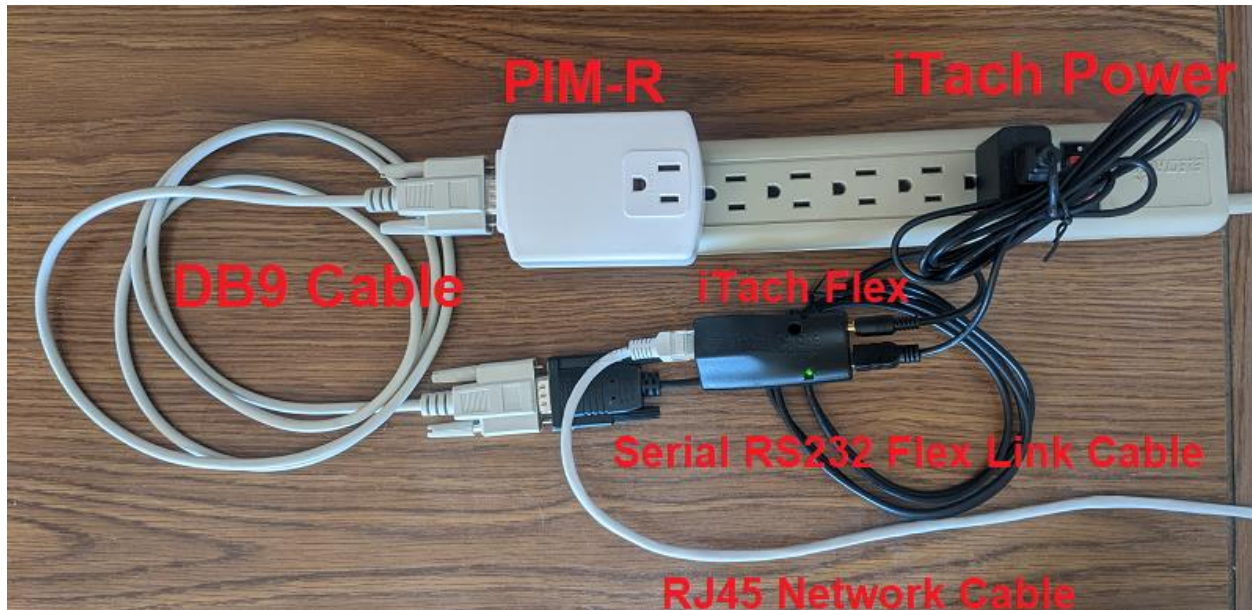
Step 1: Install the Hubitat

Follow the instructions that came with it to install and to create a Hubitat account. Use whatever tools you are familiar with (your router or find.hubitat.com) to determine the IP address assigned to the Hubitat. Write down that IP address for use later. Hubitat does offer a monthly subscription for backup. It is optional and you **do not** need that.

Step 2: Install the iTach Flex, Serial RS232 Flex Link Cable, and the PIM-R

Follow the instructions included with the iTach Flex. Mostly this is connecting all the parts together:

1. Connect the DB9 Cable – included with the PIM-R – to the PIM-R
2. Plug in the PIM-R to power
3. Plug in the RJ45 network cable to the iTach Flex
4. Plug in the iTach Flex power adapter to power and the power cable to the iTach flex
5. Plug the DB9 cable from the PIM-R to the iTach Flex cable
6. Plug the iTach Flex cable into the iTach flex



Once all are connected, determine the IP address of the iTach Flex using whatever tools you are familiar with (your router device table or the iHelp tool available from Global Cache) to determine the IP address of the unit. Write down that IP address for use later.

Start a browser and connect to the iTach flex by using its IP address.



Click on the “Flex Link Cable” button.

Change the Cable type to “Serial” and then set the serial configuration necessary for the PIM-R. Baud 4800, no flow control, no parity, 8 data bits, 1 stop bit.

Serial Cable Configuration

Cable Type: RS232

Baud Rate: 4800 ▼

Flow Control: None Hardware

Duplex: Half Full

Note: The **Duplex** setting only applies to RS485.

Parity: None Even Odd

Data Bits: 8

Stop Bits: 1 2

Gender Changer: True False

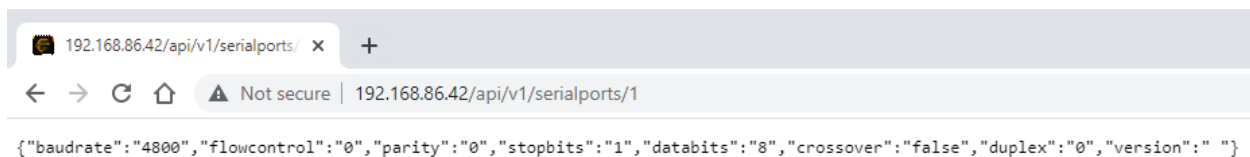
Enables internal crossover.

Save Configuration

Don't forget to press the Save Configuration button to program the iTach unit.

To check your work, request info from the Global Cache like this:

<IP Address>/api/v1/serialports/1



The browser displays the serial port settings.

Step 3: Create device drivers in Hubitat

For this step you will need four text files. They are available on the Voice Bridge website using links provided after purchasing the Voice Bridge software components.

As you need them, you can just open one in your browser (follow the link), do a select all (ctrl-a), and copy the file contents on to the Windows clipboard (ctrl-c).

The web page provides links to four Hubitat drivers and one Hubitat app. In this step you will be installing the four drivers. The next step you will be installing the one app.

Connect to your Hubitat as usual and click on “Drivers Code” in the left-hand menu. It’s under the “Developer Tools” in the Hubitat left menu. Click on the “New Driver” button in the upper right. The display changes to a largely blank screen with “New Driver” in the upper left corner. Take the contents of one of the text files and paste it into this page and then press the “Save” button in the upper right.

```

New Driver modified Drivers code Import Spaces 4 No wrap Save Help
1  /*
2  * UPB Connector for Scenes
3  *
4  * Calls PulseWorx Gateway for control
5  *
6  * Intial release: 11-June-22
7  */
8  metadata {
9  definition(name: "UPB Scene", namespace: "UPB", author: "UPB Voice Bridge", importUrl: "") {
10     capability "Switch"
11 }
12 }
13
14 preferences {
15 section("UPB Network Connection") {
16     input "UPBId", "text", title: "UPB Scene Id", required: true
17     input name: "ConnectedAt", type: "text", title: "When Gateway connection made"
18     input name: "logEnable", type: "bool", title: "Enable debug logging", defaultValue: false
19 }
20 }

```

Next, click the “<< Drivers code” link to return to the previous page and start the process again of creating the other drivers using the other text files.

When you have all four drivers created you should see this. There may be other drivers listed, just make sure you have the four as in this image:

Name	Namespace	Capabilities	Last Modified
UPB Command Connector	UPB	Switch	2022-09-09 10:17:00am PDT
UPB Dim Object	UPB	Switch, SwitchLevel	2022-09-12 12:27:43pm PDT
UPB Non-Dim Object	UPB	Switch	2022-09-11 3:26:08pm PDT
UPB Scene	UPB	Switch	2022-09-12 12:28:08pm PDT

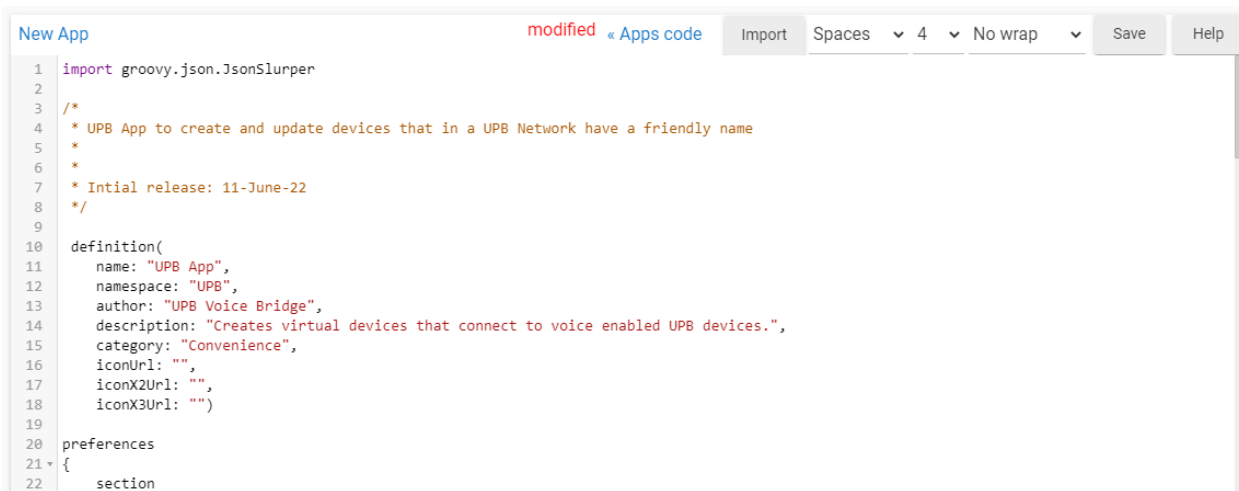
Step 4: Create the UPB App in Hubitat

For this step you will need another text file available on the Voice Bridge website. This is also provided after purchasing the Voice Bridge software.

Open the link in your browser (click on the link), select all (ctrl-a), and copy the file contents on to the Windows clipboard (ctrl-c).

Connect to your Hubitat as usual and click on “Apps Code” (**not** “Drivers Code”) in the left-hand menu. Click on the “New App” button. The display changes to a largely blank screen with “New App” in the upper left corner.

Take the contents of the text file and paste it into this page and then press the “Save” button in the upper right.



```

1 import groovy.json.JsonSlurper
2
3 /*
4  * UPB App to create and update devices that in a UPB Network have a friendly name
5  *
6  *
7  * Intial release: 11-June-22
8  */
9
10 definition(
11     name: "UPB App",
12     namespace: "UPB",
13     author: "UPB Voice Bridge",
14     description: "Creates virtual devices that connect to voice enabled UPB devices.",
15     category: "Convenience",
16     iconUrl: "",
17     iconX2Url: "",
18     iconX3Url: "")
19
20 preferences
21 {
22     section
  
```

Next, click the “<< Apps code” button to return to the previous page.

With the app added you should see this. There may be other apps listed. Just make sure that the UPB app is listed.

Name	Namespace	OAuth	Last Modified
UPB App	UPB		2022-08-02 1:50:42pm PDT

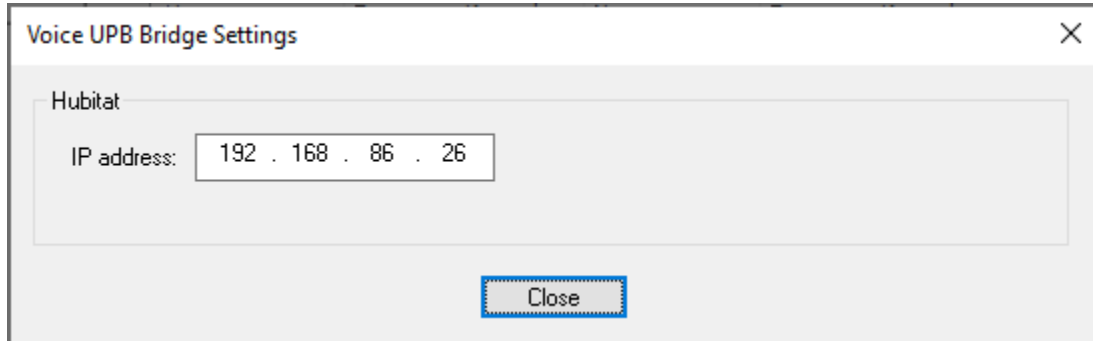
Step 5: Download and install Voice Bridge configuration software

Download and install the Bridge software from the support website. A link will be provided after purchase.

The Bridge configuration software installs on any post-XP version of Windows. Depending upon your version of Windows, Windows may give you a warning about “putting your PCS at risk”. The download is

fine, and you will see it is signed to us. Windows is really trying over hard to require moving things to their app store.

After install, start the Bridge software and press the Settings button. Enter the IP address of the Hubitat you determined in step 1.



Step 6: Loading your UPB network

This step gets ready to assign voice names and it begins with your UPB file created by the UPB Configuration program called UPStart.

The UPB File contains information about all the devices and scenes in your home and is created by UPStart. The whole setup process requires this file. If you don't have it, ask the individual or company that installed your UPB devices as they may be able to supply it. You can also use a facility in UPStart to create a file from your installed devices.

In the Bridge software, press the *Open UPB file* button and browse to the UPB file to open it. The Bridge software reads the file and lists all the devices in your home that are capable of being voice controlled. If you have other type devices – input modules, timed event controllers, keypads - they will not be listed. The voice control name for each device is initially set as the room name followed by the device name with characters not valid in voice control names removed. These names can be changed in the next step.

Note: If you have entered a name for the device on the “Remote Access” of the device properties in UPStart, those names are saved in the UPB file and that name is then used for the initial voice name.

Press the *Show Scenes* button to show any scenes you have. UPB switches and keypads can act as controllers to activate and deactivate scenes. The scene list is organized by controller – the device where you tap a rocker or push a button – and component – which rocker or which button. If the controller is a PulseWorx or HAI keypad, and if button engraving info was entered when the keypad was configured in UPStart, then that text is used to identify the button. The initial voice control name is the name of the scene.

Press the “Save Voice File” button to save all your settings into file with a “.voice” type. When you next start the Voice Bridge configuration program it automatically reloads that file.

Intermission: voice control of devices or scenes? Which do you want to do?

In the previous step you saw that the configuration software can show both devices and scenes and that you can assign a voice name to a device or a scene. Let's take a short break and look at the implications of those choices.

When making decisions about scenes, think about the scene controllers in your home. When you want to "set the scene" what keypad button do you press? What switch rocker do you tap? And do you want to be able to perform those actions using Alexa? If so, then go to the scene list and find the controller and the button you press or rocker you tap and enable that. It's often better to control a scene even if that scene controls only a single device. Let's take an example to clarify that.

In the laundry area is a switch that controls an exhaust fan. In the kitchen is a keypad that has a button labeled "Fan". That button transmits a scene activate or deactivate (it uses a Toggle button mode). That scene is in the laundry room fan switch's "receive components table". In short, the button allows you to power the fan on or off from the keypad.

Suppose you assign a voice name to the laundry room fan switch called "Laundry fan". Now you can voice control that device.

[Device voice enabled]

Laundry Room	Fan	Yes	Laundry Fan
Laundry Room	Lights	No	Lights



But if you do that, the keypad indicator for the kitchen keypad button labeled "Fan" will not correctly track the state of the fan. A better way would be to assign the voice name "laundry fan" to the scene and not to the device. Now when you ask the voice assistant to "turn on laundry fan" the fan does go on, and the keypad indicator also shows that.

[Device not voice enabled]

Laundry Room	Fan	No	Laundry Fan
Laundry Room	Lights	No	Lights



[Scene is voice enabled]

Kitchen - Keypad	B1: [Dinner A]	Dinner1	No	Dinner 1
	B2: [Dinner B]	Dinner2	No	Dinner 2
	B3: [Fan]	Laundry Fan	Yes	Laundry Fan
	B4: [Red]	House Red	No	House Red
	B5: [Yellow]	House Yellow	No	House Yellow



Another feature of the voice bridge concerns how it tries to make voice actions have similar effects with physical actions.

Suppose you have a switch configured to transmit a scene when the paddle is tapped. Like this:

ID	Rocker Switch	Options	Receive Components	Transmit Components	Advanced	Test	Communications Test	Remote Access
Rocker Switch Transmission								
Upon any type of rocker switch press, this device can be configured to transmit a specified command on a specified scene								
	Scene Name	Mode	Single-Tap	Double-Tap	Hold	Release		
Top	Art Boxes	On Button	Activate	Snap On	Activate	No Command		
Bottom	Art Boxes	Off Button	Deactivate	Snap Off	Deactivate	No Command		

When in your home and you tap the top of the switch paddle, the load is controlled to ON – that’s how the switch is electrically wired - and a scene activate command is transmitted as well. In this example, the scene named “Art boxes”.

The voice bridge determines this configuration from the UPB file and configures the voice action to do the same thing. Suppose you assigned the voice name “Desk Light” to this device. When you say “Alexa, turn on Desk Light”, the Bridge, via Hubitat, both sends a command to turn on the switch load, and also transmits the scene activate command for the “Art Boxes” scene.

The goal of the voice Bridge is to perform the same action as would happen if the device were physically controlled. Even though the preceding section may have been a bit confusing, there is even more detail in a [technical note](#) available on the support website. This explains the algorithm that the voice bridge uses to implement, for the various device types, the “same action as would happen if the device were physically controlled”.

Lastly, a big question to consider is: Which devices and scenes in the home should be enabled for voice control?

In general, think carefully about what devices and scenes to enable. The best tip is this: When just starting out don’t choose too many. You can always change names and enable / disable later.

In a later step a technique is described on how you can make a reference sheet you can print listing all the voice control names. This can help yourself and family members know what words to use when talking to your assistant.

And now onward to the next step!

Step 7: Selecting devices and scenes

Before we start the instructions for this step, here are the rules for voice control names – the name you say to your voice assistant that identifies what you want to control.

1. Every name for a device or scene must be unique. No two names can be the same.
2. Names must include only letters, numbers, and blanks
3. Some words must not be used as part of the name. There is no comprehensive list of these words, but the Bridge software has a suggested list and points out if you use one. Some examples are names that contain “on”, “off”, “dim”, “music” and others.

You may have many devices in your home that potentially can be controlled by your voice assistant. You probably don't want all of them to be controlled that way. One reason is that it can be hard to come up with good names to refer to each of them. Voice control names should be short, easy to remember, and different enough from one another so your assistant doesn't become confused between one device and another. The best reason is you probably don't need to control them all by voice.

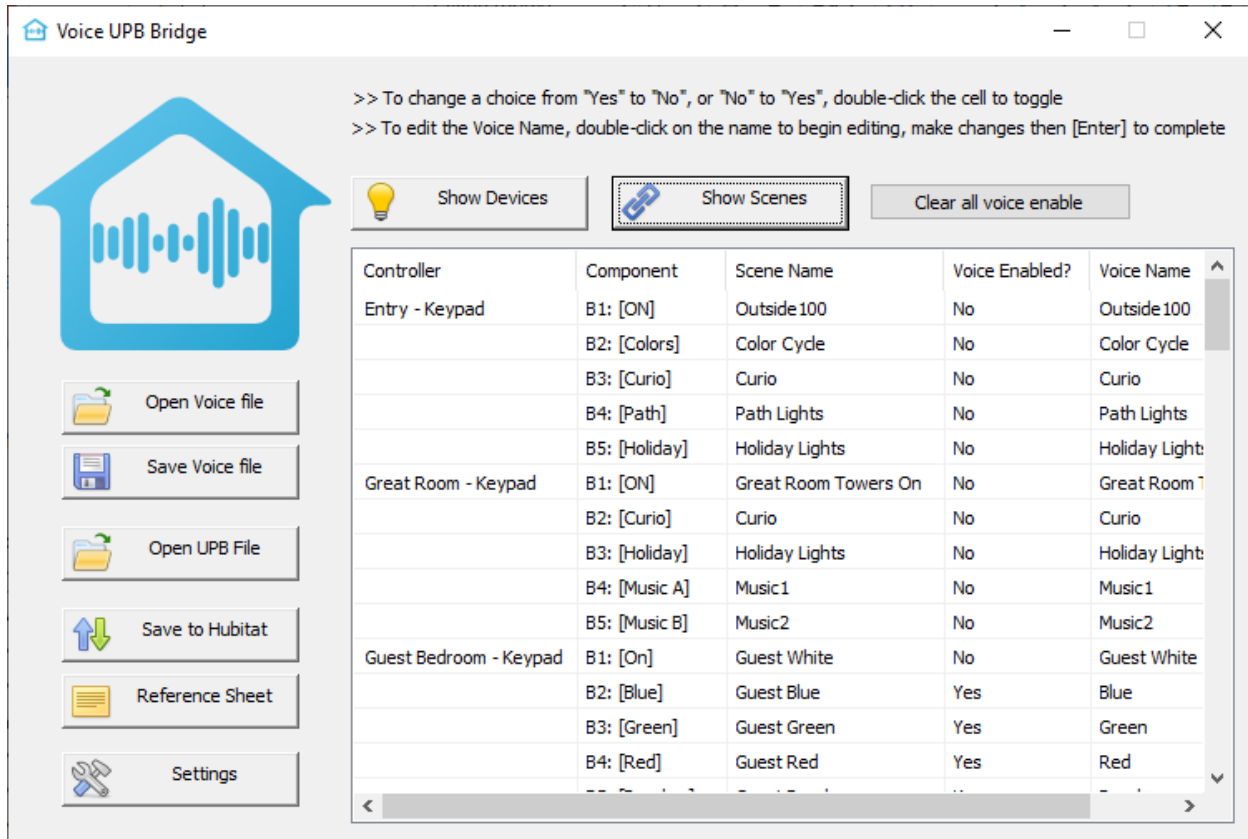
You can enable or disable a device from voice control by double-clicking on the *Yes* or *No* text in the “Voice Enabled” column for the device. A double-click toggles between enabling and disabling voice control for that device.

The voice control name can be changed by double-clicking on the name to begin an edit. Then edit the name to what you want and press the Enter key to complete the edit.

>> To change a choice from “Yes” to “No”, or “No” to “Yes”, double-click the cell to toggle
>> To edit the Voice Name, double-click on the name to begin editing, make changes then [Enter] to complete

Room Name	Device Name	Voice Enabled?	Voice Name
Crawl Space	Sensor Power	No	Sensor Power
Dining Room	Lights	No	Lights
Downstairs Bath	Mirror Lights	Yes	Mirror Lights
Entry	Lights	No	Lights
Garage	OCM	No	OCM
Garage	OCM ch2	No	OCM
Great Room	Curio	No	Curio
Great Room	Holiday Lights	Yes	Holiday Lights
Great Room	Tower Left	No	Tower Left
Great Room	Tower Right	No	Tower Right
Guest Bedroom	Art Boxes	No	Art Boxes
Guest Bedroom	Lights	No	Lights
HCA Central	Lights	Yes	Desk Lights
House	Circ Pump	Yes	Hot Water
House	Emergency Keypad	No	Emergency Keypad

In the Bridge software press the *Show Scenes* button. As described in the previous step, the list is organized by the controller of the scene. In the same way as devices, you can double-click on the *Yes* or *No* to enable or disable voice support and double-click on the voice name to change.



However, you may not always want to control many devices directly. If you often control devices by pressing keypad buttons to change scenes, then you should concentrate on controlling scenes and not devices as described above.

Note: It is not uncommon for more than one controller in your home to activate the same scene. For example, a button on a keypad in one room and a button on a keypad in another room may activate the same scene. When you enable or disable such a scene or edit its name you will see it becomes enabled or disabled for all controllers of that scene.

Tip: You can drag the Windows bigger to see more devices or scenes if you have many.

That was a lot of information so you probably have some questions about the UPB file and the voice files, right?

How does UPStart and the Bridge configuration software cooperate?

When you load a UPB file into the Bridge configuration program, the "Label / Name" on the "Remote Access" tab when viewed in UPStart carries into the Bridge configuration. Also, the "show" checkbox also carries into the bridge configuration - if it is ticked then the configuration program shows as voice enabled. If the "show" box in UPStart is not ticked it will not show as voice enabled.

This image is from UPStart on the "Remote Access" tab of a device properties:

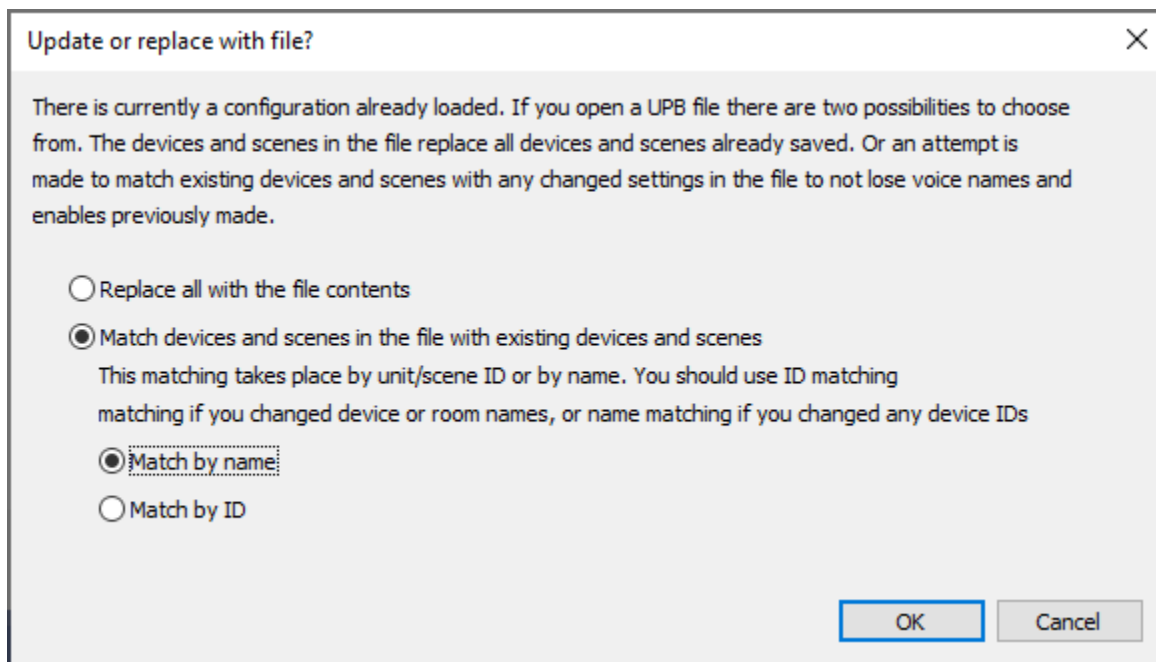
<input checked="" type="checkbox"/> Show	Label / Name	Icon	
<input checked="" type="checkbox"/> Channel 1	Theater Electronics	Audio Video	<input type="button" value="Change"/>

When to load a UPB file into the voice bridge software?

The idea is that you **don't** load the UPB file into the Bridge configuration software each time you make a change to your UPB devices using UPStart. After the UPB file is read the "Save voice file" button saves a processed form of your UPB devices and scenes with all your voice names and enables in a file with type "voice". Next time you start the bridge configuration software all your devices, scenes, and voice information are reloaded from there.

Let's suppose you have completed the initial configuration and things are working. Later you want to make a change to a voice name or to disable something. Run the configuration program again and load the voice file. No need to go back to the UPB file.

However, if you do make changes to your UPB network using UPStart, for example by adding a new device, then you will have to reload your UPB file into the Bridge configuration program. Any voice enables or voice names you had previously assigned will not get lost as the software matches what you did before with what is now in the UPB file. First load the voice file and then use the "Open UPB File" button. This popup appears:

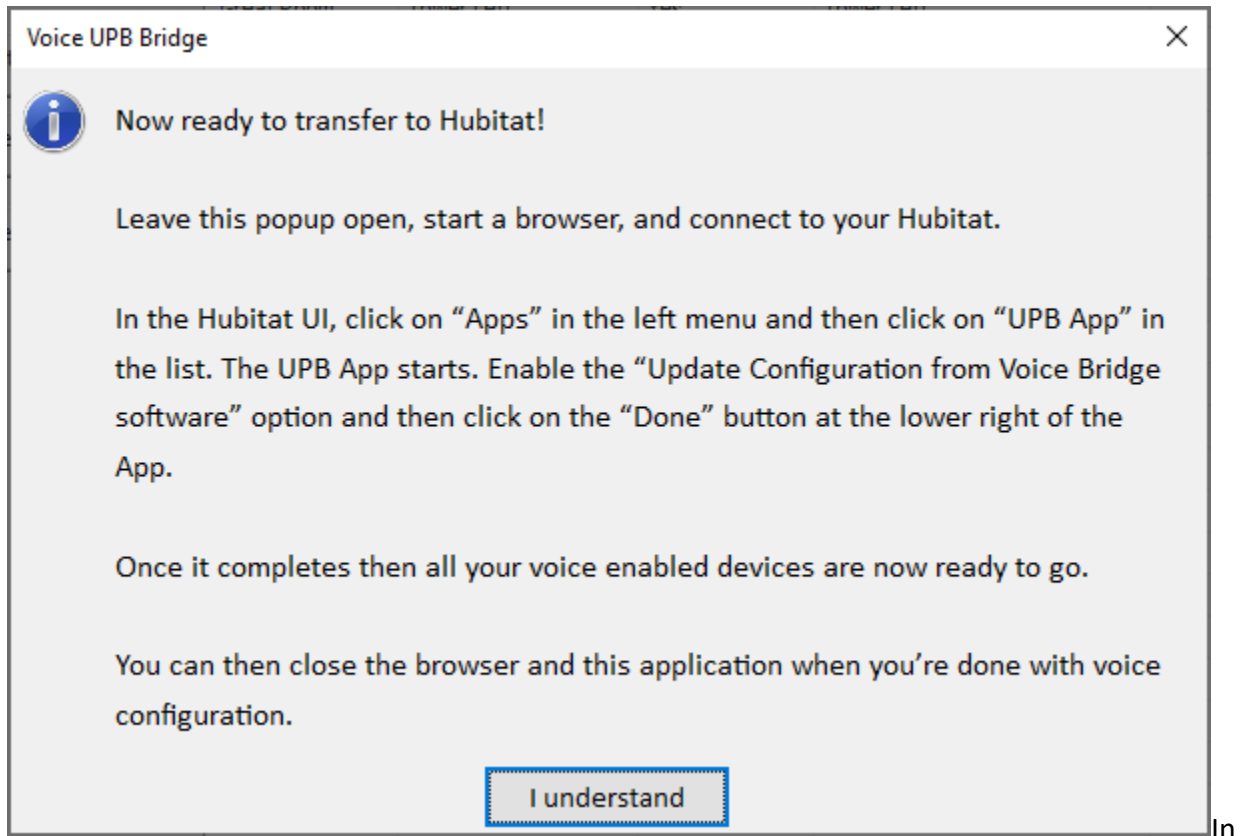


A final point on this: If you make a minor change in Upstart you **don't** need to reload the UPB file into the configuration program again. What's a minor change? Changing a preset level within an existing scene. If you do add a new device or scene, or add or remove a device from a scene, then you should reload your UPB file. But as said above, you will not lose any of your work in assigning voice names.

Step 8: Getting ready to save to the Hubitat

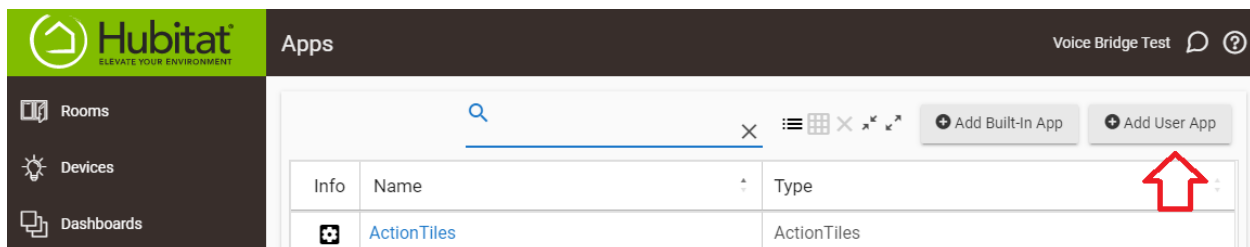
When you have selected the devices and scenes to be controlled, press the *Save to Hubitat* button. As part of this the Bridge software checks that all the names are valid, and you have no duplicates. If there are problems, popup messages explain and point out problem names.

After you press the “Save to Hubitat” button, this popup appears and describes what to do next.



Step 9: Use the UPB application in Hubitat to import your UPB devices

Start a browser and connect to the Hubitat, go to the Apps section - *not the "Apps Code" section* – and press the “Add User App” button.



Click on the “UPB App” in the list of apps and it is added to your Hubitat system and it starts. Next time you are here you can go direct to the App as the “Add User App” is only needed once.

UPB App

Configuration computer IP Address*
192.168.86.35

PIM serial network adapter IP Address*
192.168.86.42

UPB Network ID*
136

Enable debug logging

Update Configuration from Voice Bridge software

Assign a name
UPB App

Set for specific mode(s)
Choose Modes

Remove Done

If this is the first time using the app, enter the three required pieces of information. Please take care to get these correct.


The computer IP address can be determined by whatever tools you are familiar with. An easy way is to start a Windows command prompt and then enter "IPConfig" on the command line. Find the current IP address in what is displayed.

The ITach address was determined back in step 2.

The UPB Network ID can be found in UPStart by looking in the properties of any device using UPStart.

Edit Device: Unit 028 - Great Room - Keypad

ID Options Keypad Tx Indicators Advanced Engraving Test Co



Name Info


Network Name

Room Name

Device Name

ID Info

Unit ID

Network ID 

Manufacturer ID

Product ID

Firmware Version

Click on the option button “Update configuration from voice bridge software” to enable, and then click on the “Done” button.

The app creates a virtual device in Hubitat for each object that has a voice name assigned in the bridge configuration.

If this doesn’t seem to work for you, look in the Hubitat logs as the UPB App puts messages there. In the Hubitat UI, click on “Logs” in the left-hand menu. Then click on “Past Logs” in the header. Scroll around and you will probably see errors listed. If the App completes then it reports like this:

app:36 2022-06-13 06:36:56.189 am info Devices added:8 updated:0 removed:0

If something looks wrong, first check that all the IP addresses you entered are correct and that the Bridge configuration software is running, and the popup shown in step 8 remains on the screen.

Step 10. Configure Hubitat for voice control

While it may seem like you have done a lot of work already – you did! - you are nearly done. All you need to do is to follow the directions supplied by Hubitat on their support site to configure voice control.

The key is that you must add the Alexa skill (or Google Action) to your account The directions for Hubitat are quite comprehensive and easy to follow. As the Hubitat documentation says, it all starts by saying, “Alexa, Add the Hubitat Skill”, but please do follow their step-by-step instructions.

<https://docs2.hubitat.com/apps/amazon-echo-skill>

If you are a Google Assistant user, there are instructions for that as well.

<https://docs2.hubitat.com/apps/google-home>

Subsequent changes to voice names using the Bridge software

If you make a change to a voice name, or if a device or scene has its voice enable changed, there is a two-step process to complete once you are done making changes in the Bridge configuration software.

Don't forget to start the process with the "Save to Hubitat" button in the configuration software.

Next, connect to the Hubitat using a browser, and then open the UPB App (go to the Apps list and click on the UPB App link to open), enable the "Update configuration from voice bridge software" option, and close with "Done". This updates existing Hubitat virtual devices like this:

- For voice name changes, the label (where the voice name goes) is changed.
- For the addition of a new voice enabled device, a new Hubitat virtual device is added.
- For a device no longer voice enabled, that Hubitat virtual device is removed.

Here is the part that can be easy to forget: Open the Hubitat App for your voice service and tell it that voice names have changed.

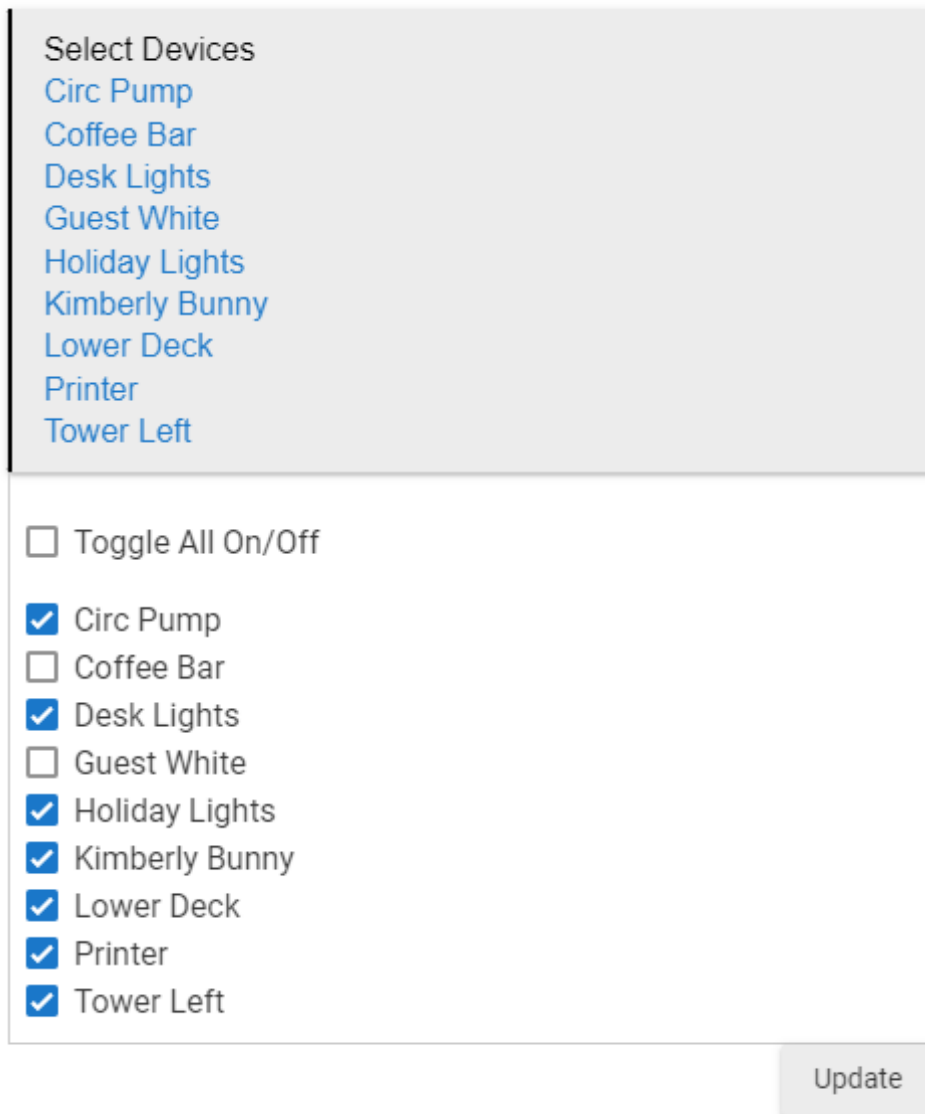
For example, when using Alexa, use the "Amazon Echo Skill" app as shown below. For Google Assistant it will be equally obvious which to use.

Info	Name	Type
	ActionTiles	ActionTiles
	Amazon Echo Skill	Amazon Echo Skill
 	Hubitat® Dashboard Dashboard	Hubitat® Dashboard Dashboard
	UPB App	UPB App (user)

When the app is open, click on the device list to get to where you can make changes. Click anywhere in the gray box headed by "Select Devices":



That click expands to show a checkbox list below it so you can make changes:



If you added a new voice enabled device, you will have to set the tick next to it in the list. New voice named devices are not automatically made available to the voice assistant.

If you didn't add a new device but only removed a device or changed a voice name, you still must also use the voice assistant app in Hubitat just as described above. Click on the list of devices – the grey box – so it expands, then click the “Update” button, and then the “Done” button. You must do this even if you didn't tick or untick anything in the list.

Commit your changes with the “Update” button, and then close the App with the “Done” button. Very important to do “Update” and “Done”!

After the “Done” button is pressed, generally, the voice assistant discovers the changes and reports that something has changed. In some cases, this automatic discovery doesn't happen, and you then must ask it to discover devices in the usual manner.

Step 11. Finishing up

To help all family members get used to using Alexa or Google Assistant, you can capture a list of the devices and scenes that you have enabled and their voice control names. Press the *Reference Sheet* button in the Bridge software and a File-Save popup lets you save a simple list you can print.

You don't need to leave the Bridge configuration software running and can close it at any time.

##end##