

Using the Line 6 Helix with Cantabile

Derek Cook © 2022



Introduction and Background

This guide shows you how to setup and use the Line 6 Helix Guitar Processor to act as a control surface for Cantabile, allowing automatic song selection in Cantabile when you select patches on the Helix. It also shows you how to use the Helix **Command Centre** to configure Helix foot switches to trigger bindings in Cantabile, for example to start and stop backing tracks in Cantabile, and change song states.



I hope that you as an interested Cantabile user will also find this guide useful. Even if you do not own a Helix, you may be able to adapt the ideas included in this guide for your own setup.

This guide was written using Cantabile Performer 4 (latest version), and you may need to adapt the approaches given here for other versions of Cantabile.

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Helix and Cantabile Design Approach

For the small set I put together for my ambient duo, Carreg Ddu¹ I wanted the following as part of this Helix and Cantabile setup:

- To be able to play to backing tracks;
- To control Cantabile from my Line 6 Helix (no need to touch Cantabile at all once the set is loaded);
 - Cantabile Songs are selected when I select Helix patches;
 - I can start and stop the Cantabile transport from the Helix.
- To send patch changes and chords to a TC Helicon VoiceLive 2 vocal processor (for real time vocal harmony generation);
- To have a “Practice mode” in the backing tracks, where if my singer that I was collaborating with was not about, I could bring in a track of their vocals to practice against².

The main design approach to using Helix as a control source in this context was to create a Cantabile Linked Rack, to contain bindings for Cantabile Song selection and other actions, with these bindings being triggered from the Helix.

This Linked Rack is then used within all of the Cantabile Songs within a related Cantabile Set List, so that the features provided by the Rack are shared across the songs in the set list.

The guide assumes that you have songs setup similar to the use case above. I describe how the songs are created and setup after the description of how the Helix Linked Rack is setup, which will give you an idea of how the Helix Linked Rack is used in context.

¹ Welsh for “Black Stone”.

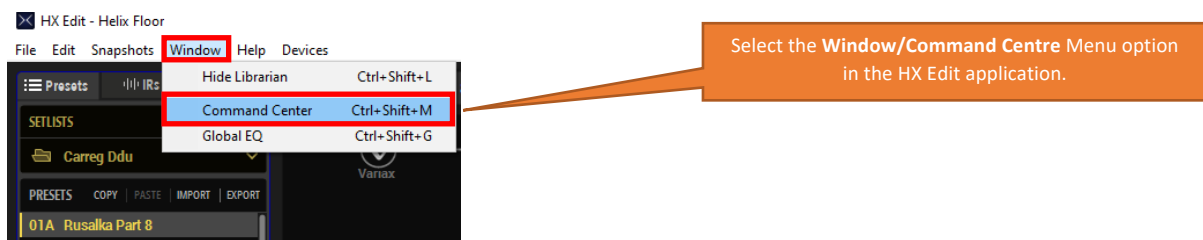
² And have this built into the Cantabile set, but in a way that it could not accidentally left selected during a live performance – or worst case if that happened, I could turn it off.

Setting up the Helix

To allow control of Cantabile Transport Start/Stop and to switch my “practice mode” on or off, I have setup the following foot switches in each Helix Patch using the Line 6 **HX Edit** program.

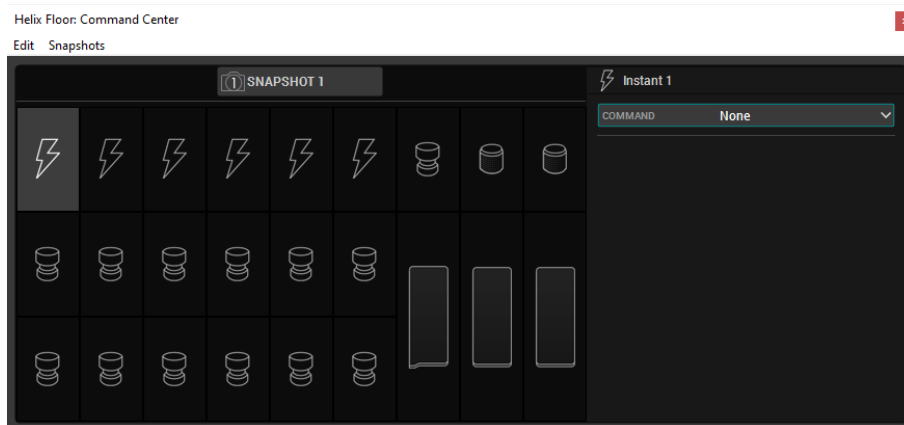
- A Start song footswitch;
- A Stop song footswitch;
- A Practice enable/disable footswitch.

In the Line 6 **HX Edit** application, select the patch you wish to edit and select the **Window/Command Centre** menu option (you could of course do this from the Helix front panel as well if you prefer, but it is easier to show from **HX Edit**).



This provides the following **Command Centre** window, which you can use to setup what MIDI commands are sent for the following:

- Up to six “Instant” commands³, which are sent when you select a patch;
- Built in Expression Pedal Toe switch;
- Variax Guitar volume knob;
- Variax Guitar tone knob;
- Twelve Footswitches (Stomp Switches);
- Three Expression Pedals (one built in, two external).



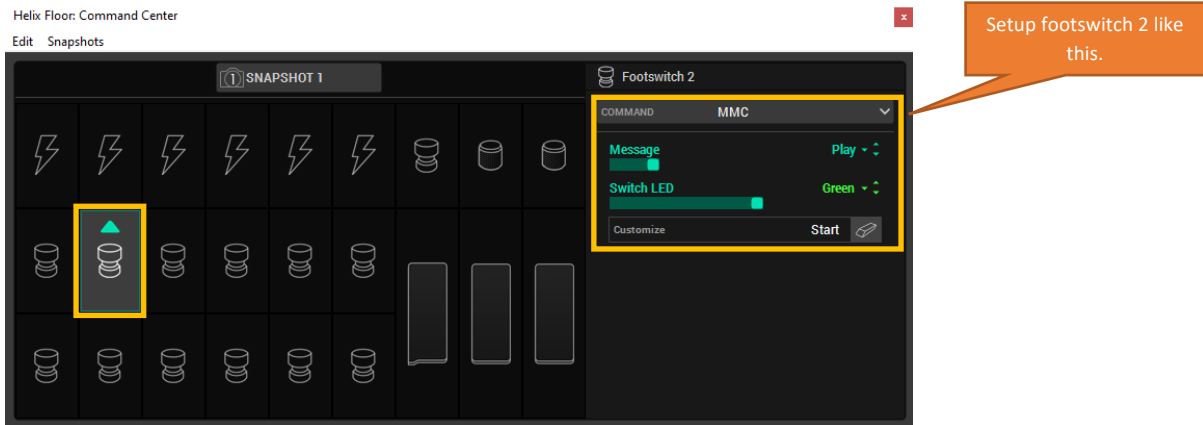
I want to set the Footswitches (stomp switches) as follows:

- Footswitch 2 Start Cantabile Song;
- Footswitch 3 Stop Cantabile Song;
- Footswitch 5 Enable/Disable Practice Mode.

³ Signified by the “lightning” icons.

In the Command Centre Window, select Footswitch Switch 2 and set it up as follows:

Command	MMC
Message	Play
Switch LED	Green
Customize ⁴	Start



Notice how a controller that has been configured has a green arrow above it to show it is active.

In the Command Centre Window, select Footswitch Switch 3 and set it up as follows:

Command	MMC
Message	Stop
Switch LED	Red
Customize	Stop



⁴ This is the text shown on the “scribble” strip for the footswitch.

In the Command Centre Window, select Footswitch Switch 5 and set it up as follows:

Command	CC Toggle
CC	102
Dim Value	0
Lit Value	127
Type	Latching
Switch LED	Blue
Customize	Practice



And don't forget to save your patch when you have finished.

This gives you the following on the Helix Pedal, I went for this arrangement as it still allows me four programmable stomp switches on the bottom row if I need them in a patch.

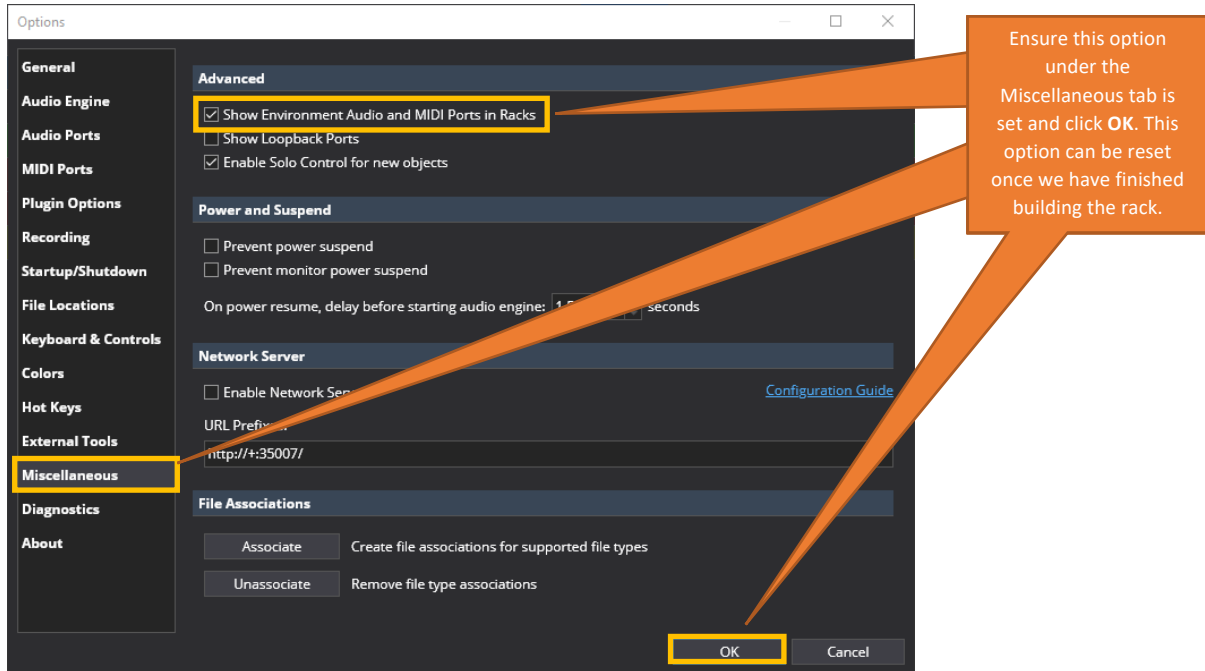


Once you have done this for one patch, you can right click and select **Copy All**, select your next patch and go to the Command Centre window for that patch, right click and select **Paste All**, which pastes most of the parameters you have just set up. For some reason the LED sleeve colours and customize text labels are not copied, so you need to set those up in each patch, which is a little annoying.

Setting Cantabile Options to View the Environment Ports

Please ensure that the following Cantabile option is set under **Tools/Options/Miscellaneous**.

Ensure that **Show Environment Audio and MIDI Ports in Racks** is checked.



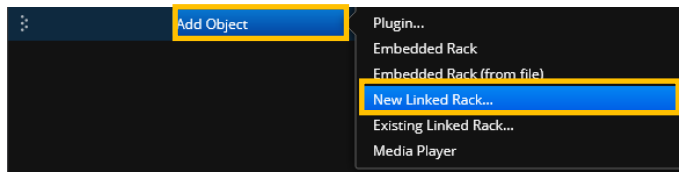
This option allows you to select input ports directly within racks, and is handy when you want a Linked Rack to encapsulate a device with no need to create a song level routing in each Song. For example, with the Linked Rack I am creating for the Helix, I just want to drop it into the songs, with no need to set up any routing in the song.

Once we have created the linked rack, you can always untick this option if you wish to just see the standard port options again.

Creating the Helix Linked Rack

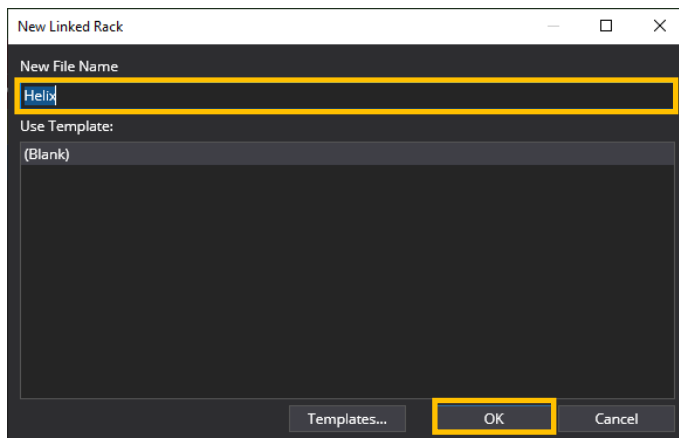
The first step is to create the Linked Rack that will be used across the songs

Within a new Cantabile song, click on **Add Object** and select **New Linked Rack...**

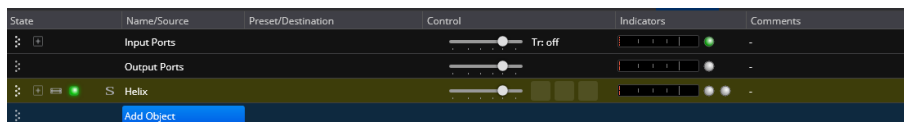


Add a New Linked Rack object called Helix.

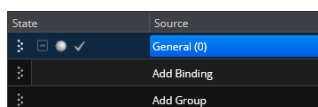
Type the Helix as the name of the Rack and Click **OK**.



And you end up with the following. I always colour my control racks gold.



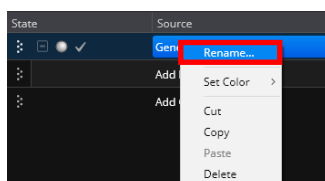
Double click on the Helix Rack to open it, and go to the bindings view, where you will see an empty binding group called **General**. It has no bindings under it, so it is labelled **General (0)**, and you have options to add bindings under it or to create additional binding groups.



General binding group that has no bindings yet.

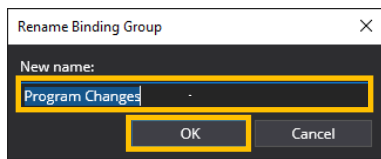
We will make use of the **General** binding group after having first renamed it, and then we will set up two more binding groups to keep our bindings organised (a very good discipline to get into the habit of doing!).

Right click over **General (0)** and select **Rename**.



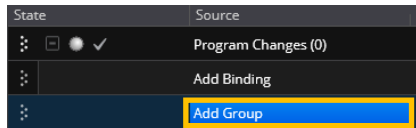
General binding group that has no bindings yet.

Type the name **Program Changes** and click **OK**.

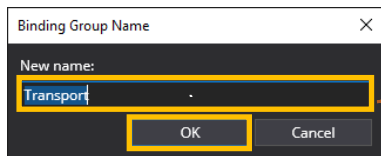


Rename the binding group to **Program Changes** and click **OK**.

Click **Add Group** and type the name **Transport** and click **OK**.

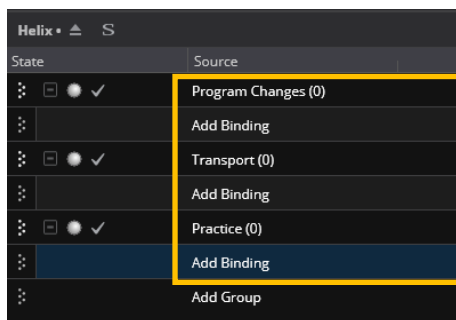


Click on **Add Group** to create a new binding Group, called **Transport** and click **OK**.



Repeat the above step and create another binding group called **Practice**.

You should now have the following binding groups



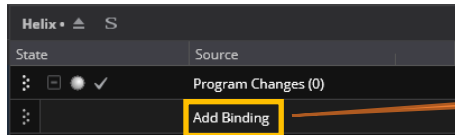
Our new binding groups.

Creating binding groups is not essential, but they are a good way of organising your bindings, which makes them easier to maintain and copy.

Creating the Program Change Bindings

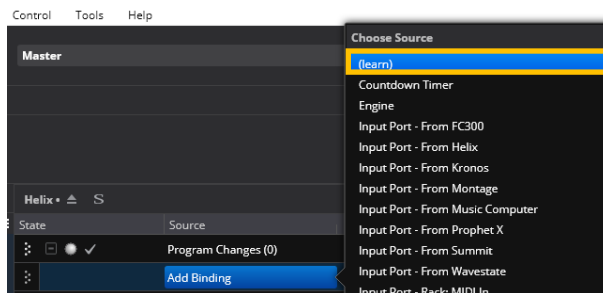
Here I will show you how to use Cantabile's MIDI learn feature to listen out for Helix Patch changes and create bindings to select the required Cantabile Song.

Under the **Program Changes** Group, Click **Add Binding**.

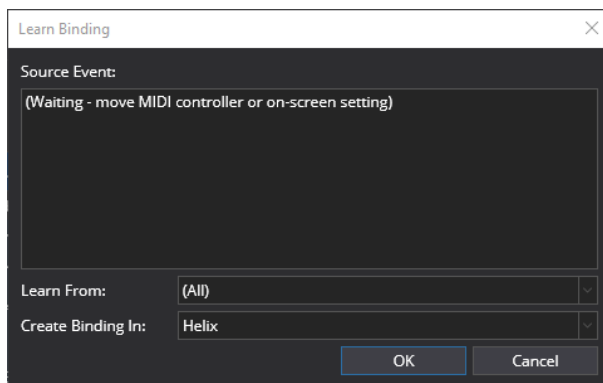


Click on **Add Binding**, followed by **(learn)**.

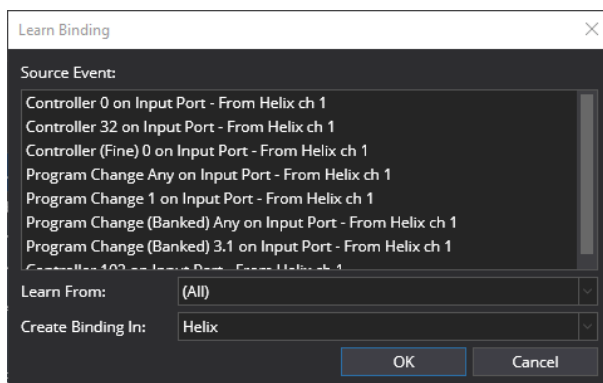
In the menu that appears, click **(learn)**.



You will get the following dialog, which is waiting for a MIDI event from any MIDI port.



On your Helix select the Patch that you wish to associate with the Cantabile song. You can also select the patch in **HX Edit** if that is easier and the Helix will still send the patch change event.

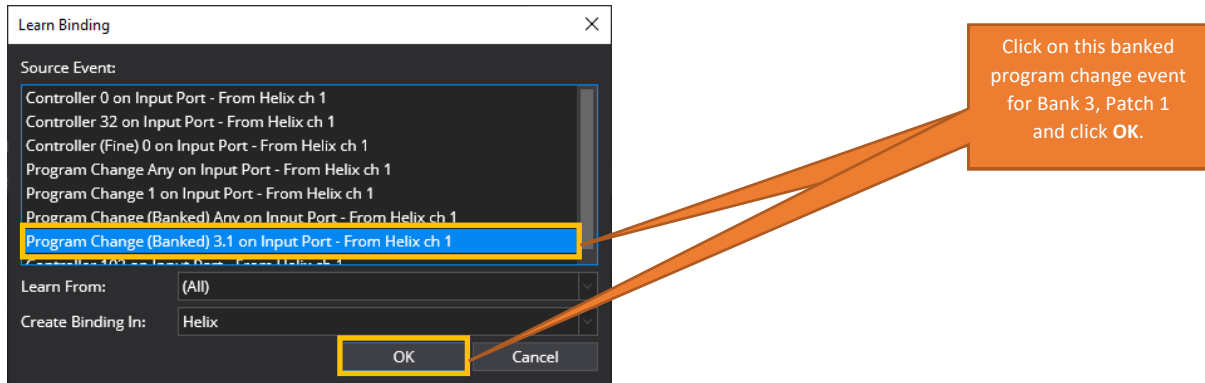


You will see that you get quite a lot of source events to select from!

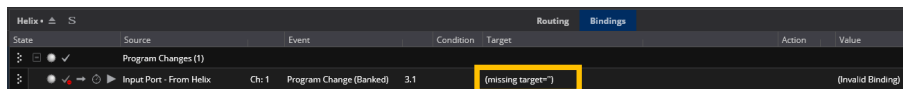
The one that you want is a banked program change from the Helix.

In my Helix I have selected the first patch in the 4th set list. The Helix does not send out bank select MSB/LSB CCs for the first set list (**Factory 1** by default), so the second list (**Factory 2** by default) is identified as the first Bank, the third setlist as Bank 2, etc. Strange, but true!

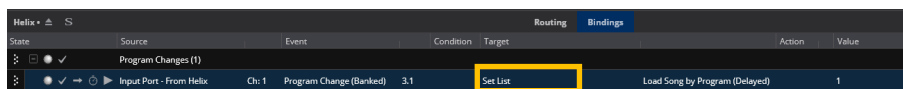
So, select the source event that is highlighted below and click **OK**.



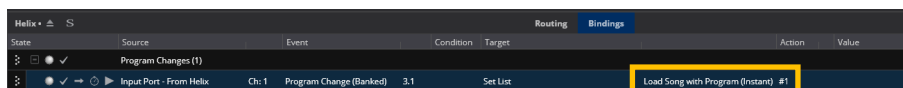
You should now have the following binding in Cantabile with a missing target.



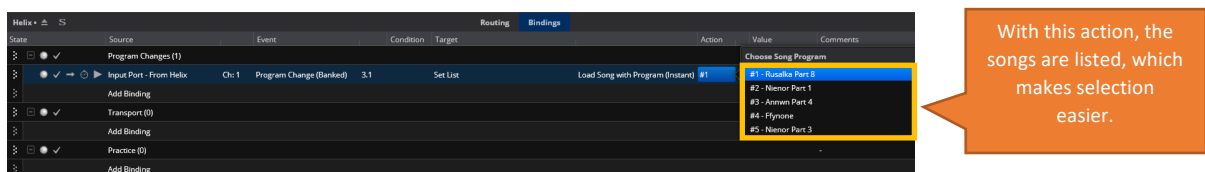
Click on **(missing target=)** and select **Set List** from the menu, and you will get the following.



Select **Load Song by Program (Delayed)** and change to **Load Song with Program (Instant)**.

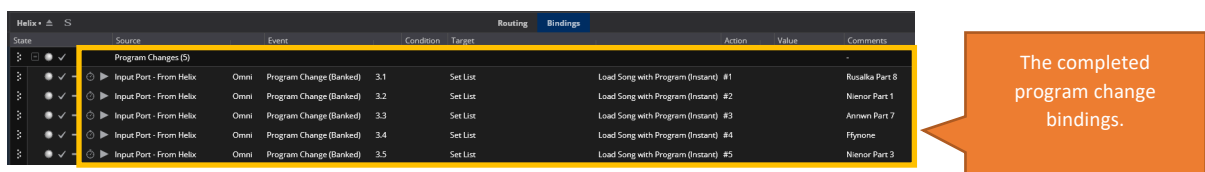


The reason for this change is that if you now click on #1 under action you get a menu that shows your loaded songs, so it is easier for setting up. For example:



Select the song that you wish to associate with the binding. In this case for banked change 3.1 then Song #1 is what I want.

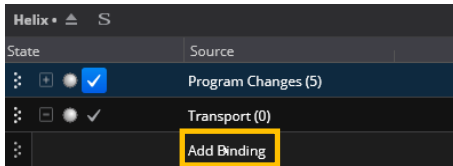
Repeat the binding step for all of your songs and you should now have the following **Program Change Bindings**. You can see that I have also entered the song name as a comment.



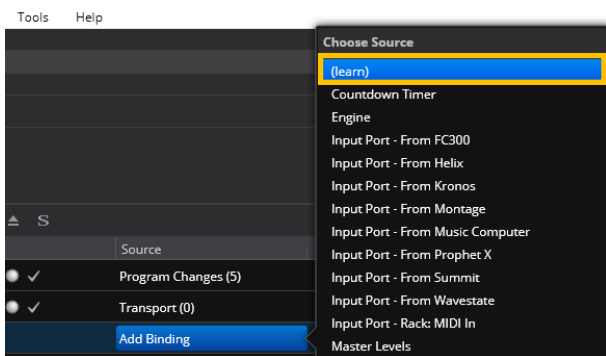
Creating the Transport Bindings

Here I will show you how to use Cantabile's learn feature to listen to foot switch presses and create bindings to start and stop the Cantabile transport.

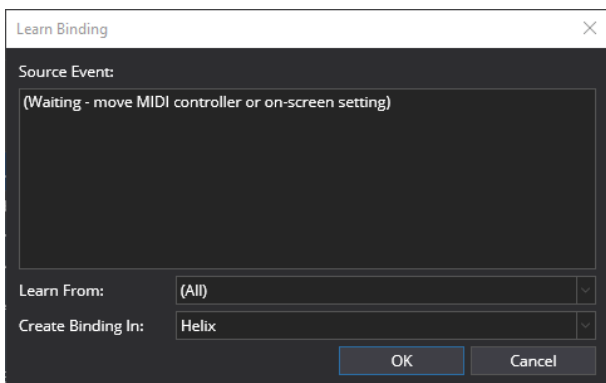
Under the **Transport** group, Click **Add Binding**.



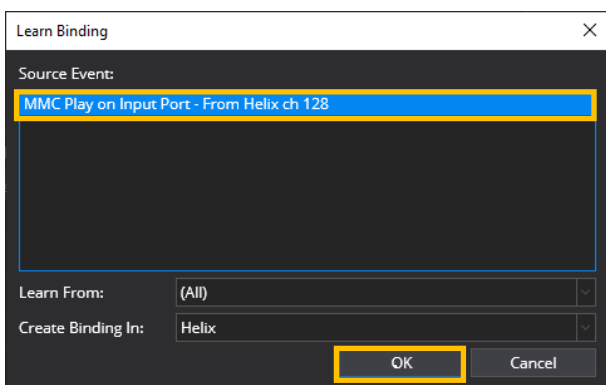
In the menu that appears, click **(learn)**.



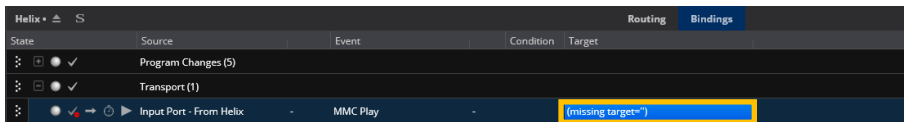
You will get the following dialog, which is waiting for a MIDI event.



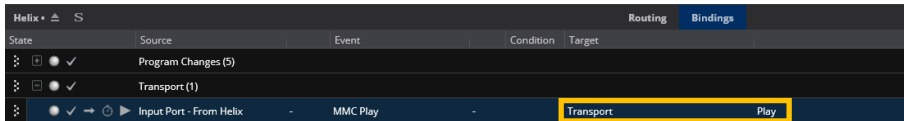
On the Helix, press your programmed **Start** footswitch.



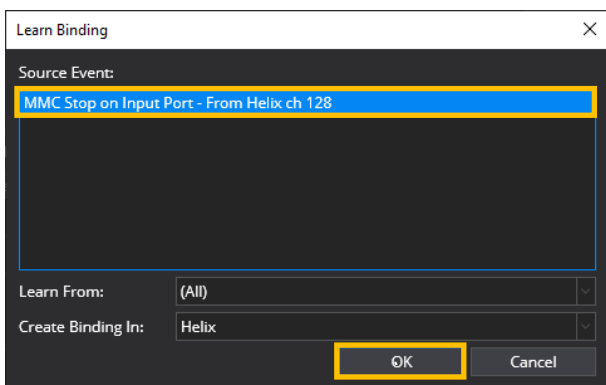
Select the **MMC Play** message and Click **OK**.



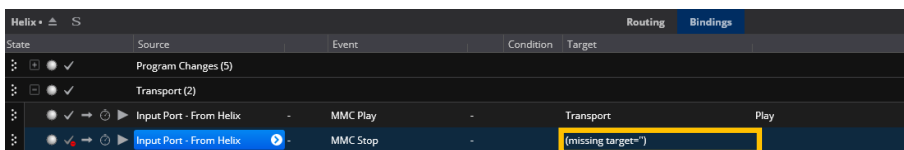
Click on **(missing target=)** and select **Transport** from the menu, and you will get the following.



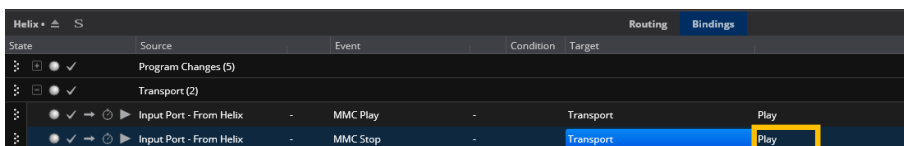
Click on **Add Binding**, and **(learn)** again, and this time press your programmed **Stop** foot switch on the Helix.



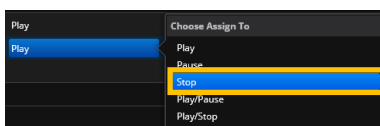
Click on the MMC Stop message and Click OK. You should have the following.



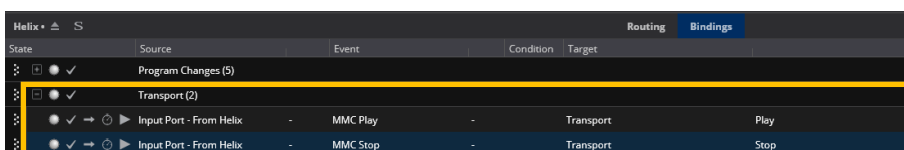
Click on **(missing target=)** and select **Transport** from the menu, and you will get the following.



Click on **Play** in the second binding and select **Stop** from the Menu.



You should now have the following two transport bindings.

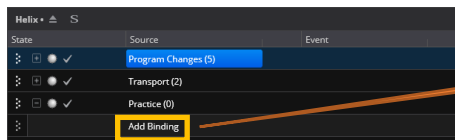


Now when you press these foot switches, the Cantabile Transport should start and stop as expected.

Creating the Practice Bindings

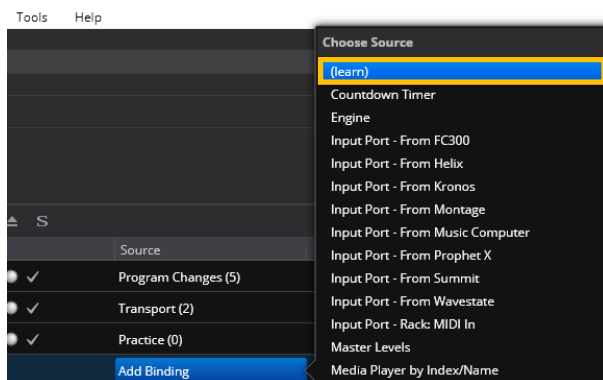
Here I will show you how to use Cantabile's learn feature to listen to foot switch presses and create bindings to switch between the **Gig** and **Practice** States that I will have in my songs in this set list.

Under the **Practice** group, Click **Add Binding**.



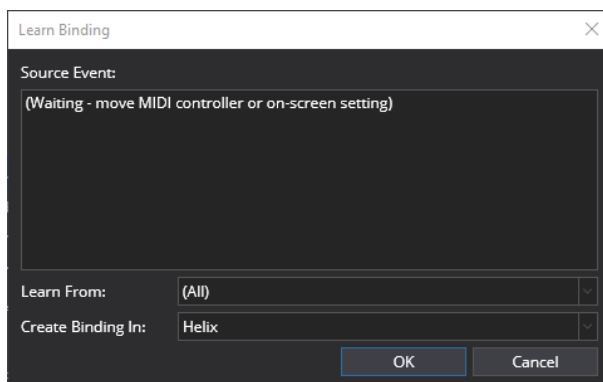
Click Add Binding.

In the menu that appears, click **(learn)**.

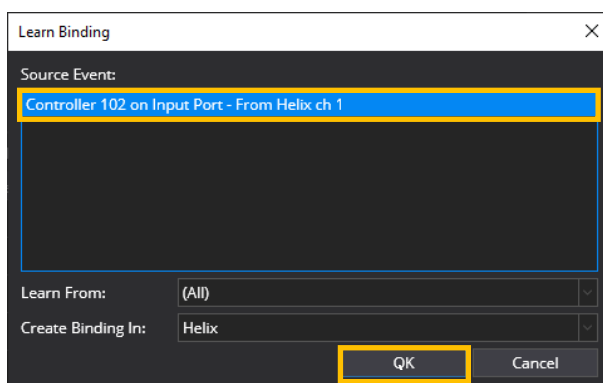


Select (learn).

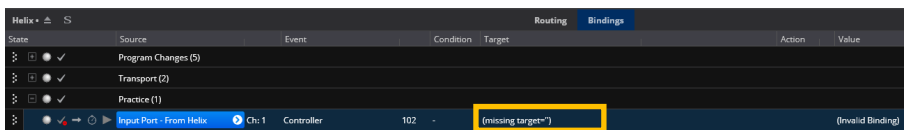
You will get the following dialog, which is waiting for a MIDI event.



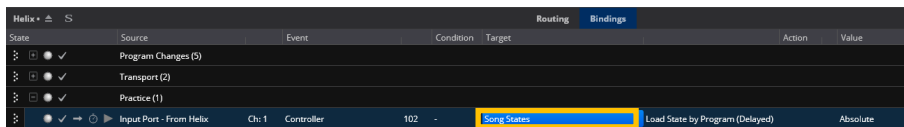
On the Helix, press your programmed **Practice** footswitch.



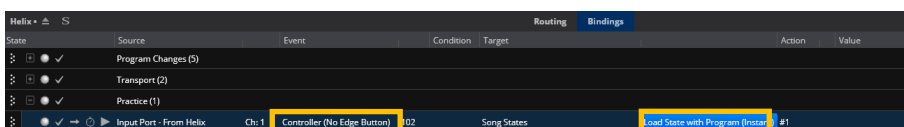
Select the Controller message and click **OK**. You should have the following.



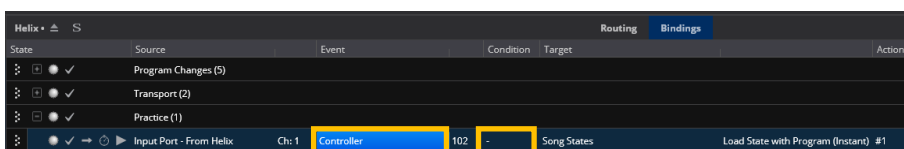
Click on **(missing target=)** and select **Song States** from the menu, and you will get the following.



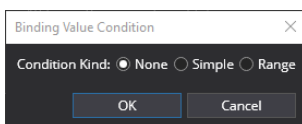
Click on **Load Song State by Program (Delayed)** and select **Load State with Index (Instant)**, and you should have the following. Note that the Event has changed to **Controller (No Edge Button)**.



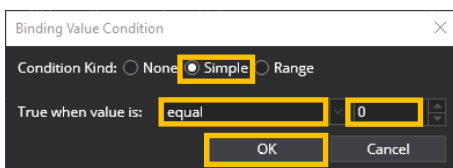
Change it back to **Controller**.⁵



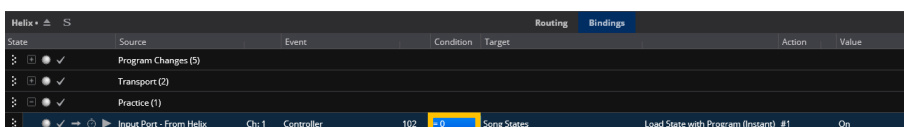
Click on the **|** under **Condition** column and you will get the following dialog.



Click the **Simple** option, set the condition to **equal**, and ensure that the value is **0**. Click **OK**.



You should have the following

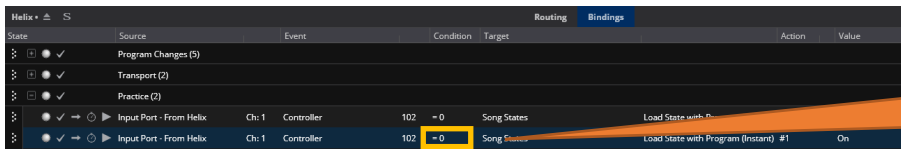


Right click over the binding you have just copied and select **Copy**.


Right click over Add Binding under the Practice Group, and select **Paste**.

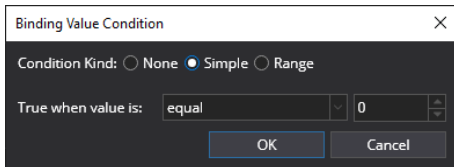
⁵ Not sure if this is a Cantabile bug, I cannot figure out a set of steps other than this way to get what I want.

You now have two identical bindings, and we need to make the second one different. The first state will trigger when the footswitch is inactive, and we want to change the second state so that it will trigger when the footswitch is active.

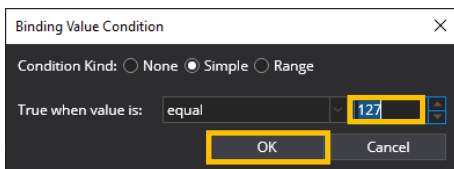


After copying, we need to change the second condition value.

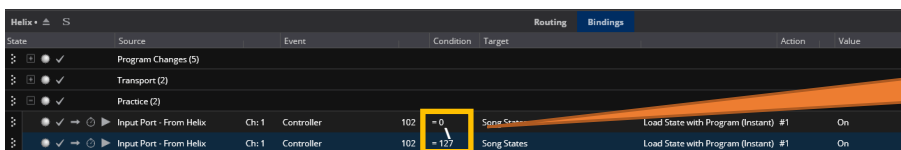
Click on the  under **Condition** column for the second binding and you will get the following dialog.



Change the value to **127** and click **OK**.

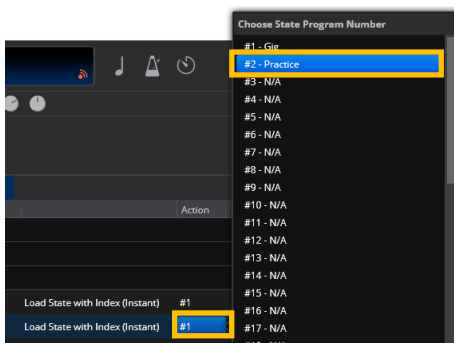


You should now have two bindings that will react to the toggling of the Practice foot switch programmed on the Helix, but they are currently both selecting the same Song State.



The two bindings now have different condition values.

In the second binding, click on the #1 under the Action Column, and select state 2



We are now setting the second binding to select State 2.

That completes all of the bindings in the Helix Rack. You should have the following in total, noting that I have added some comments as well.

State	Source	Event	Condition	Target	Action	Value	Comments
Program Changes (5)							
✓	Input Port - From Helix	Omni Program Change (Banked)	3.1	Set List	Load Song with Program (Instant)	#1	Rusalka Part 8
✓	Input Port - From Helix	Omni Program Change (Banked)	3.2	Set List	Load Song with Program (Instant)	#2	Nienor Part 1
✓	Input Port - From Helix	Omni Program Change (Banked)	3.3	Set List	Load Song with Program (Instant)	#3	Anmwn Part 7
✓	Input Port - From Helix	Omni Program Change (Banked)	3.4	Set List	Load Song with Program (Instant)	#4	Ffynone
✓	Input Port - From Helix	Omni Program Change (Banked)	3.5	Set List	Load Song with Program (Instant)	#5	Nienor Part 3
Add Binding							
Transport (2)							
✓	Input Port - From Helix	- MMC Play	-	Transport	Play		Play Song
✓	Input Port - From Helix	- MMC Stop	-	Transport	Stop		Stop Song
Add Binding							
Practice (2)							
✓	Input Port - From Helix	Omni Controller	102 = 0	Song States	Load State with Index (Instant)	#1	Gig State
✓	Input Port - From Helix	Omni Controller	102 = 127	Song States	Load State with Index (Instant)	#2	Practice State

And that is it for the Helix Rack. It is all done via bindings!

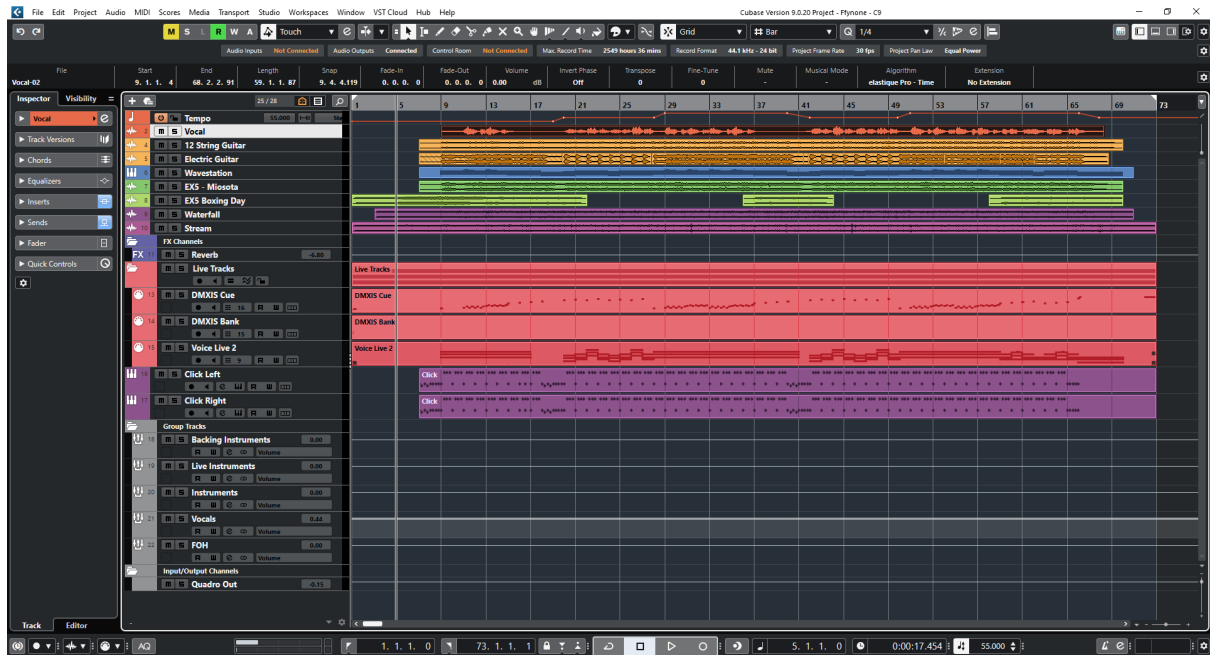
How the Cantabile Songs are set up

This section shows how one of the songs in this set is configured, making use of the Helix Rack that we have just created.

I will use the song Ffynone⁶ as an example, starting with the source data in Cubase, which is my preferred DAW.

Source Data in Cubase

The source Cubase project is shown below. This is also the project that I use to create the final recorded tracks, but I have set it up in a way that allows me to create the backing tracks and show for the live performances as well, as I do not want to maintain different projects for recorded and live.

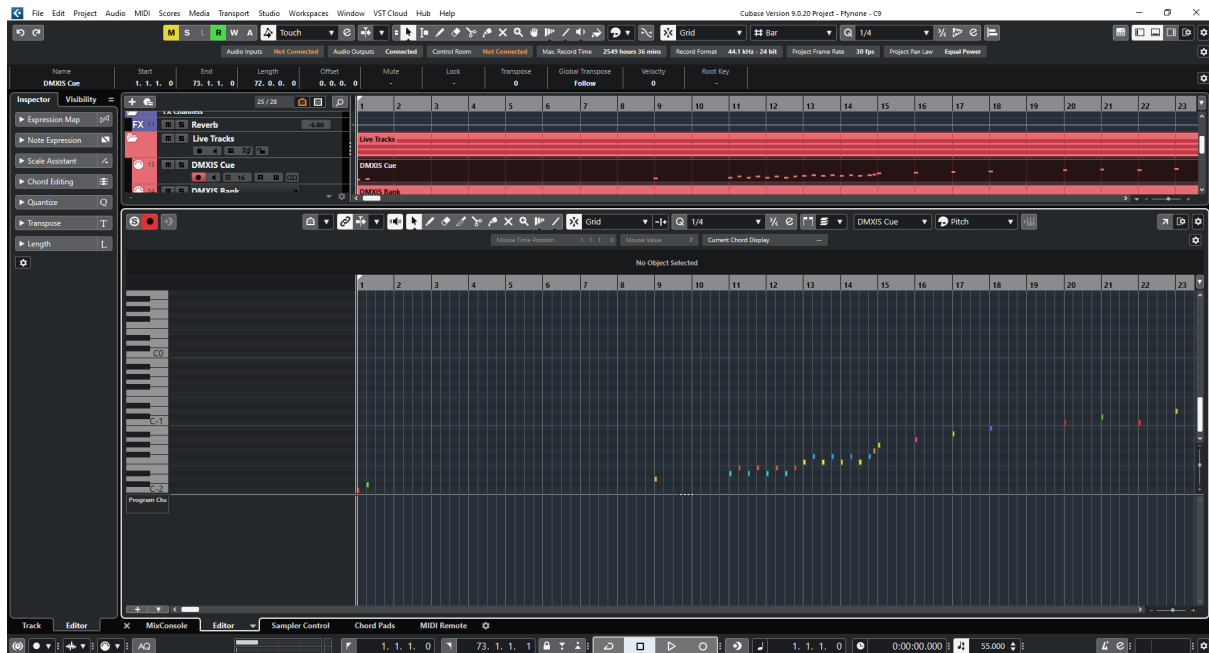


Items of interest on the track list:

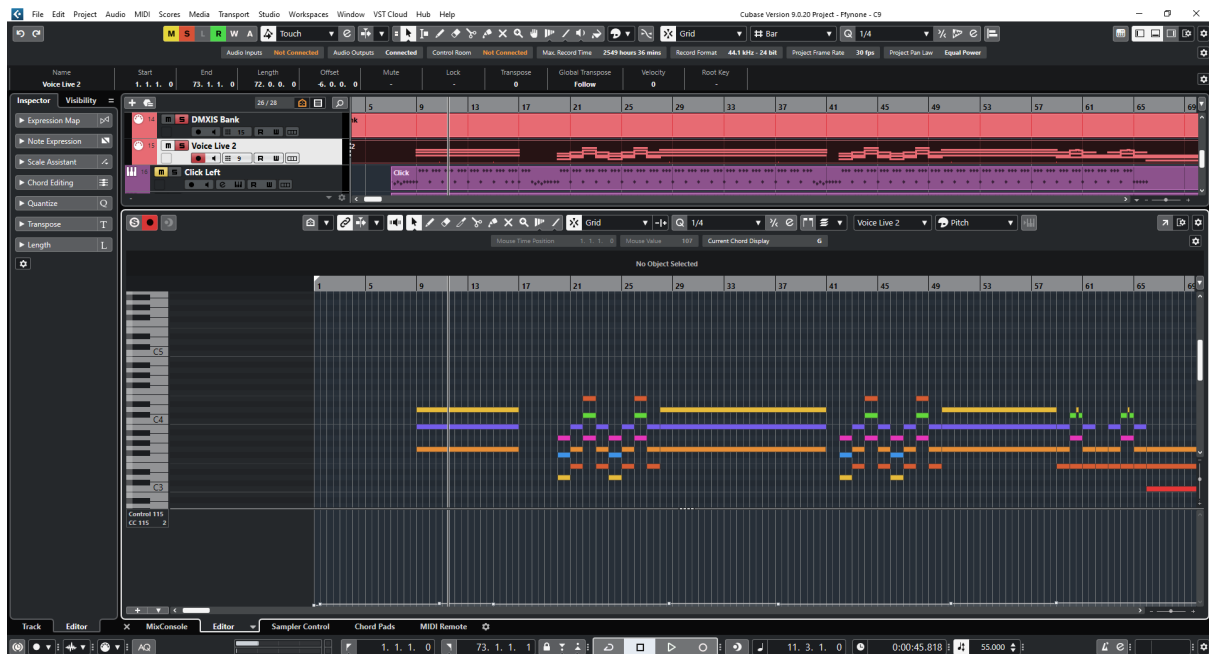
Live Tracks	Tracks that are specific to the live show.
DMXIS Bank DMXIS Cue	Bank and Cue selects for the light show using DMXIS, which uses MIDI note messages to select different banks and cues. In the Cue track you can see the MIDI cue triggers which are quite sparse in the verses, but are a little more active in the chorus.
Voice Live 2	Chords and CC data for the Voice Live 2 vocal processor.
Click Left Click Right	Click tracks for in ear monitoring. I have two channels in case different band members need different cues (in Welsh Floyd, left was for keys and guitar and right was for bass and drums).
Group Tracks	Groups that are used to split the tracks.
Backing Instruments	A group for the instruments that will form the live backing track
Live Instruments	The instruments that are in the recording, but which I will play live
Instruments	The overall mix for the backing and live instruments.
Vocals	The vocal track that will be sung live.
FOH	The Front of House mix of the instruments and vocals.

⁶ Ffynone is a secluded waterfall that is not far from where I live, and it is reputed to be the entrance to the Celtic Underworld ("Annwn"), as mentioned in the Mabinogion (a classic Welsh Medieval text). My Carreg Ddu project was inspired by folklore from Wales and other countries.

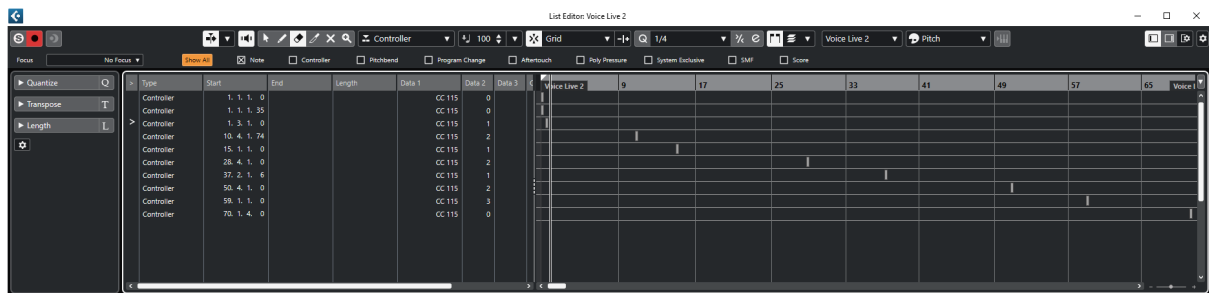
Below you can see an expanded view of the DMXIS Cue track, which shows different notes being used to select lighting cues. There is more going on in Bars 11-14 as this is a small run down on guitar.



And here we have the Voicelive 2 track which is a combination of the chords sent to the device for the vocal harmonisation and, whilst it is a little hard to see scale wise, CC 115 values being sent to select different steps in the Voicelive 2 program, for example to turn vocal harmonisation on or off between verse and chorus.



You can see the CC115 values a little clearer in the list editor with the note data filtered out. The VoiceLive 2 patch for this song has 4 steps programmed where different features of the VoiceLive are enable/disable in each step.



I export the following to Cubase

- Live Tracks Group soloed and exported as a MIDI file⁷;
- FOH/Click is exported as a quad channel audio file⁸ with the Live Group muted to exclude the track(s) that I will play live;
- Vocal Track exported as an audio file for practice.

⁷ Soloing the Live Group for MIDI export means that other MIDI data as part of the base recording is not exported.

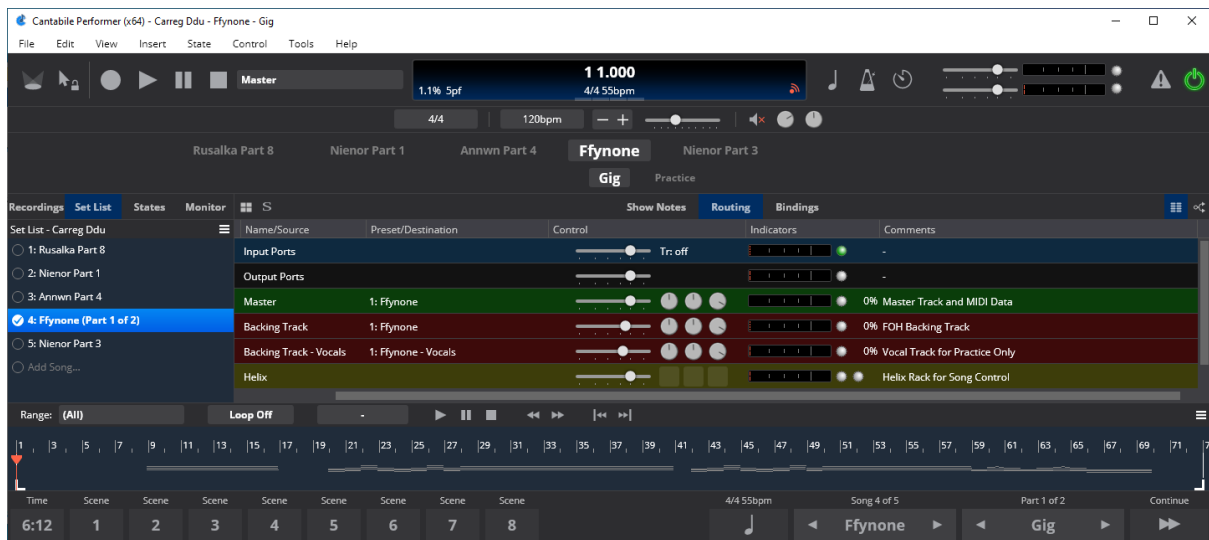
⁸ I used to do this so I just had a single file for audio and click, but I do not do this anymore and I tend to export them separately now.

Cantabile Song

The data exported from Cubase looks like this in the Cantabile Song routing view, basically:

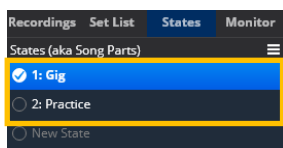
- A **Master** Media player for MIDI data (including time signature and tempo);
- A **Backing Track** Media Player for the FOH backing track that is heard at the gig in addition to live singing and playing, and which also includes the click that only the players will hear;
- A **Backing Track – Vocals** Media Player that must be disabled in the **Gig** State and enabled in the **Practice** State;
- The **Helix Linked Rack** as described above in this guide. This will be included in all songs in the set.

All songs in the set follow a similar structure.



I will go through the tracks step by step, but the important thing to note that I have two song states defined:

- State 1 – **Gig** is the default state for gigs;
- State 2 – **Practice** is for when I wish to practice on my own and I want the vocal track (normally sung live) as part of the practice.

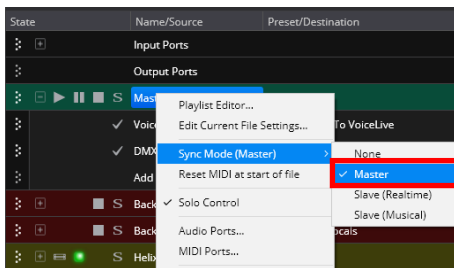


The two states that are defined in the Song.

The programmed **Practice** footswitch on the Helix switches between the states. When it is off (inactive) then the **Gig** State is selected (vocal track disabled), and when it is on (active) then the **Practice** state is selected (vocal track enabled). I'll show how to do this later.

Master Media Player

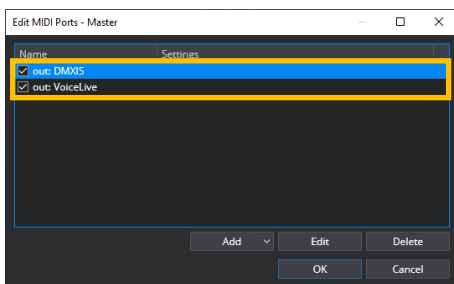
This is my Master Media Player that contains the exported MIDI data (including time signature and tempo). The Sync of this media player is set so that it is the sync master.



The MIDI Player is the Sync Master.

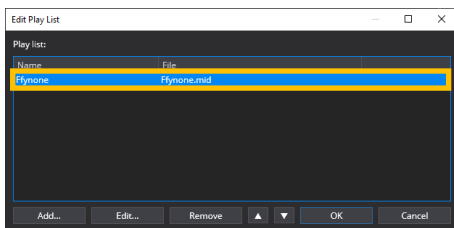
The Media player has the following MIDI ports set up:

- DMXIS Port for DMXIS MIDI Data;
- VoiceLive Port for VoiceLive 2 MIDI Data.



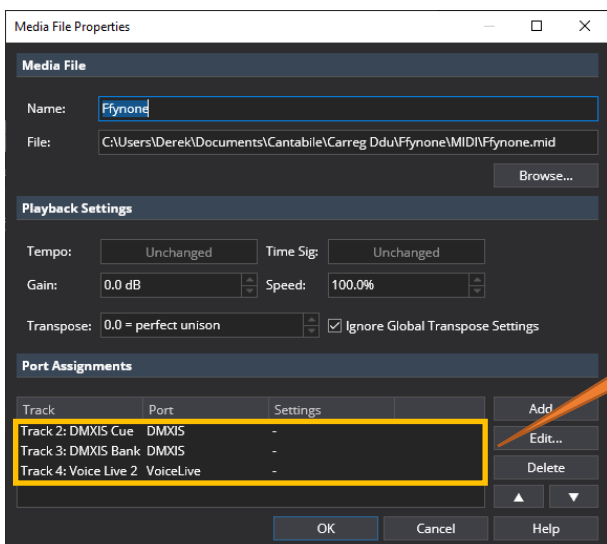
The MIDI Player has two MIDI ports so that MIDI data can be routed to the appropriate destination.

The media player has a single MIDI file loaded which contains the exported time signature and tempo map, and the DMIS and VoiceLive 2 MIDI data.



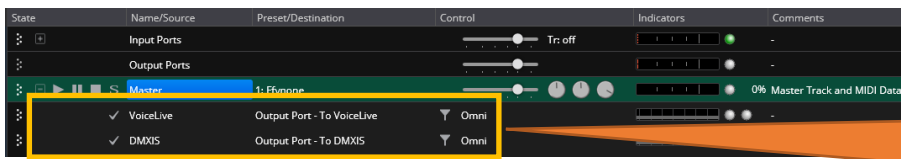
The MIDI file exported from Cubase.

The MIDI data in the track is routed as follows to the Track MIDI ports.



The MIDI tracks in the MIDI file are routed to the appropriate MIDI ports. DMXIS data is on 2 tracks for Bank and Cue select respectively.

At song level the Media Player routes are as follows.



The MIDI routes at song level are from the output ports of the Media Player to the global output ports for the devices

This routes the MIDI data in the MIDI file to the appropriate destination.

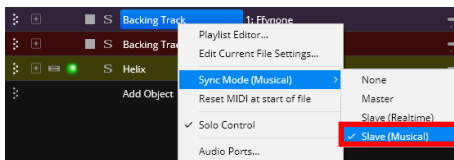
- Chords and control data to the TC Helicon Voice Live 2;
- DMXIS note based cues to the DMXIS MIDI OUTPUT port.

The Backing Track media Player

This is a media player with two stereo pair outputs that provide:

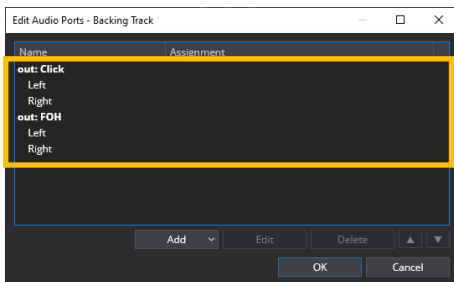
- Front of house stereo pair;
- Click track stereo pair.

The sync mode is set as a musical slave.



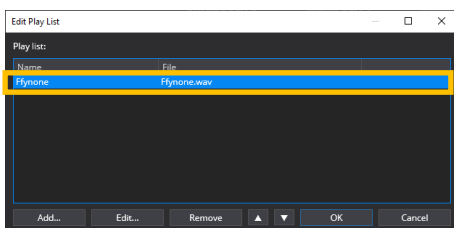
This media player is set as a musical slave.

The Audio ports are configured as follows



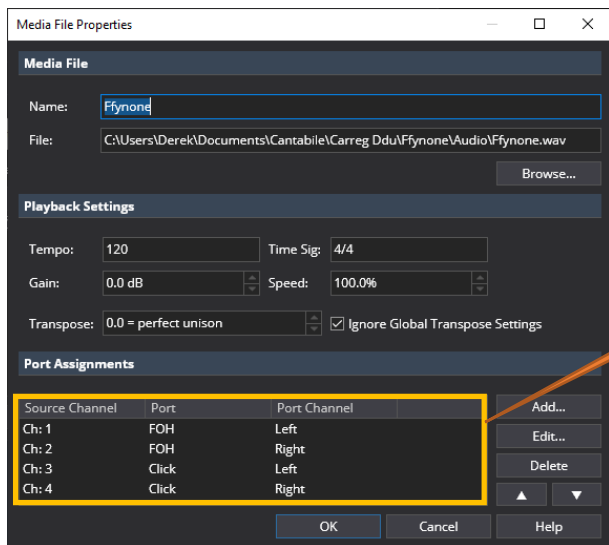
Backing Track Media Player audio ports.

The Media File is a quad channel file containing the FOH mix and the click track each as stereo pairs.



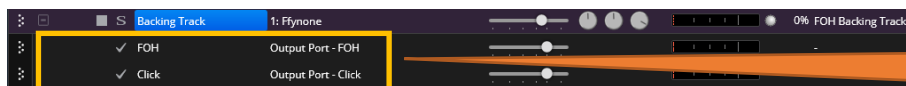
FOH Track exported from Cubase.

The channels of the media file are assigned as follows to the Media player audio ports.



Backing Track Media Player file port assignments.

At song level, the routings are as follows, with FOH and Click outputs routed to my audio outputs named the same.

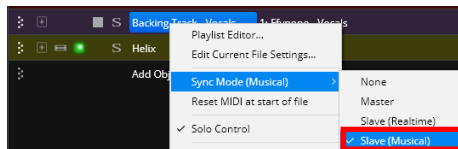


Backing Track Media Player song level routing assignments.

The Practice Track media Player

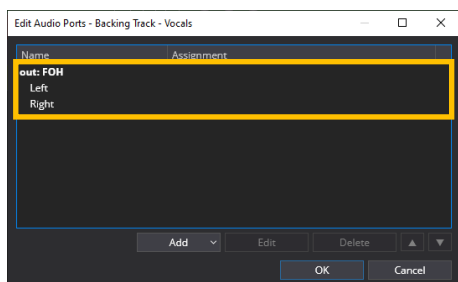
This is a media player with one stereo pair output that provides a practice track of the recorded vocals for when I wish to practice without the singer present.

The sync mode is set as a musical slave.



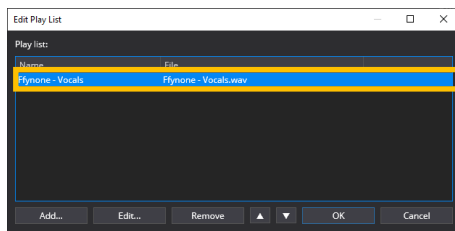
This media player is set as a musical slave.

There is a single stereo output port.



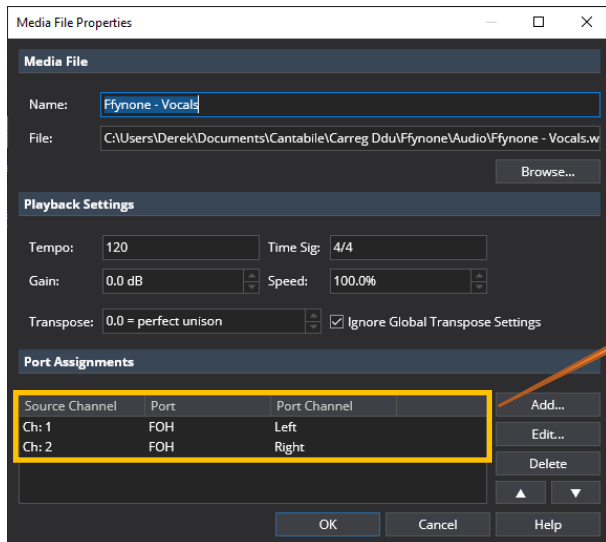
Practice Track Media Player audio ports.

The vocal track from Cubase is exported and loaded into this media player.



Practice Track – Vocals exported from Cubase.

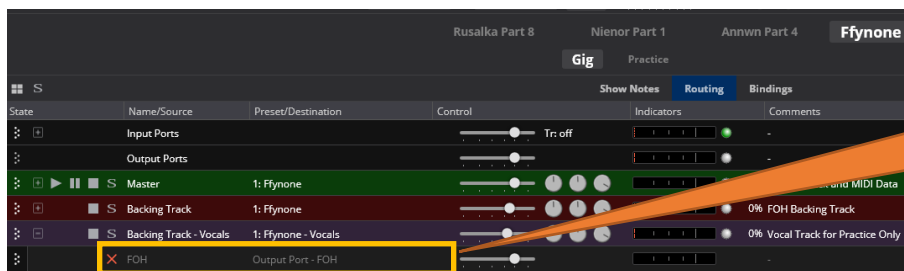
The channels of the media file are assigned as follows to the Media player audio ports.



Practice Track Media Player file port assignments.

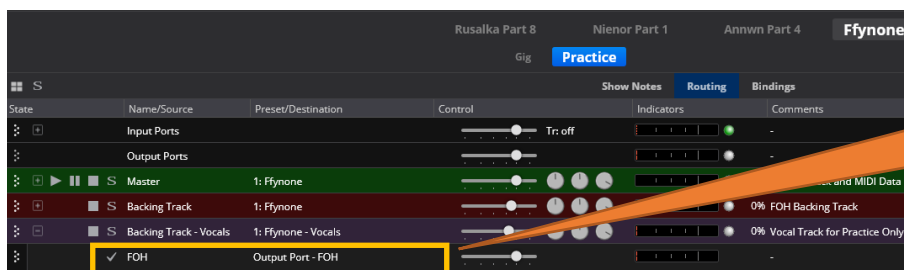
And the song level routings now differ depending on the **Song State**.

For the **Gig State**, the following routing is set up, but disabled (note the red **X** at the left of the route), which means that the media player will play, but the sound output is not routed anywhere.



Practice Track Media Player song level routing assignment (Disabled in Gig Song State).

For the **Practice State**, the routing is as above, but now enabled (note the white **✓** at the left of the route), which means that the media player output is routed to the FOH mix.



Practice Track Media Player song level routing assignment (Enabled in Practice Song State).

The state is selected by the **Helix Linked Rack** bindings for **Practice**, when the Practice footswitch on the Helix is toggled on or off:

- Practice footswitch **off** selects the **Gig** State (the default state when the song is selected), which disables the **Backing Track - Vocals** routing to FOH (Front of House);
- Practice footswitch **on** selects the **Practice** State), which enables the **Backing Track - Vocals** routing to FOH.

Song Level Bindings

In the Song binding view, I have a single binding to do a patch select on the TC Helicon Voice Live 2 when the song is loaded.

State	Source	Event	Condition	Target	Action	Value	Comments
	General (1)						
	Song	On Load		Output Port - To VoiceLive	Ch:9	Program Change (Banked)	Z:4 P:None

Song binding to select the correct patch on the VoiceLive 2 when this song is selected.