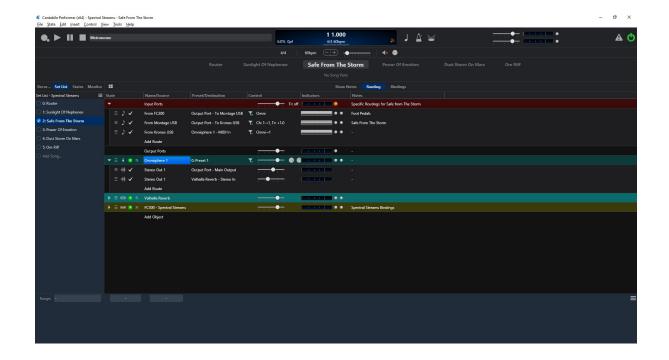
Using Cantabile – A Real Example

Derek Cook © 2018



Using Cantabile - A Real Example

This Guide shows how I have used Top Ten Software's <u>Cantabile</u> program in my Gig Rack. I have written this to hopefully inspire other people to make the move to integrate a live VSTi hosting solution in their gig rig. Please see my companion <u>Gig Rack Guide</u> on how the rack is constructed.

I use Cantabile to perform a combination of duties:

- Provide audio backing tracks (including click for in-ear monitoring);
- Providing MIDI tracks for driving VSTi synths when I am not playing them;
- Providing a MIDI track that provides chords and commands to my TC-Helicon Voice Processor;
- Providing a MIDI track that drives my DMX lighting system to provide either manual light cues or light cues synced to the backing track;
- Listening to program changes from my FC300 MIDI foot controller (or Helix Pedal) to select different songs;
- Acting as a MIDI processing hub for all of my devices. All MIDI enabled devices on stage are connected to the computer as the hub.

So, as you can see, Cantabile is capable of quite a bit and, so far, it has handled everything I have thrown at it!

If you wish to see how I setup and use Cantabile then read on! The intent of this guide is not to be a detailed tutorial on how to use Cantabile, as that is well covered by Cantabile's own Support Guides and the Cantabile Community is also an excellent resource. My intent is to show an example of how I am using it.

Cantabile itself comes in three versions:

- Cantabile Lite free edition;
- Cantabile Solo for lightweight live performance and/or home studio use;
- Cantabile Performer has all features required for serious heavyweight stage use.

This description is written around Cantabile Performer, so not all features may be present in the other versions.

You can get Cantabile on a 30 day evaluation license to check it out.

Please note, some of the screenshots in the guide are low contrast as this is the colour scheme best suited to a dark stage.

Just to put things in the context of my gig setup, here is a picture of it and the equipment in it.



So, I have at least four MIDI sources and destinations (FC300, Montage, Kronos and Nord G2). I also have the option to add a Line6 Helix and TC-Helicon VoiceLive2 into the mix depending on what I am doing. As such one decision I made (and it is an experiment to see how well it works) is to, where supported, use USB MIDI as the means of connecting the external devices to the computer.

Another decision I made to support maximum flexibility is to have all external MIDI devices to connect to the computer in a "hub and spoke" arrangement, so the devices only connect to the computer and nothing else. This means that Cantabile on the computer is also being used as a MIDI processing hub.

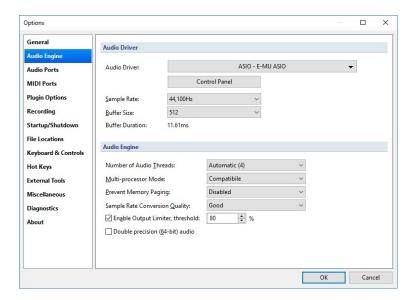
Step 1 - Making Your Connections

At this stage, I assume that your computer and audio/MIDI interface(s) are set up and ready to go and that Cantabile is installed and licensed.

Go to the **Tools/Options...** menu to get the Options Dialog

Step 1.1 – Audio Engine

The first stage is to set the Audio Driver for the Audio Device that you are using. The Audio Engine options can be tweaked, but the Cantabile defaults are sensible ones to start with and are best left as they are, unless you are having specific problems

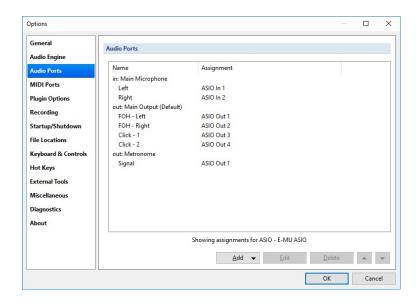


Step 1.2 – Audio Ports

The next step is to define your Audio Ports. Cantabile will set some sensible defaults, but you are free to delete or edit these and setup you own.

In the example below, the input ports are the default, but I have set up the output port to match my four channel sound module by using the **Add** and **Edit** options to add extra channels and rename existing ones.

In my setup, the first two output ports are for a stereo output pair for the Front of House sound (the mix of VSTis and backing tracks), and the second pair are used for providing a click metronome to my In-Ear Monitor System (I usually only use one, but in my last band, the drummer had different cues for some songs). Cantabile has the option of playing its own Metronome, but I prefer to create my own as I often used pitched cues for specific reasons.



Note that I have provided specific names for the ports, and they are assigned to the ASIO channels on my Emu 1212M sound card (this is on my main music computer in my studio).

This is a good time to introduce an important Cantabile Concept: that of Virtual Ports for both the Audio and MIDI devices. You'll see later that when you configure Cantabile, you refer to the virtual ports as named, not the physical ports. The beauty of this approach is that if you move the configuration to a different computer with a different Audio/MIDI setup, then the configuration will still work with no need to edit your songs to change all the routings once you have setup the virtual to physical mapping.

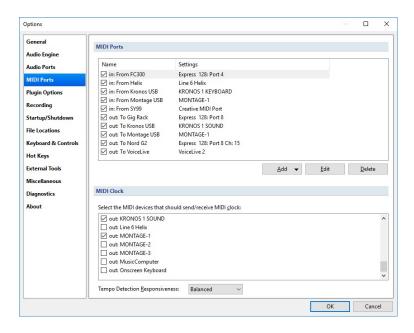
For example,

- My Music Computer uses an EMU 1212M, a MIDISPORT 128 and also direct USB MIDI connections;
- My Gig Computer uses a Focusrite Scarlett 2i4, a MIDISPORT 2x2 and the direct USB MIDI connections

This means that I can develop a Cantabile Set on my music computer and then move it to the Gig computer with no need to make changes.

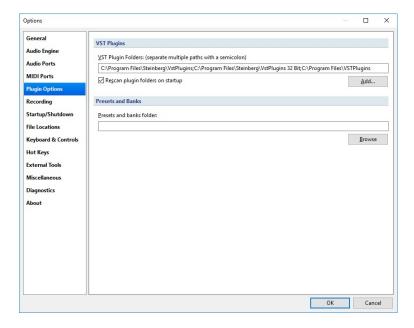
Step 1.3 - MIDI Ports

You then need to do the same thing for your MIDI Ports, I use a fairly simple (and boringly consistent) naming form with "From" and "To" prefixing names to make it obvious that a port is either a source or destination. Note that Input and Output ports are split in Cantabile. You also have the option for which output ports receive MIDI Clock. Cantabile can also slave to an external clock.



Step 1.4 - Plugin Options

This is where you set your plugin paths.



After this, there are other options you can setup and configure, but I won't go through those (yet) in this guide.

Final Setup Step – Optimising Your Computer

A final important step is to ensure that your computer is fully optimised for live audio.

Cantabile's author has written an excellent ePub called <u>Glitch Free Audio</u>, which is worth getting and stepping through, irrespective of what studio/live host you use. As well as the usual tweaks, there are optimisations listed here that I have never heard of before!

Let's Get Going!

OK, after all that setup, it's time to start looking at how I use Cantabile!

There are people out there on the <u>Cantabile Community</u> who are more "heavyweight" users than myself and who have some pretty complex setups, but I think my "light" use is a good start point to grasp the concepts. As I start building my set lists, I keep thinking of new things to do with Cantabile, so this guide will also serve as an interesting snapshot in time!

Songs and Set Lists

These are the main units in a Cantabile Configuration. You create **Cantabile Songs** for each song you wish to have, and you can build them into **Cantabile Set Lists**.

In this guide I will not show you how to create them from scratch, as there are plenty of Cantabile guides on that.

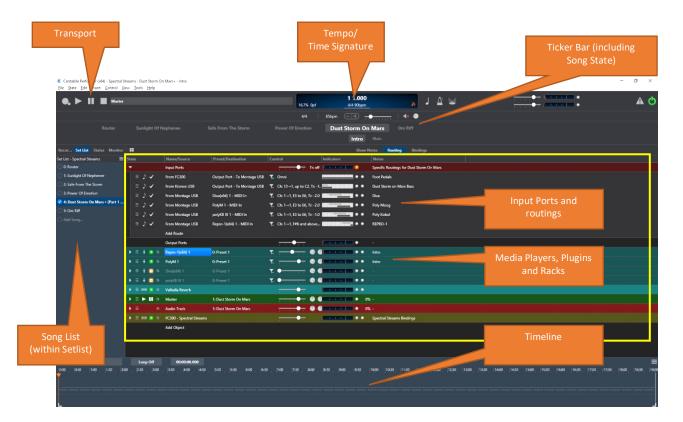
Instead, I will dissect an existing Set List/Song setup that I have done to show you how it works in my context and how it meets my aim to bring hardware and virtual instruments together, and how I use Cantabile as a "MIDI Hub" in my rig.

My old rig was essentially a sequential chain of MIDI connections, facilitated by the fact that my older keyboards could echo their MIDI In data and merge it with their MIDI Out (so no need for external MIDI mergers). However, few keyboards seem to do that now, and for my new rig I had to rethink how it would work!

Here are some examples from my Set list "Spectral Streams" starting with the Song "Dust Storm on Mars", which was a relatively busy setup. I'll also show the other songs later as they vary in complexity and it shows that you can be as simple or as detailed as you need.

Dust Storm on Mars Song

Refer to the screenshot below, and in the following table I will explain each area. The Area highlighted in Yellow is the main window, currently showing the "Routing View".



Item	Function
Transport	Logic "tape recorder" style transport controls
Tempo/Time Signature	Self-explanatory!
Ticker Bar	An optional window, which I prefer to have on, which shows the previous, currently
	selected and then the upcoming songs. It also shows the current Song State (more on that later)
Set List	In the example above, the left-hand pane is showing setlist information. You can
	select other options to view.
Main Window – Input Ports	Shows all of the routes of input ports to output ports. As you can see an input port
	can appear several times.
Main Window – Media Players,	The heart of Cantabile is the ability to create either Audio or MIDI media players (for
Plugins and Racks	backing playback), Plugins or Racks (Racks are very powerful, and you can embed
	objects within racks (including other racks) for reuse.
	You can see in the main window, there are quite a few input routes
Timeline	Another optional window, which I like to show. If you have a Media Player selected,
	then its contents will be shown in the timeline, rendered in a similar manner to what
	you would expect to see in a DAW track rendering.

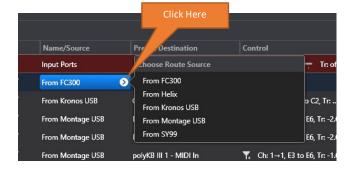
MIDI Routes

As mentioned, I have my setup configured as a "hub and spoke" arrangement, where Cantabile is the MIDI hub of the system. All of my external MIDI devices connect to Cantabile (and its host computer) and nothing else.

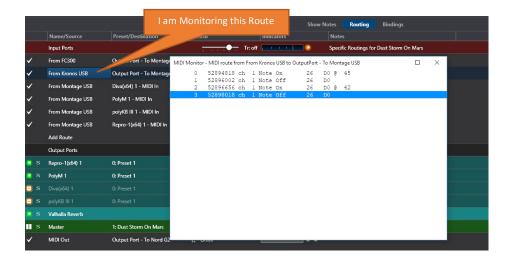
So, one of the key things I need to do in each song is setup the MIDI routes that I need, including keyboard splits. You can see in the example above that I have quite a few routes! You can see from the descriptions that Cantabile allows you to setup MIDI filters and keyboard splits. I could do this on the keyboards, but I find it easier to manage in Cantabile, and it can also do transforms that you cannot do on the keyboards.

Quite simply, you use "Add Route" to create routes (you can also copy and paste existing ones).

Once you have a route, you Select your input source, select your output source from the drop downs that appear when you click the names.



One thing worthy of quick mention is that Cantabile has a MIDI monitor (found on the View menu) which you can use to see what is going on at different points in your routes! This is great for trouble shooting! Simple click on a MIDI Route and select **Midi Monitor** from the **View Menu**.



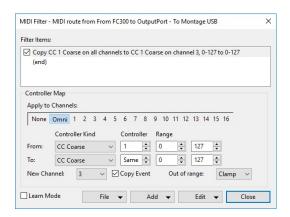
Walking through the routes I have setup for this song as can be seen in the screen shot below (you can get a visual indication of key ranges from the graphics towards the right):

- My FC300 MIDI Foot Controller is sending CC modulation data from its foot pedals to my Montage (e.g. to control the Montage's "Super Knob" or the Mod Wheel).
- When I play bass notes on my Kronos, I want them to trigger the Montage sound to layer the Montage and Kronos sounds.
- I then have three routes that are layering three VSTis from the upper octaves on the Montage keyboard (but they are selected by **Song State** more on that later).
- At the top of the Montage keyboard range, I am triggering another VSTi in a certain state, but not another one.

To configure MIDI routes and filters simply click on the Control area for the route. In the example below, I only have one filter active on the first route, which you can see by the little green "LED" by the filter icon.

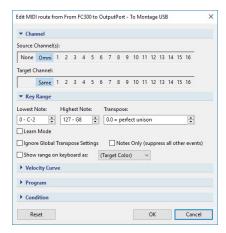


The **From FC300 to Montage USB** route is an OMNI route and all data is being passed through, but it does have a filter set. Let's look at the filter first.

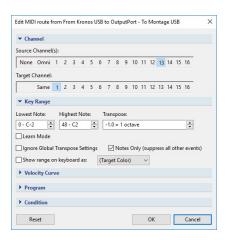


This filter is remapping CC1 on Channel 1 to Channel 3. Note that the **Copy Event** option is ticked. This means that the original event is left undisturbed and a new event is generated, which means that the synth will receive both events. If the **Copy Event** option was not ticked then the original event is transformed. This is a very powerful feature!

You can have as many filters as you wish in this dialog for transforming different data. As mentioned, the route itself is OMNI with no key ranges or mapping set, so this is what a default OMNI mapping looks like.



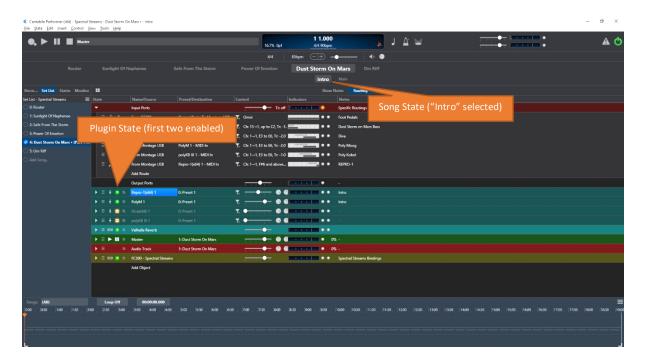
The **From Kronos USB to Montage USB** route has no filter, but does have note ranges, transposition and channel mapping set. This route is mapping from Kronos Channel 13 to Montage MIDI channel 1, filtering out any notes above C2 and transposing down one octave.



Hopefully, going through these two dialogs shows you the power of Cantabile as a MIDI Processor! I won't show the other MIDI route dialogs in the song, as you can get an idea of their settings from the earlier screen shots and the graphics shown in the control area.

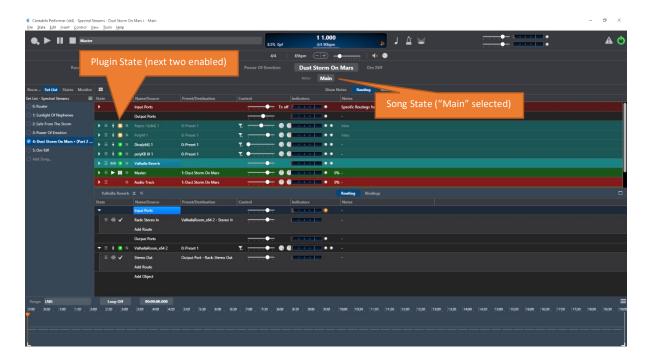
Cantabile States

In the screenshot below, if you look down at the VSTi Plugins and the icons on the left of the main window, the fourth icon in shows whether or not the Plugin is active. In the screenshot, the Repro-1 and PolyM plugins are active because they are enabled in the "Intro State" of the song, which you can see selected in the ticker bar. In the "Main" state, they are disabled and "DIVA" and "polyKB" are enabled.



States are very powerful in Cantabile and you can use them for many different things. Here I am using them to manage computer load. When Plugins are disabled, they are taking no processor load but can be switched on in an instant (with no loading delay) when you change state. In the screen shot below you can see the "Main State" is now selected and the plugins which are now enabled has changed – the PolyM and Prepro-1 plugins I use in the intro are now disabled and DIVA and PolyKB are now enabled.

I am switching states using my FC300 MIDI foot controller via Cantabile **Bindings**, which I will cover later.



Out of interest, the beauty of the Gig Computer and VSTi hosting provided by Cantabile is what it allows you to run on stage. As I run through each example, I will show you what I am running in virtual form as opposed to having a lot of classic and expensive synthesisers (with all the space and maintenance overhead)!

Here goes for "Dust Storm on Mars" and the virtual instruments that I am using, which is in addition to my Kronos, Montage and Nord G2 Engine (stuffed in the rack as I had space, and it still sounds great!)

<u>UH-E REPRO-1</u> is an emulation of Sequential Circuits' PRO1 mono synth, and I am using it for a specific sound effect in the intro that the PRO 1 was very good at. UH-E also now have extended REPRO to cover the Prophet 5 as well!



<u>XIL-LABS' PolyM</u> is an emulation of the much maligned PolyMoog, but when you dig into the history of this device, it didn't deserve the criticism that it had at the time. It is very powerful, and was never meant to be a "polyphonic MiniMoog" which is what people mainly criticise it for! I am using it in this song to get a beautiful ambient sound on the intro.



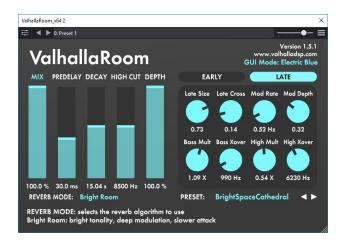
<u>UH-E DIVA</u> (Dinosaur Inspired Virtual Analog!) is, in my view, one of the best Virtual Analog VSTis out there, but a real processor hog as a result! You can mix and match classic components to create your own hybrid synth. For example, if you fancy Roland DCOs going through a Moog ladder filter.



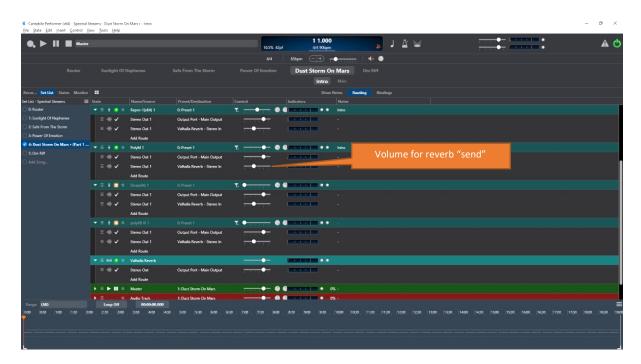
And finally, for this song, <u>XIL-LABS PolyKobol</u> (very, very rare in hardware form!), and capable of some amazing sounds.



All of these VSTis are being sent to a <u>Valhalla Room Reverb</u>, using Cantabile routes to not only send the audio to the main output, but also to the "Valhalla Rack". Valhalla plugins are renowned for sounding very good, but with light CPU overhead, which is just what you want on stage!



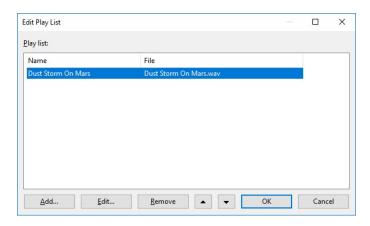
The following screen shot, expands all of the plugins to show their routes. As you can see, each plugin is routed to the main Output, and there is also a route acting as a send at a lower level (check the volume sliders on the right of each route) to the reverb processor



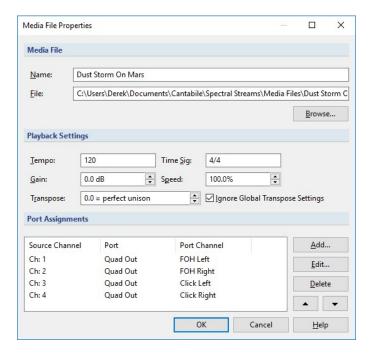
Media Players

In this song, I have no backing track (yet), but as everything is tempo synced, I needed a solid click to play against, even though I am (currently) playing it free form, so I setup a Media Player to provide a backing track currently providing nothing but a click for a long period. Eventually I will probably have something going to Front of House as well....

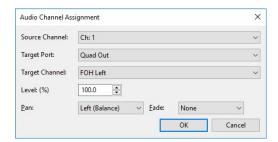
You create a Media Player object, and edit the play list to **add** a file.



And you can **Edit** the properties to route the channels in the media file to specific virtual ports. Cantabile will set sensible mappings by default if it can. You can see below that the four channels in my WAV file (created in Cubase) are mapped to the four channels on my "Quad" virtual output port.



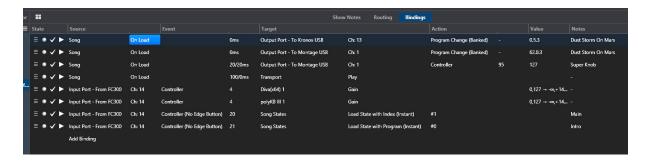
If you wish to change the mappings, or tweak levels, then select a **Port Assignment** and click the **Edit...** button.



Bindings

We now come onto one of the most powerful features of Cantabile: **Bindings**. Using bindings, you can listen to different events, either from Cantabile's own set of internal events, or MIDI events, and trigger different actions.

The screenshot below shows the main bindings for "Dust Storm on Mars"



The first four bindings are triggered when the song is loaded. Using the **Song/On Load** event. The first two bindings send patch changes to my Kronos and Montage so the correct patches are selected for the song.

The third binding after a short delay (to allow for synth to make the patch change) sets the value of CC95 (the default CC for the "Super Knob" on the Montage) to 127, so it starts at the correct value (saves me forgetting!).

The fourth binding is an unusual one, but shows the power of Cantabile, and is simply a "convenience" binding that starts the transport for the media players. In the case of this song, this is simply a click as everything needs to be tempo synced in this song (if you look back at my MIDI settings, you will see that the Kronos and Montage receive MIDI clock from Cantabile).

The next two bindings map a foot pedal on my FC300 transmitting CC4 to the volume levels of the Diva and PolyKB plugins. This allows me to fade the sounds in using the foot pedal. If I need to control volume of the external synths, then I could also route to a MIDI output.

And the final two bindings all me to select the song state from either "Intro" (when REPRO-1 and PolyM plugins are active to "Main" (when DIVA and PolyKb plugins are active). I have a foot switch (CTL) on the FC300 that is setup to be latched, and to send CC20 when pressed the first time to the ON state and CC21 when pressed the second time to the OFF state. The Cantabile bindings for each CC are used to select the required song state.

The buttons to the left, allow you to disable a binding (which may be useful in conjunction with states if you only wish the binding to work in one state), and you can also manually "play" the binding by pressing the Play button, which is useful whilst building and testing bindings.

Racks

Racks are another powerful concept in Cantabile. You can set up racks that contain plugin configurations that you use all the time, and simply load the rack into the song. Racks can be chains of plugins and other racks. You can either **embed** racks into a song where they are only used in the song or add **linked** racks to your songs in a setlist where the same rack (and resources) is used across all songs that it is used within.

The advantage of linked racks is that there are no loading delays when you switch songs. For example, this is a huge advantage if you are using a plug in like Omnisphere or Kontakt which will have log sample load times. Assuming you have enough memory, there is a very useful option in Cantabile called **Pre-Load Set List**, which, as it suggests, pre-loads all of the songs and plugins used in a Set. When used in conjunction with linked racks and states, you will get instant switching of plugins with no loading delays.

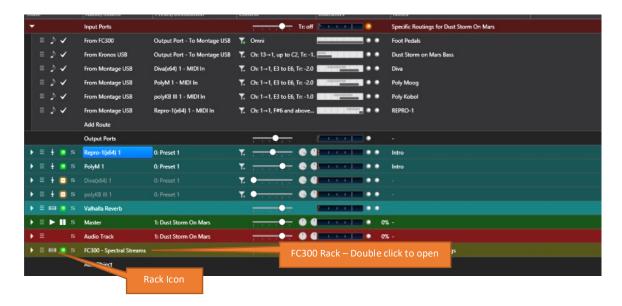
In my Spectral Stream set list, I have the following racks

FC300 Rack

The <u>Roland FC300</u> is a MIDI Foot Controller, so you might ask yourself why I have a Cantabile rack for it? As well as using racks as described above, they are quite a powerful way of abstracting functions. In the case of the FC300 Rack, what I have set it up to do is to listen to the data coming from the FC300 and respond to bank/patch changes to then select Cantabile songs



The following screenshot shows the FC300 rack in the main screen.



If you double click on the rack, you will open it to view its contents, which is shown below.



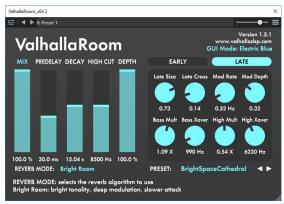
In the rack, you can see that I have a set of bindings listening to FC300 MIDI data on Channel 16, and when the bank/patch stored in a binding is received then the binding is triggered so that the relevant song in Cantabile is selected. This means I can do all control of Cantabile from the FC300. In another setlist, where my main instrument is guitar and I have a Line6 Helix pedal on stage, I use its "command centre" functions to do something similar.

I have the FC300 Rack as a **linked rack** in all songs in the setlist, so this patch change function is present across all songs in the set list.

Valhalla Rack

The a <u>Valhalla Room Reverb</u> plugin referred to above is also placed inside a linked rack, so that one instance of the plugin is shared across all songs, which helps conserve memory load and also means there is no loading delay when you switch songs.





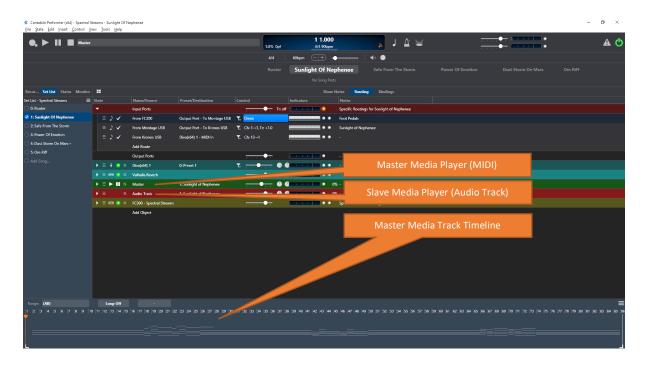
A look at my other Songs

This section is a quick look through the other songs in my setlist to show the varying degrees of complexity you can have in a set and the different permutations you can have in mixing live and virtual instruments.

In this view I do not show the Song Bindings as they are very similar to those shown in "Dust Storm on Mars".

Sunlight of Nephenee

This is a Vangelis inspired intro to my setlist.

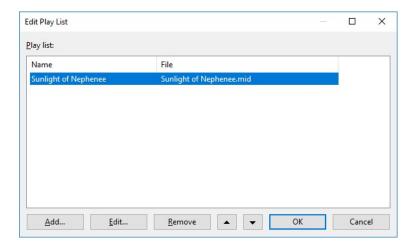


The song is interesting, as in this one I have two media players running to provide a backing track. One Media Player is an audio backing track for some backing instruments (AN1x, UH-E Diva and a Roland System 8 plugin). Basically, if sounds are fixed and I am just playing over them, then it is far less computationally heavy to have Cantabile play back an audio file! But I also wish to have real time control of the Montage and Kronos. Sometimes I play a part on the Montage and other times I want the Montage to be played for me. So, there are parts which are MIDI instead of audio.

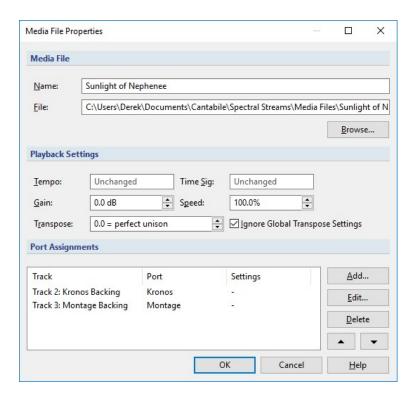
I have the MIDI track set as a **Master** track for playback, by setting its sync mode to **Master**. It is best for this track to be the master as it contains tempo and time signature information, which Cantabile will respond to (as the track is set to the **Master** track), and the Audio track has its sync mode to be a slave, which then plays in time with the master track. The Master MIDI track can be seen in the song timeline at the bottom of the screen.

Note that in Cantabile you can also have Media Players triggered from other events, like MIDI messages. This means it is very good for simple playback of sound effects. In Welsh Floyd, we had a cannon sound for the end of "Run Like Hell", which was triggered from the Drummer's MIDI drum pad which he hit as part of his grand finale!

The MIDI file in the Master Track is setup in the play list for the media player

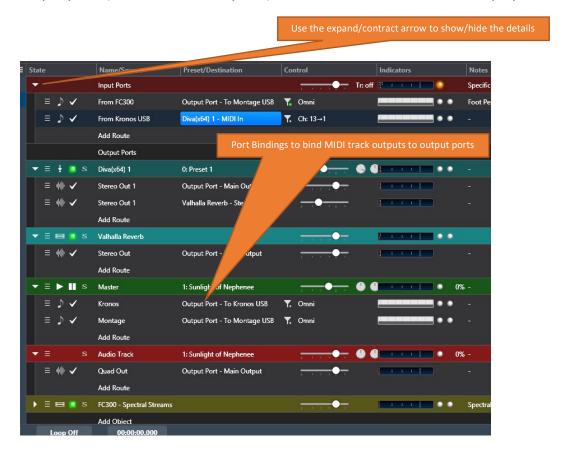


As the midi file contains several tracks, you need to set the destination for each track by clicking **Edit...**



You can see that I have created two MIDI Ports in the player, which I have routed the MIDI relevant track data to.

Once you have done this, back in the main Cantabile Window you need to bind the ports to MIDI destinations. Which is done by expanding the media player (using the dropdown arrow on the left, and you can see below that I have routed the Media Player Ports to the virtual MIDI ports for my synths. The screen shot also shows all the other routings of input ports to output ports (for the hardware synths), DIVA and Valhalla and the audio playback.



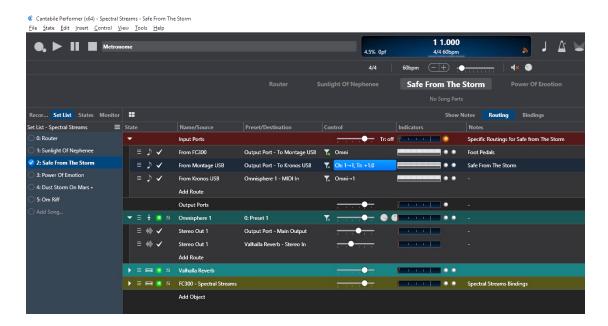
The MIDI Tracks contain not only note data, but MIDI CC data for modulation and volume control.

In this song I only have one Virtual synth, the excellent <u>UH-E DIVA</u> providing the "Bladerunner Vangelis Brass" sound, which in the original movie soundtrack was a Yamaha CS80, but for this song I am using a patch from Luftrum's excellent <u>Luftrum 11 DIVA</u> sound set.

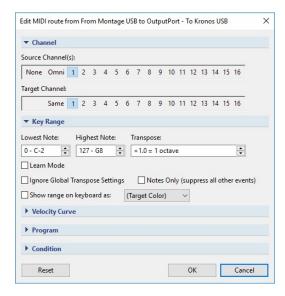


Safe from The Storm

This is a fairly simple song as there is no backing track. I am only using the Montage as a master keyboard in this song as the main sounds are made by the Kronos. The Montage 7 is my bottom tier keyboard, and the Kronos X61 is the top tier, so I want to play the left-hand chords on the Montage, occasional right hand on the Montage, and when I play the right hand on the Kronos I have a Harp sound (using the Kronos's STR-1 engine) I also want that sound layered with a lovely Omnisphere Vocal patch.



So, above you can see a routing from the Montage to the Kronos, which is also applying a key transpose to get data in the right octave. I have the Kronos Timbre (Part) in its Multi set to the Montage transmit channel, so no transpose of channel is needed.

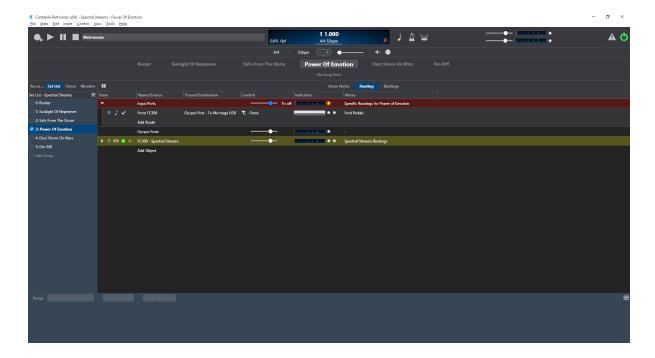


And you can see that I have a routing from the Kronos to Omnisphere, which provides the layering that I want. This is a lovely vocal/ocean pad sound from Plugin Guru's Kreaturesque sound set



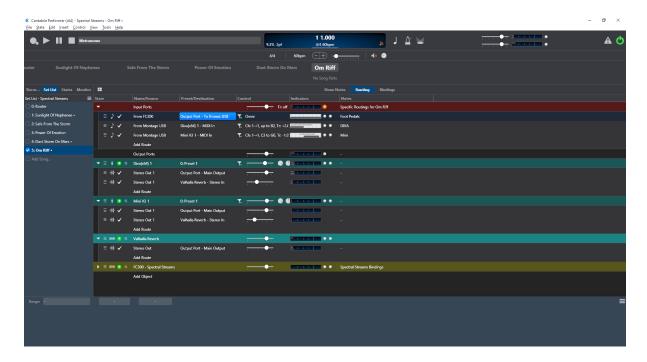
Power of Emotion

This one is really simple as it is Montage only, but I am controlling the Montage using my Roland FC300 foot controller. So, there is nothing in this song other than a Route from the FC300 MIDI input to the Montage.

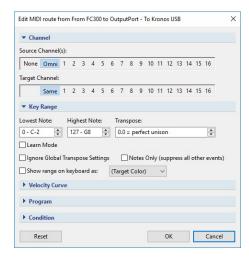


Om Riff

A bit of an improvisation this one. Fans of Steve Hillage might recognise the reference! A friend of mine in America nailed the intro synth sound for this iconic song using the Kronos AL-1 (Virtual Analog) engine, so I had to find a use for it!



In this song, the Kronos is standalone and just playing live sounds. I have the FC300 routed to it as I have one of its CTL pedals set to latched and, when it is pressed, it will send a note on command to play a bass note on the Kronos, and when released it will send the corresponding note off command. This will give me a bass drone when I want it whilst my hands are playing other things!



The Montage is only used as a Master keyboard and I have split the keyboard so that the lower portion is going to <u>UH-E DIVA</u>, for a very nice hippy sounding phased pad. A two octave upwards transpose is applied to get the sound in the right range.

The DIVA screen shot below shows a mix of Moog style oscillators with a Roland filter!



And the upper portion is going to an <u>Arturia Mini V</u> Minimoog emulation, and a downwards octave transpose is applied.



Conclusion

This has been a run through of how I use Cantabile in my new stage rig, which I hope that you will find useful to give you some ideas of how you could apply this very powerful stage host in your rig. I hope it inspires you to check Cantabile out to see how it could run your VSTis live!

Be sure to check out my companion Gig Rack Guide for building the gig rack as well!