



VocALIGN Pro 4 AU (ARA)

User Manual

An Audio Units Plug-In for Logic 9 and higher



Version 4.4



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Important Notes

- In this manual, 'VocALign PRO 4 AU (ARA)' will be referred to simply as 'VocALign PRO' or simply 'VocALign'.
- 'Audio Units' will sometimes be shortened to AU.

Technical specifications

- The AU instance of this program is compatible with Apple Logic 9 or higher, running on macOS 10.9 or later.
- The ARA version of the plug-in is compatible with Logic Pro X version 10.5.1 or higher, running on MacOS 10.14 or later.
- For a full list of compatible DAWs (all versions of VocALign Pro) see <http://www.synchroarts.com/products/vocalign-pro/support>
- VocALign PRO 4 AU (ARA) is an Audio Units plug-in. It also contains an instance that functions as an ARA II plug-in.

Acknowledgements

- Special thanks go to our beta testers and Apple's Logic team for their help and support.
- Thanks to Steve Cooke for providing the English voices in the demonstration audio.
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Contents

Contact Information.....	ii
END USER LICENCE AGREEMENT	iii
A. Introduction to VocALign.....	1
What is VocALign?	1
How does VocALign work?	1
How can VocALign help?.....	1
Working without VocALign	1
Working with VocALign.....	1
B. Applications	3
C. Basic and advanced operation modes.....	4
D. Software installation and Authorization	5
Installation	5
Installation on Logic Pro 10.5.1 (and above)	5
Trial and Full Licences	5
Reauthorizing VocALign Pro if the iLok is removed	7
WARNING.....	7
E. Modes of operation	8
F. Getting started (AU: Logic)	9
Quick start.....	9
G. Tutorial (Logic project)	14
Step 1 Obtain the tutorial project and audio	14
Step 2 Open the project in Logic	14
Step 3 Add VocALign Pro as an Audio Fx	15
Step 4 Select the Guide audio as the side chain input	16
Step 5 Set the Location Indicators in Logic.....	17
Step 6 Capture the audio	17
Step 7 Prepare the settings for alignment.....	18
Step 8 Analyze the audio	19
Step 9 Align the Dub audio	19
Step 10 Create the time-aligned version of the Dub audio.....	20
Step 11 Play the aligned audio	21
Step 12 Create an audio file of the aligned Dub.....	21
Step 13 Using advanced features of VocALign Pro.....	22
H. Operation as an ARA II plug-in	23

Adding VocALign as an Audio Fx In Logic Pro X	24
Select and Process the Audio.....	26
Play and render the aligned audio.....	28
Capturing and aligning multiple Guides and Dubs	29
Displaying a Specific Dub Audio Event in VocALign.....	30
Changing the plug-In's settings.....	30
Capturing audio in real time using Basic AU mode (as an Audio Fx).....	31
I. VocALign PRO 4 screen contents and controls.....	32
J. Important tips for effective operation	34
Logic Pro X with VocALign Pro (ARA)	34
Capture	34
Overview window	35
Trimming the captured material	35
Alignment.....	36
Alignment settings	38
Editing modes	38
Further tips and tricks.....	38
Latching.....	38
Reverb tails	39
Controlling the plug-in status	39
Previewing material	39
K. Advanced mode operation	40
Synch points.....	40
Protected sections	41
L. Troubleshooting	42

A. Introduction to VocALign

What is VocALign?

VocALign is a process that automatically edits the timing of one audio signal to match another.

How does VocALign work?

VocALign works by applying varying amounts of time stretching or compression to one signal (called the 'Dub') to make its energy peaks and troughs align in time with a 'Guide' signal. It does this in three main steps as shown in Figure 1.

VocALign analyses the Guide and Dub audio signals using identical spectrum analysers to produce time-varying energy patterns. Then it uses advanced pattern recognition techniques to examine the energy patterns and determine the best way to 'warp' the time structure of the Dub signal so that its energy pattern is matched to that of the Guide. The time-warping path describes the best time-distortion of the Dub for matching to the Guide. The time-warping path is fed to an audio editing processor that time-compresses and expands the Dub audio to create the aligned version based on the path. It is this edited version of the Dub that is returned to the audio editing software for the desired use.

Note: In the above diagram, the spectrum analyser colours match those used in the VocALign screen for Guide and Dub audio signals and controls.

How can VocALign help?

If you are a dialogue editor needing to lip-synch vocals, or a music editor needing to tighten-up lead or backing vocals, instrumental tracks, or perform a number of other alignment tasks, then VocALign will help you.

Working without VocALign

A dubbing session for film post-production or music production begins with a guide track. Then the voice-over artist, singer, or musician will dub this as closely as possible.

Because humans are not machines, they will not be able to get exactly in time with the Guide. This is generally not acceptable for lip-synching, nor for double-tracking of vocals or instruments. Often, the next step is to loop-record the trickier sections individually, but this can break-up the natural flow of the line. Lastly, the editor will attempt manually to cut and nudge individual sections of the new recordings into time with the Guide.

The above process can take many hours for both the artist and the editor.

Working with VocALign

The above process becomes a simple matter of getting the artist to concentrate on creating a great performance, rather than worrying about the fact that it may drift in and out of exact synch with a previous performance. VocALign can then be used to adjust the timing by automatically time-stretching and compressing the material to allow the Dub to take on the same timing pattern as the Guide.

This saves studio time, saves artists time and improves the quality of results. Most importantly, artists are allowed to produce their best performances, free from the rigidity normally associated with dubbing.

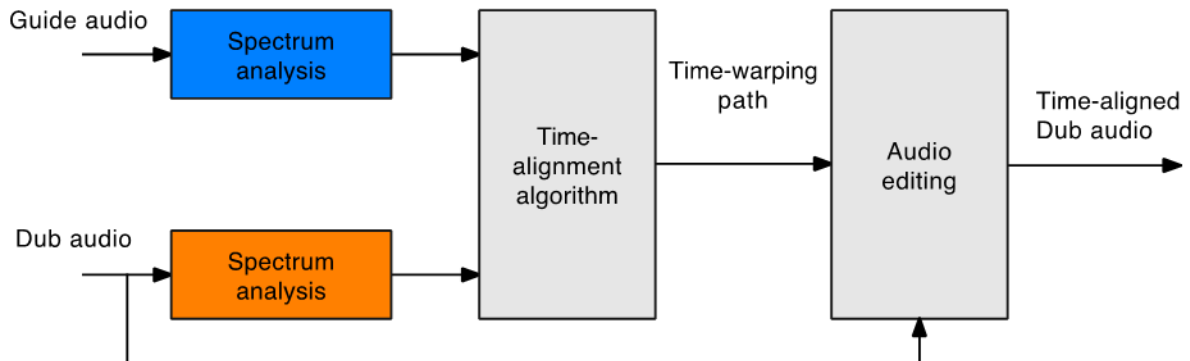


Figure 1 VocAlign block diagram



B. Applications

VocAlign was originally designed for lip-synching replacement dialogue for film and video post-production but it has been adapted to work successfully in the following applications:

- Synching replacement dialogue in post-production for film and video.
- Double-tracking vocal parts or instrumental parts
- Tightening the ensemble of singers with one another, or with the lead vocal
- Tightening the ensemble of backing instrumental tracks
- Synching a drum machine audio-output to a real drummer (or vice versa)
- Giving a dubbed vocal the timing of a 'live' vocal performance
- Changing the voice or even apparent sex of a singer or actor's performance
- Replacing the vocals from a music video shoot with a production track, achieving perfect lip-synch
- Foreign language dubbing



C. Basic and advanced operation modes

VocAlign PRO 4 has two modes of operation: BASIC and ADVANCED.

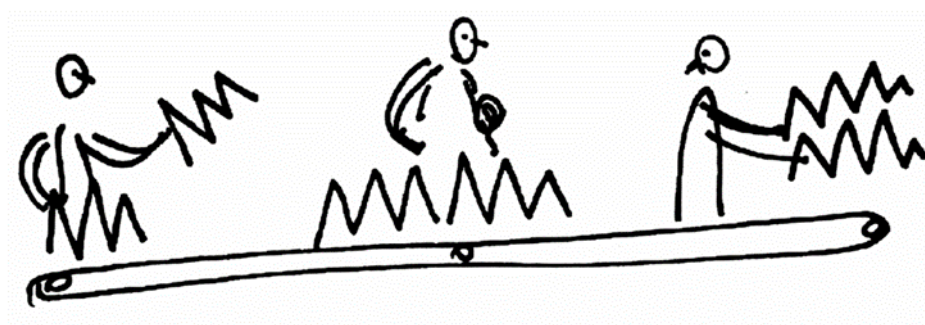
In both modes VocAlign automatically aligns the selected Guide and Dub audio regions, using either time or frequency domain processing. In VocAlign, you can trim the starts and ends of regions to be processed and control the degree of flexibility in the time-warping (alignment) process.

BASIC mode uses an alignment algorithm that has compatible behaviour to VocAlign Project. The ADVANCED mode uses a more sophisticated and robust alignment algorithm, which generally results in more successful and accurate alignment. It also provides more flexibility and control during the alignment process and may work better with audio signals that are difficult to align in BASIC mode. In general, you should use ADVANCED mode unless you specifically want the algorithm to behave like VocAlign Project.

The ADVANCED mode adds two important controls: one that enables you to determine 'synch points' and the other to select 'protected' regions in the audio to be aligned. Synch points are pairs of pointers that relate specific locations in the Dub to specific target locations in the Guide. VocAlign will try to ensure that the points are put in synch. In essence this enables you to attempt to 'force' VocAlign to match the audio at these points. Protected regions are user-specified parts of the Dub audio that will not be affected by VocAlign's time warping.

VocAlign PRO also includes frequency domain editing, in addition to the normal time domain editing available in the VocAlign Project version. This can be useful for getting good results on single line melodic material such as solo singers or instrumentalists.

These features are covered in more detail later in this manual.



D. Software installation and Authorization

Installation

If you have not already done so, download VocAlign Pro 4 plug-ins from www.synchroarts.com/downloads

Installation on Logic Pro 10.5.1 (and above)

After you have installed or upgraded VocAlign Pro AU, you will need to perform additional steps in Logic Pro to use VocAlign Pro AU (ARA) in your projects. The steps are these:

- i) Run Logic Pro X.
- ii) In Logic Pro X, open any project or create an empty project.
- iii) In Logic, add VocAlign Pro AU as an insert to any track in the project.
- iv) Quit Logic Pro X *without saving*.
- v) Rerun Logic Pro X. VocAlign Pro (ARA) should appear in Logic's Plug-in Manager under Synchro Arts.

Trial and Full Licences

VocAlign Pro can run in a **Trial Mode** but it will require an **iLok Trial licence** which you can obtain from the [Synchro Arts website](http://www.synchroarts.com). Once you have obtained and installed the Trial licence as described below, VocAlign Pro will run in a **fully functional** demonstration mode for the number of days stated in the information you receive with it.

VocAlign Pro licences will authorize both Mac and Windows versions.

If you already have a VocAlign Pro licence installed on an iLok USB Key that is plugged into the computer running VocAlign Pro, you can skip the rest of this section on authorization.

Software authorization summary

VocAlign Pro uses the iLok system described on www.iLok.com for authorization.

IMPORTANT: Before you can run VocAlign Pro, you must do all the following (if you haven't already done so)

1. Create a free account on www.iLok.com

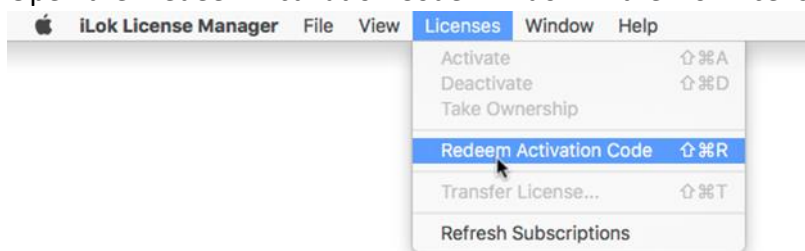
2. Go to www.iLok.com, download and install the new **iLok License Manager** on your computer.
3. Run the iLok License Manager and sign in.
4. Synchro Arts normally supplies an iLok Activation code in the form:

XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XX
 (where the X's are numbers)

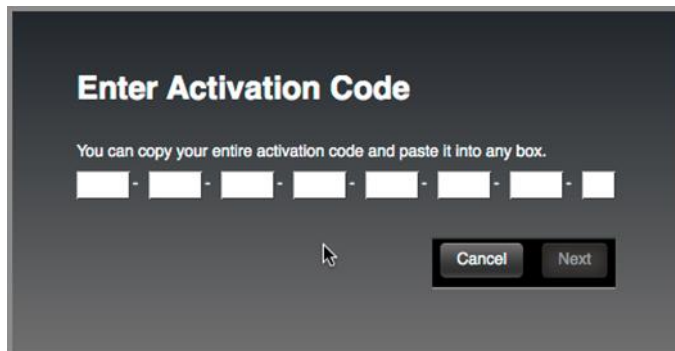
note that this code is NOT a licence but an **Activation Code** that you can redeem in the iLok License Manager to obtain your licence.

5. To redeem an **Activation Code**:

Open the 'Redeem Activation Code' window in the iLok License Manager.



Enter your Activation Code as instructed.



If the code is recognized, you will see a VocAlign Pro Licence in the iLok Manager.

Drag the Licence to your iLok USB Key.

iLok Keys can hold licences for a number of protected software products. You can have licences from Synchro Arts and other software vendors on the same iLok.

If you have followed the above procedures correctly, and the iLok Key with the relevant licence is inserted in the computer running VocAlign Pro, it should run in an authorized mode by simply launching VocAlign Pro

Reauthorizing VocAlign Pro if the iLok is removed

If you subsequently try to run VocAlign Pro without the iLok inserted into your computer, you will receive a warning message. Follow the instructions in the warning to reauthorize the software.

WARNING: Do **not** remove the iLok from your computer while you are using VocAlign Pro.

E. Modes of operation

This version of VocAlign Pro has two modes of operation, which operate differently depending on whether you are using an AU-only compatible DAW, or one that additionally supports ARA, such as Apple’s Logic Pro X (version 10.5.1 or higher).

Please visit <http://www.synchroarts.com/compatibility/editors/VocAlign+PRO+4> for information and videos about editors that support VocAlign Pro.

<i>Mode</i>	<i>Description</i>	<i>Method of capture and alignment</i>
<p>Basic Audio Units (AU) (see Sections F and G)</p> <p>Ableton Live, Logic and Logic Pro</p>	<p>The plug-in works as an effect with AU-compatible DAWs that support sends and sidechains (e.g. Logic Pro). Processing is simply applied to the track concerned with no awareness of individual audio events.</p> <p>Useful if you want to work on a track as a whole, or to control exactly what is captured, rather than on individual segments or events.</p> <p>Fairly slow as the audio has to be captured in real time.</p>	<p>Press “Capture”. You must play audio into VocAlign Pro in real time.</p> <p>Align by pressing “Process” in the plug-in’s window.</p>
<p>ARA (see Section H)</p> <p>Logic Pro X (version 10.5.1. or higher)</p>	<p>The plug-in works as an Audio FX with Logic Pro X. This means that VocAlign is applied to specific audio segments or events.</p> <p>Faster than Basic AU mode as the audio is captured as quickly as possible.</p>	<p>Press “Capture” to capture selected audio events in non-real time (as fast as possible).</p> <p>Aligns automatically.</p>

F. Getting started (AU: Logic)

To learn to use the basic functions of VocAlign PRO 4 only takes a few minutes. To get the best understanding quickly *we strongly recommend that you first follow the brief tutorial in [Section G](#)*, which uses prepared audio examples.

The following section is a Quick Start guide for those that want to jump straight in without following the tutorial. (For the ARA plug-in with Logic Pro X please see [Section H](#).)

Quick start

- 1 In Logic select 'VocAlign Pro AU->Mono' as an insert on the track to be aligned (the 'Dub' track, Audio 2). It is found in the list of Audio Units in the plug-in menu as shown in Figure 2.

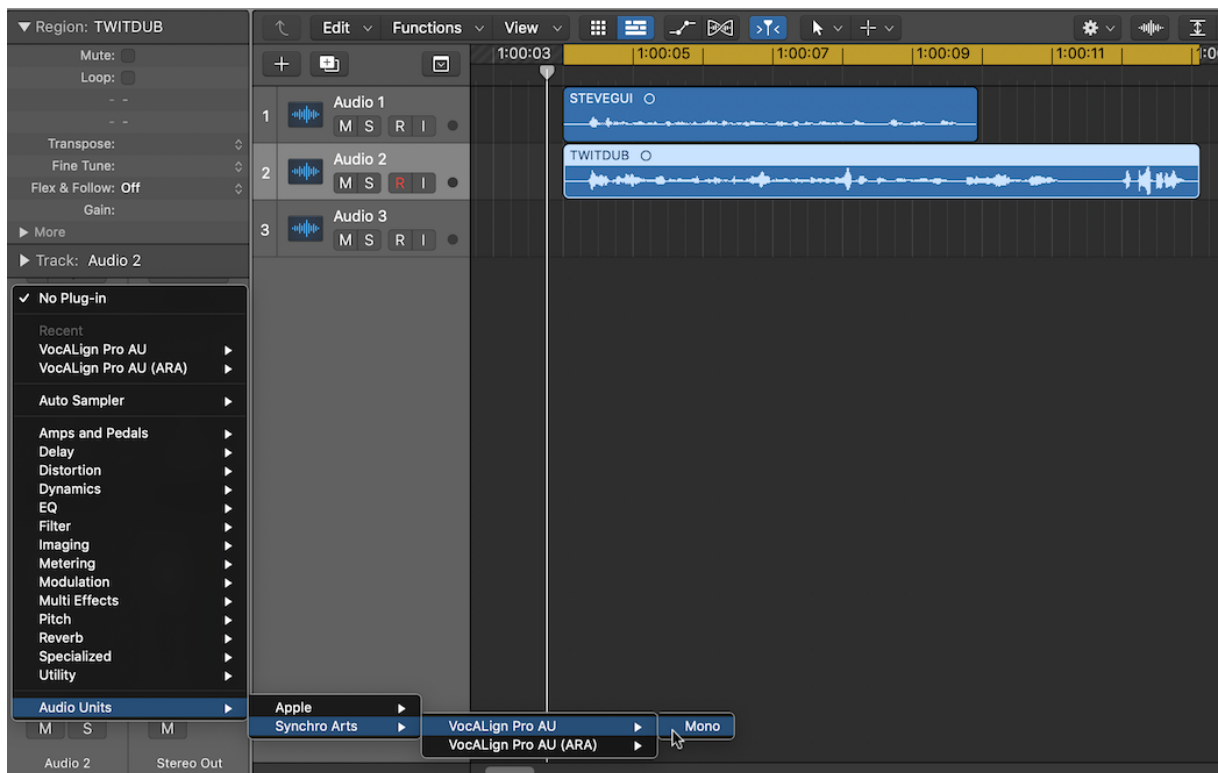


Figure 2. Selecting VocAlign Pro AU as an Audio Fx in Logic

- 2 The VocALign Pro AU plug-in window will open as shown in Figure 3.



Figure 3. VocALign Pro AU Window before capture.

- 3 In VocALign Pro's Side Chain menu select the track that you want to use as Guide audio. In this example it is track 'Audio 1'. The Guide is the original sound to which the Dub audio will be matched. See Figure 4.



Figure 4. Setting the sidechain to Track 'Audio 1'.

- 4 Set the Logic Pro's location indicators, by dragging the ends of the yellow bar (shown in the image below), to select the audio that VocALign will process.

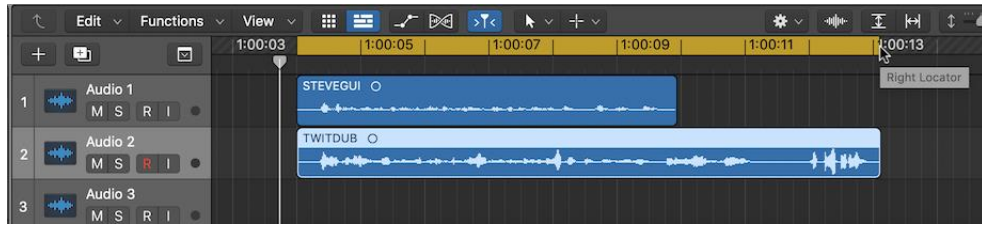


Figure 5. Setting Logic's location indicators to span the audio for capture.



Figure 6. Capture button showing green flashing light

- 5 In the VocAlign window press 'Capture Audio'. The green light in that button will flash showing that it is waiting for audio. See Figure 6 above.
- 6 Press <Play> (space bar) in Logic. The selected section of the Dub track and Guide track will be loaded into VocAlign. VocAlign will display the audio waveforms of the captured Guide and Dub when Logic loops to the start of the audio. Press <Stop> (Spacebar) in logic.



Figure 7. VocAlign Pro showing captured Guide and Dub waveforms.

- 7 In this example the Guide signal much shorter than the Dub. To improve the quality of the alignment, move the Guide end marker (right-hand blue arrow) to just after the actual end of the audio.

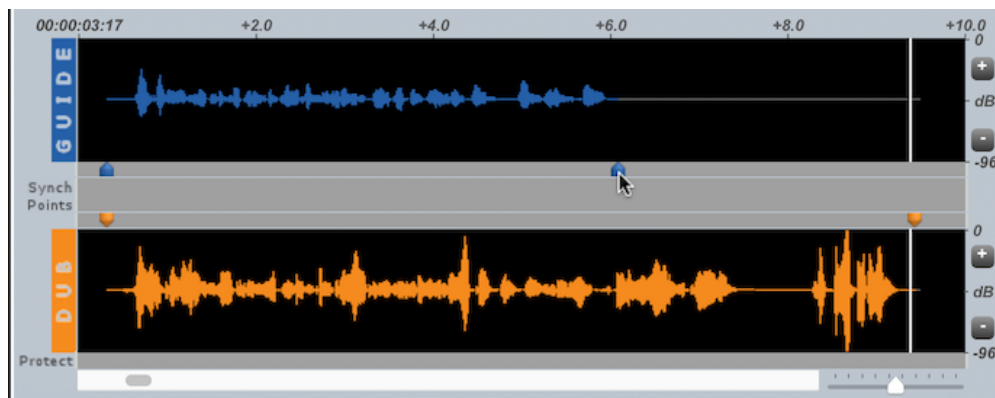


Figure 8. Setting the Guide's end-marker

- 8 In the VocAlign window select **Advanced** align mode, **Time Domain** editing and **Normal Flexibility** (these are the default settings).
- 9 Press **Process** and VocAlign Pro will align the Dub audio to the Guide audio. Once the Dub has been aligned, the display will show the energy plots of the Guide and Dub. You will also see a yellow trace above the Guide, which shows how the energy of the Dub has been matched to the energy of the Guide.



Figure 9. Yellow trace over Guide showing the new alignment.

- 10 In Logic, move the play head back to the start of the Guide. Press **Play** in Logic and you will hear the aligned Dub along with the Guide.
- 11 In Logic, right- or control-click on the Dub region waveform and select 'Bounce in Place'. This enables you to make a new aligned audio file that can be played on a new track in Logic. You can either select the track yourself before bouncing, or let Logic create a new track. If you used the 'Export to File' option, you will find the processed file in the *Project Audio Browser* (formerly called *Logic Bin*).

TIP: When you are aligning audio, try to make sure that:

- The Guide audio content is sufficiently similar to the Dub.
- The Guide starts at roughly the same time as the Dub.
- The Guide and the Dub have a small lead-in (a quarter of a second to half a second) containing a bit of background noise.

G. Tutorial (Logic project)

This tutorial guides you through the use of VocAlign Pro AU in easy stages so that you can learn about how it works and how best to use it. It uses a prepared Logic project that can be downloaded from the Synchro Arts website.

You will learn how to:

- Select the Guide and Dub audio that will be processed in VocAlign
- Transfer the Guide and Dub audio into the VocAlign plug-in
- Use VocAlign to create an Aligned (synchronized) Dub and audition it
- Return the Aligned Dub audio to Logic.

Step 1 Obtain the tutorial project and audio

The Logic project for the tutorial can be found by going to the **following webpage** at:

https://www.synchroarts.com/compatibility/editor-product/Logic_Pro_X/VocALign_PRO_4.

Locate and click on the \ *Logic Pro X Project for VocAlign Video Tutorial* to download a copy of the project to your computer.

Copy the contents of the dmg file to a suitable folder on your computer's hard disk. The copied material should contain the file and folders shown in Figure 10.



Figure 10. Contents of the downloaded tutorial.

Step 2 Open the project in Logic

Click on the file "VocAlignTutorialForLogicProX" to open the tutorial project. It should bear some resemblance to Figure 11 below.

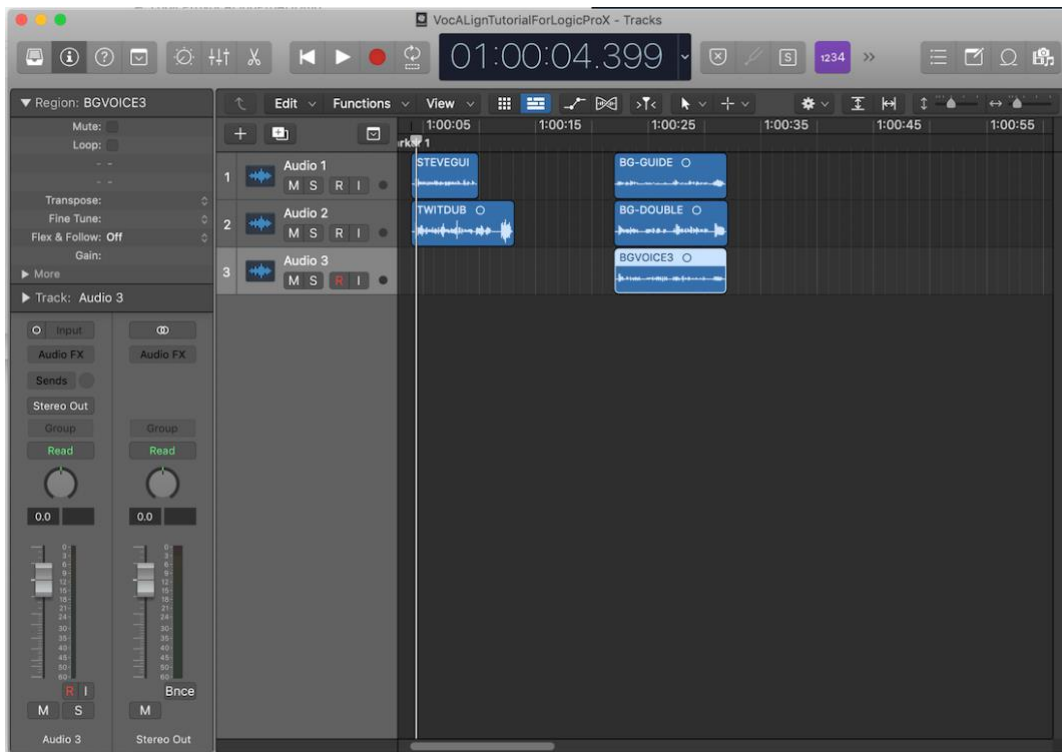


Figure 11. Tutorial project displayed in Logic Pro X.

Step 3 Add VocAlign Pro as an Audio Fx

In Logic, add VocAlign PRO AU as an Insert on the DUB track by selecting the track 'Audio 2' and clicking its *Audio Fx* button.

In the pop-up menu that appears, navigate to "Audio Units->Synchro Arts' and select "VocAlign Pro AU" as shown in Figure 12. The VocAlign Pro AU window should appear as shown in Figure 13.

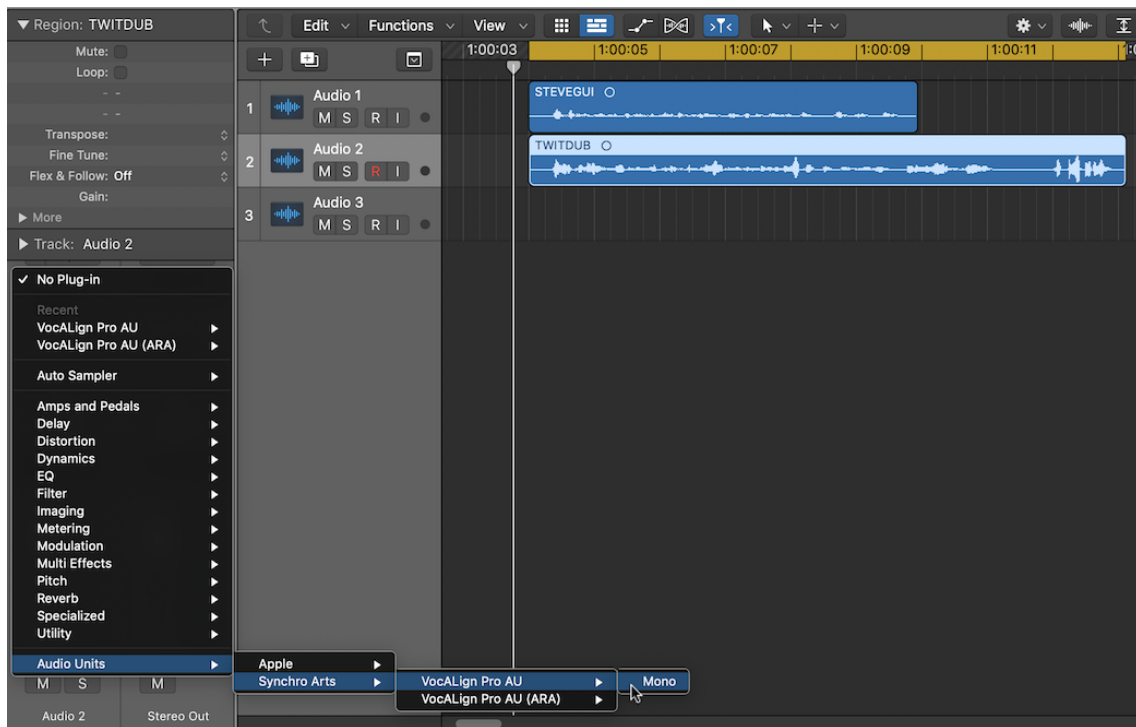


Figure 12. Select VocAlign Pro as an Insert in the Dub track 'Audio 2'.



Figure 13. VocAlign Pro's plug-in editor window before audio capture.

Step 4 Select the Guide audio as the side chain input

The *Side Chain* selection in VocAlign determines which audio material will be used to guide the alignment process. You configure Logic's sidechain by clicking the button "Side Chain" in the top right-hand corner of the plug-in window. In VocAlign Pro's "Side Chain" menu, select the track 'Audio 1'. This contains the audio STEVEGUI, which we use as a guide in this tutorial.



Figure 14 Turning on the side chain input

Step 5 Set the Location Indicators in Logic

In Logic, select the starting point of the audio you want to process, using Logic’s timeline. (The Guide and Dub audio should be approximately in the same place.) In this example it means dragging the timeline back to 1:00:04 (before the start of the audio).

Step 6 Capture the audio

In VocAlign, press ‘Capture Audio’ as shown below. The green light in that button will flash showing that it is waiting for audio.

Press <Play> (space bar) in Logic. When Logic has finished replaying both the Guide and Dub press <Stop> in Logic (space bar). The replayed section of the Guide and Dub tracks will be loaded into VocAlign and their waveforms will be displayed in the plug-in’s window. (See Figure 16, below).

TIP: If you need to capture more than one audio region into one instance of VocAlign, you may need to use the Overview display at the bottom of the window to select separate regions for processing. Click on the desired waveform to select it. Click <Delete> to delete the selected waveform from VocAlign. This is covered in more detail in [Section J](#).

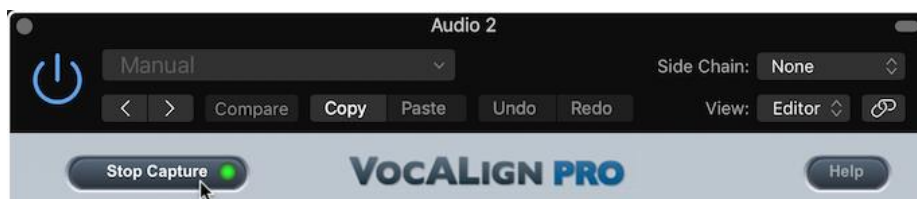


Figure 15. When you select Capture Audio (left) the lamp in the button will turn green and flash.

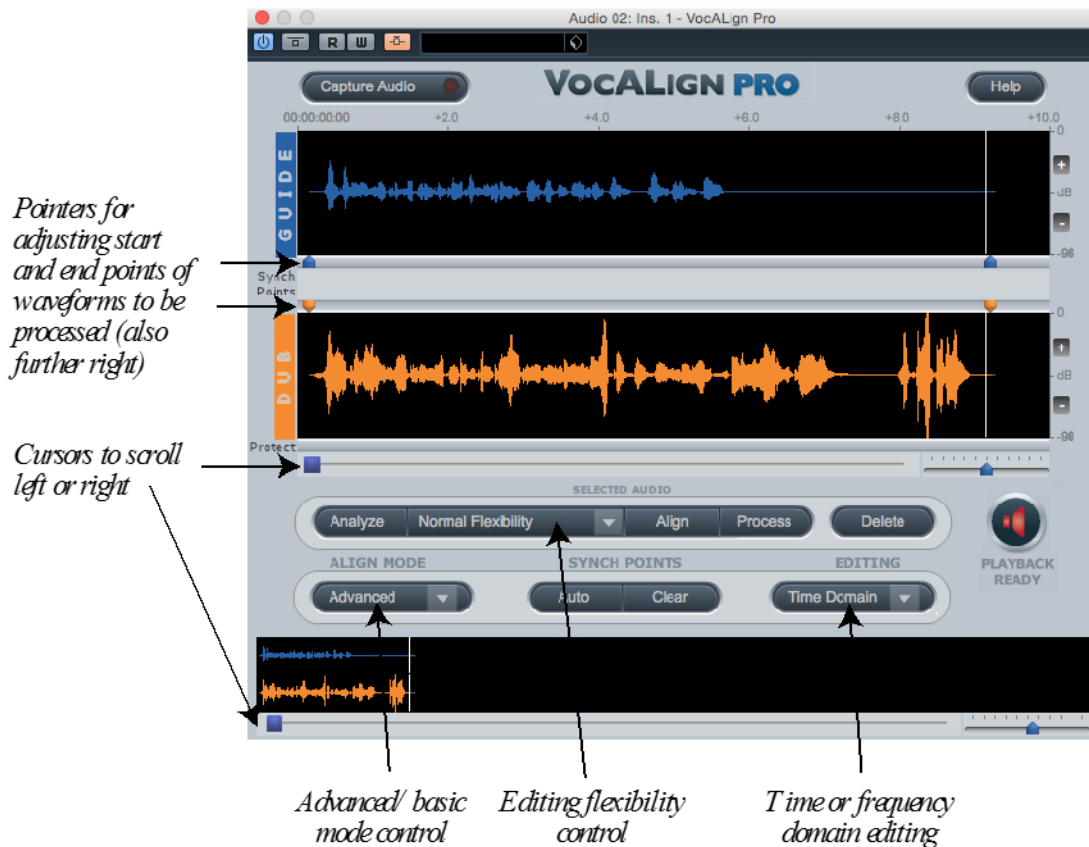


Figure 16. VocAlign's window after audio capture

Step 7 Prepare the settings for alignment

Select the **Advanced** alignment mode as shown in Figure 16 above, along with **Time Domain** in the Editing menu to the right of it, and **Normal Flexibility** above and between these two options. (These are the default settings.) This sets up the plug-in with some typical settings for speech alignment.

In VocAlign, if required, adjust the start or end of the Guide or Dub audio so that the sections to be aligned are roughly similar in terms of content. This is done by clicking and dragging the waveform from its ends (when first captured), or where it changes colour too grey (after adjustment). The selection can also be made by sliding the blue or orange pointers above or below the waveform, as shown in Figure 16. There is a pointer at the beginning and at the end of each waveform to begin with. You may have to scroll to the right in the VocAlign window in order to see the pointers at the end of the waveforms. Logic's transport commands are used to play the audio.



Figure 17 VocAlign energy display after pressing 'Analyze'

TIP: Try to ensure that the start of the audio selection is in 'silence' (which should be low level noise within an audio segment, rather than an empty part of the track that lies between segments) for about 0.25 seconds before the waveform energy appears. Try to ensure the end of the selected audio is at the desired stopping point.

Step 8 Analyze the audio

In VocAlign click **Analyze**. The display changes to show an energy plot of the Guide and Dub tracks (Figure 17, above), which is what VocAlign uses to create a time-warp path to match the two extracts. (This step can be omitted because the **Align** or **Process** buttons will automatically include the analysis step. The **Analyze** control is available to obtain a quick overview of the analysis stage without further processing.)

Step 9 Align the Dub audio

Clicking **Align** creates a processed version of the track on which the VocAlign plug-in is inserted. You will now see a yellow trace superimposed on the Guide audio track's waveform (see Figure 18), which is VocAlign's proposed mapping of the Dub track's energy pattern to match that of the Guide. Initially VocAlign saves its output to a temporary file, but you can also create a more permanent audio file of the processed version.

(If you press **Help** then **About** in VocAlign, you can see where the plug-in stores the temporary audio files. You can also change the location of the folder for the temporary files.)



Figure 18. Yellow trace over Guide showing proposed alignment



Figure 19. The Green loudspeaker shows that audio is ready to be played

Step 10 Create the time-aligned version of the Dub audio

Click **Process** to create a rendered version of the aligned audio that is written temporarily to disk. The red loudspeaker (Not Ready) symbol next to the Delete button will change to green (Ready), to show that the audio is processed and ready to be auditioned (see Figure 19 above).

(While the loudspeaker symbol next to the **Delete** button is red – Not Ready – you won't hear the aligned audio from the track being processed. When the loudspeaker is green you will hear the aligned audio.)

TIP: Generally, for the fastest operation, once the audio has been captured, press only the **Process** button.

Step 11 Play the aligned audio

Once the Edit is completed and the speaker symbol is green, if you press **Play** (space bar) in Logic you will hear both the Guide and aligned Dub audio together in sync. The BYPASS button in the top left-hand corner of VocAlign's display (see Figure 20) allows you to temporarily turn off the processing of this plug in so that you can hear the original unprocessed audio. The button is orange when bypassed. Be sure to turn Bypass Off (i.e. NOT Bypassed) if you want to use the aligned audio.



Figure 20. Bypass button in top left-hand corner

Step 12 Create an audio file of the aligned Dub

In order to create an audio file of the processed version (of the Aligned Dub), control-click (or right click) on the Dub region in the Logic window and select 'Bounce in Place', as shown in Figure 21.

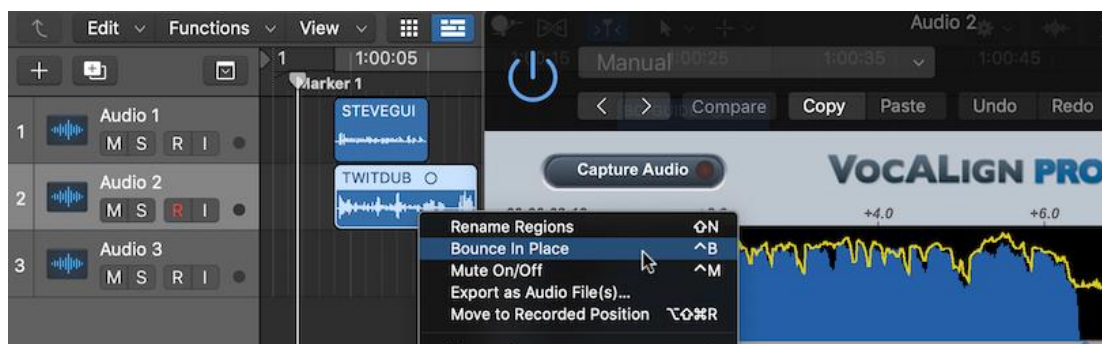


Figure 21. Choosing 'Bounce in Place'.

If using 'Bounce in Place' the processed audio will be bounced onto a new track in sync with the start of the original one. You can either let Logic choose a new track, or you can select the track onto which it will be bounced before you select 'Bounce in Place' (see Figure 21 above). For now, the new extract can be renamed (shown below in Figure 23 as 'TWITDUB_bip') and bounced onto track 3. Notice that VocAlign has only processed that part of the Dub audio that matches the Guide.

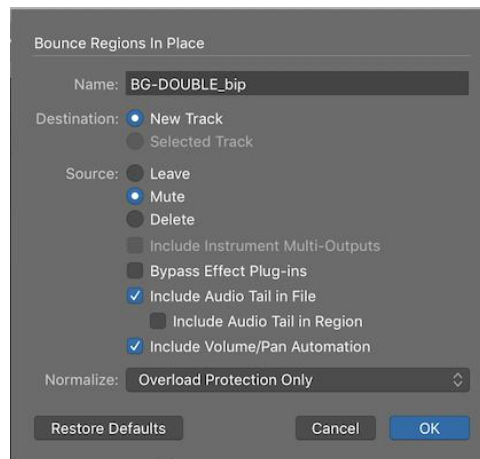


Figure 22. Options for 'Bounce in Place'.

The source (original Dub) audio region can either be left as it is, muted or deleted during this process (Figure 22 above). In the example shown in Figure 23, it was muted during the bounce, indicated by a blue dot before the region name on the Logic display. (This means you will only hear the newly aligned file when you play.) You can unmute a muted region by control/right-clicking on the region concerned and selecting 'Mute on/off'. Alternatively, you can mute the entire source track using the track mute control to the left of the display.



Figure 23. Aligned audio on track 3 in the Logic display, showing blue dot on track 2's audio region to indicate muting.

If you have used 'Export as Audio File', the new region will be available in the *Project Audio Browser* (formerly called *Logic Bin*) and can be dragged onto the new track. If the Snap function is active in Logic the aligned audio can be dragged accurately to match the start of the original version.

TIP: Do not save the modified Logic's tutorial session over the original downloaded session when exiting Logic. We recommend that you save the modified one with a different name so that original tutorial can be reused.

Step 13 Using advanced features of VocAlign Pro

VocAlign Pro AU has a number of advanced features that enable you to control the way VocAlign aligns audio. Guidance on the use of 'synch points' and 'protected regions' is given in [Section K](#). [Section J](#) also includes a few tips and tricks for effective operation.

H. Operation as an ARA II plug-in

The AU version of VocALign Pro contains an ARA-compatible extension that will work with Logic Pro X (version 10.5.1 or higher) as an ARA II plug-in.

This section explains how to use VocALign as an ARA plug-in with Logic Pro. Apart from this, other detailed and advanced aspects of the plug-in's operation are the same as for the basic AU version described in this manual.

Unlike the basic AU version, the ARA version can load audio into the VocALign plug-in quickly without needing to take audio from an insert or sidechain in real time.

The basic steps below describe how to use VocALign Pro AU as an ARA plug-in in Logic Pro X.


Important

Please note that it is important to put Logic Pro X into <Play> briefly just before you add any audio to VocALign Pro (ARA). This ensures that VocALign (ARA) and any other ARA plug-ins are aware of any changes to your project. The need to do this is a quirk of Logic Pro's implementation of ARA, over which VocALign (ARA) has no control.

*(*Tip*) Tapping the spacebar twice before pressing either <Capture Guide> or <Capture Dub> in VocALign Pro (ARA) is a quick way to do this.*

We recommend that you make Logic Pro's track selection follow the selection of audio regions automatically. To do this:

a) In Logic Pro X open "Preferences -> Advanced Tools...". Make sure that "Show Advanced Tools" has been selected. and then select "Editing", which you will see near the top of the dialogue box.

b) Next in Logic Pro X click the button "General"  (near the top left corner of the dialogue box) and then select "Editing", which

you will see near the top of the dialogue box. Under “Editing”, enable “Select Track on Region/Marquee selection”.

Adding VocAlign as an Audio Fx In Logic Pro X

In Logic you need to add VocAlign as an *Audio Fx* to each track that contains the Guide audio and the Dub audio. In the example below the first track contains the Guide while the second and third tracks contain the Dubs.

For each of the first three tracks follow these steps in Logic Pro X:

- a) For Track “Audio 1”, click the track’s button **Audio Fx**

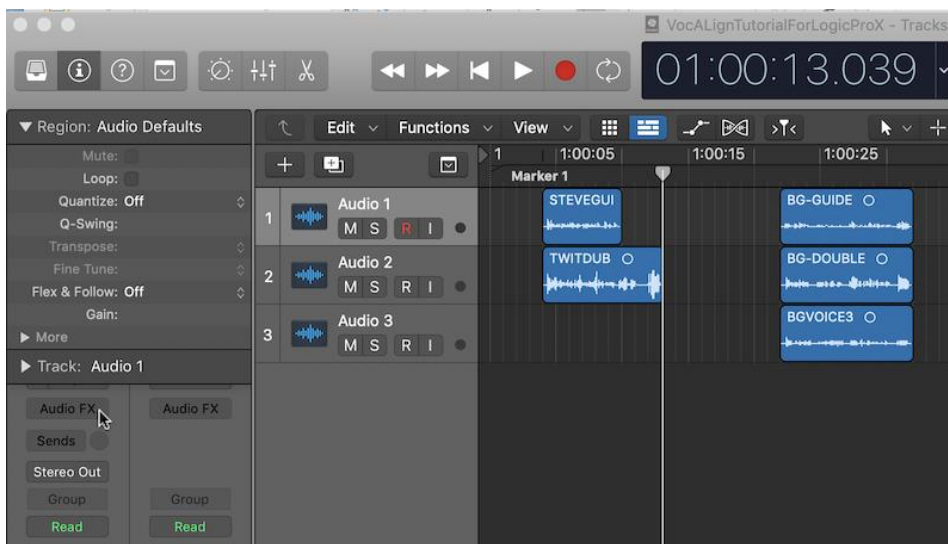


Figure 24 Adding an Audio Fx to Track “Audio 1”.

- b) In the pop-up menu, choose *AudioUnits->Synchro Arts->VocAlign Pro AU (ARA) ->Mono*. It is important to choose the (ARA) version.

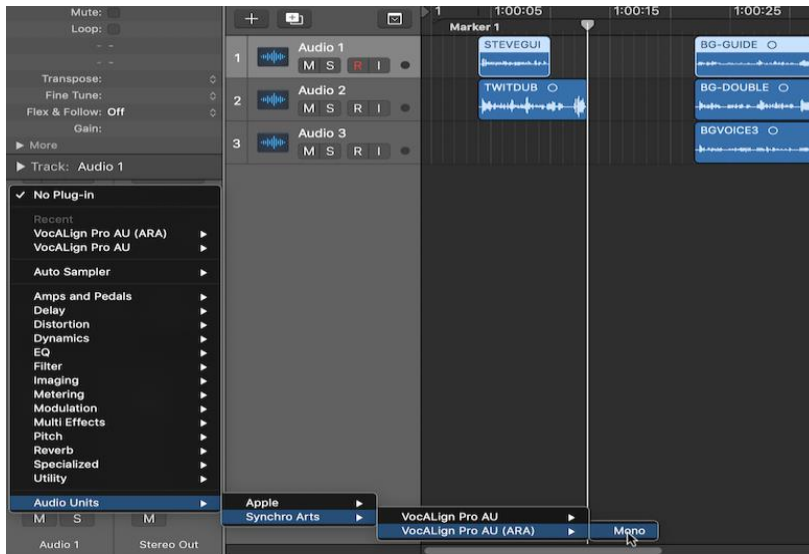



Figure 25 Adding VocAlign Pro (ARA) to Track "Audio 1".

- c) Once you have added VocAlign to the track, Logic Pro will display each plug-in labelled with the name of its associated track.



Figure 26 VocAlign Pro (ARA) added as an Audio Fx to Track "Audio 1".

- d) Set “**Link Mode**” to “**Single**” in the VocAlignAU (ARA) plug-in. To do this, select the Link button  in the top right corner of the Plug-in's window with <Ctrl><Click> and select “**Single**” in the pop-up menu that appears. The Link button should glow purple.
- e) Similarly, add VocAlign Pro (ARA) to Tracks 2 and 3 by repeating steps a) to d) for each of these track.

To remove VocAlign Pro (ARA) from a track, click “*No Plug-in*” in the *Audio Fx* menu.

Select and Process the Audio

First, in Logic select the Guide audio, which in this example is *BG-GUIDE* on the first track. Make sure that you have selected only *BG-GUIDE*. Next in Logic, press <Play> followed quickly by <Stop> (by tapping the spacebar twice) and then in VocAlign, press the button “*Capture Guide*”.

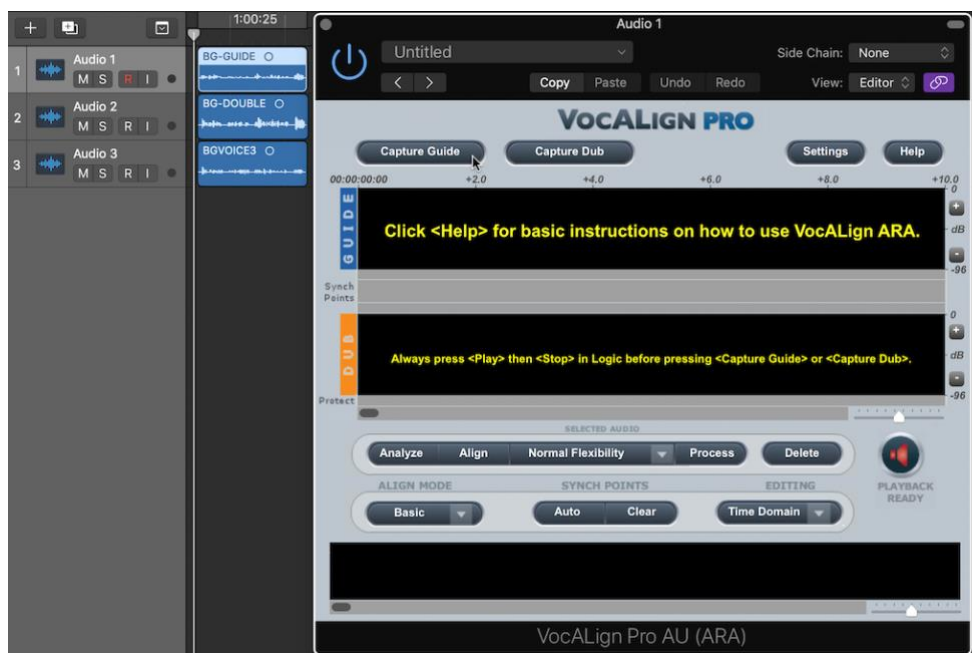


Figure 27. Capturing the Guide audio BG-GUIDE in VocAlign Pro.

Once you have captured the Guide, VocAlign will show the selected audio in its Guide display.

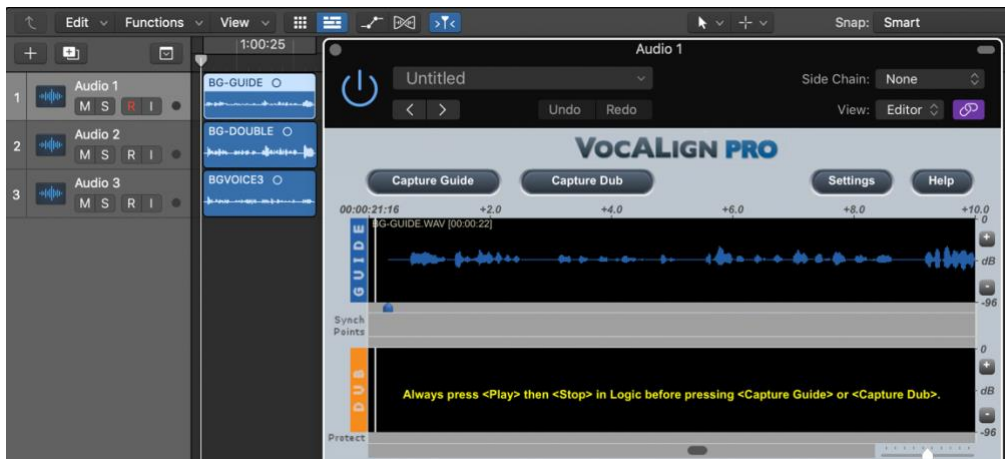


Figure 28. Guide audio in VocAlign Pro

Now to Capture the Dub audio, in Logic Pro X select the audio region *BG-DOUBLE*, tap the spacebar twice and then in VocAlign press the button “*Capture Dub*”. (Make sure that you have selected only *BG-DOUBLE*.)

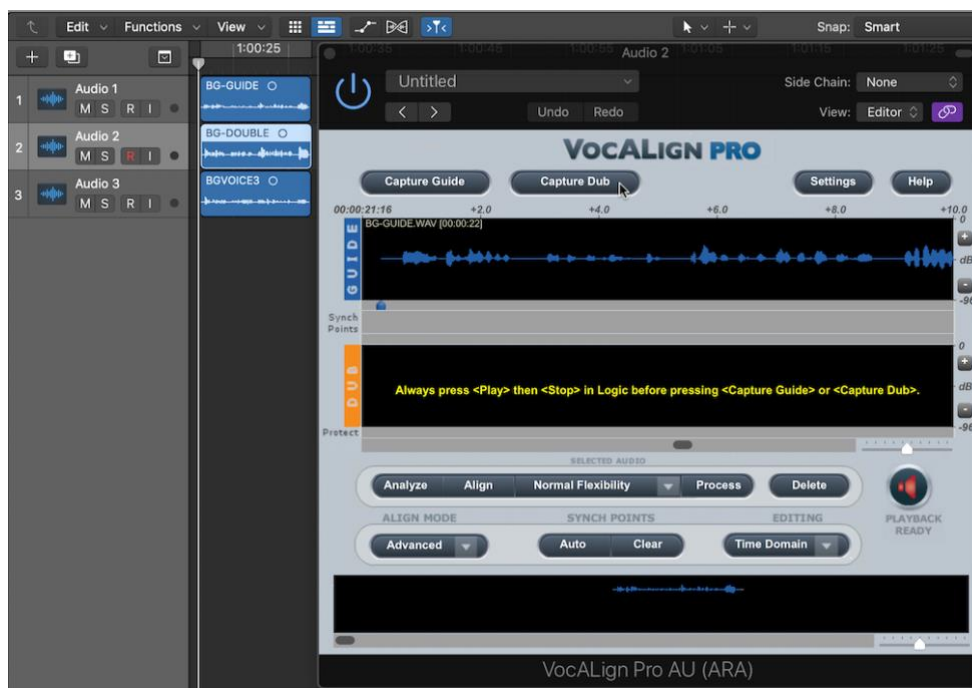


Figure 29. Capturing the Dub audio *BG-DOUBLE* in VocAlign Pro.

Once VocAlign has captured the Dub audio, it will automatically align the Dub to the Guide using the current settings. The display will show the energy profiles of the original audio and the energy profile of the Aligned Dub superimposed on the Guide’s. The small loudspeaker icon will glow green to indicate that VocAlign has generated audio file for the aligned Dub.



Figure 30. VocAlign Pro displays the energy profiles of the Guide (blue) and Dub (orange). The yellow trace shows the energy profile of the Aligned Dub.

Play and render the aligned audio

If the Playback Ready indicator below the Dub track on the plug-in's display is green, you can play the tracks concerned in Logic Pro X. You should hear the aligned version of the audio segment instead of the original one. This, however, is only a temporary “effect” applied to the audio segment in real time.

To “render” the aligned audio permanently in Logic Pro X, first select the Dub audio with **<Ctrl><Click>** and choose ‘Bounce in Place’ or use the keys **<Ctrl>** as a shortcut. ‘Bounce in Place’ will copy the aligned (processed) audio onto a new track in sync with the start of the original one. You can either let Logic choose a new track, or you can select the track for the bounce’s destination.



Figure 31. Use Logic's 'Bounce in Place' to create a permanent audio file of the aligned Dub generated by VocAlign.

TIP: Unless you render (bounce) the aligned audio, it will continue to be applied as a real-time effect, using processing power, unless the effect is turned off. This means that you will continue to hear it as it was originally aligned, even if you edit the original audio. To avoid any such confusion, render the effect before changing any audio in Logic Pro X and it will then replay reliably.

Capturing and aligning multiple Guides and Dubs

To align more than one pair of audio regions (a Dub paired with a Guide), simply repeat the steps for the first pair, namely:

1. Add VocALign to the tracks that have the Guides and Dubs. When VocALign is added as an *Audio FX*, it will have access to all the track's audio.
2. In Logic Pro X select the Guide audio, tap the spacebar twice and then in VocALign press the button **Capture Guide**.
3. In Logic Pro X select the Dub audio, tap the spacebar twice and then in VocALign press the button **Capture Dub**. This step both captures the Dub and aligns it to the Guide automatically using the current settings.
4. If necessary, in VocALign make adjustments to the settings to improve the alignment and press the button **Process**.
5. Repeat steps 1 to 4 for each new pair as required...

It is even simpler to align more than one Dub to the same Guide, namely:

1. Add VocALign to the tracks that have the Guides and Dubs. When VocALign is added as an *Audio FX*, it will have access to all the track's audio.
2. In Logic Pro X select the Guide audio, tap the spacebar twice and then in VocALign press the button **Capture Guide**.
3. In Logic Pro X select all the Dubs, tap the spacebar twice and then in VocALign Pro press the button **Capture Dub**. This step both captures the Dubs and aligns them to the Guide automatically using the current settings. *Note:* For this to work effectively all the Dubs should have similar starting times and should be on different tracks
4. If necessary, in VocALign make adjustments to the settings to improve the alignment and press the button **Process**.

Tip:

The examples in this manual have assumed that each Guide corresponds to a single Audio Region and that each Dub corresponds to a single Audio Region. Nonetheless, it is possible to create a Guide or a Dub by selecting consecutive Audio Regions in Logic before clicking **<Capture Guide>** or **<Capture Dub>** in VocALign. The Regions for each Guide or Dub must be on the same track and be adjacent to each other. In other words, there can be no silence or overlaps between each Audio Region and the Audio Regions must be next to each other.



Figure 32. Selecting the Guide and Dub(s). In this example, the audio regions BG-Guide.1 and BG-Guide.2 could be selected to form the Guide. Likewise, BG-Voice3.1 and BG-Voice3.2 could be selected as one Dub and BG-Double as another.

(** Remember to tap the spacebar twice before pressing either of the capture buttons **).

Displaying a Specific Dub Audio Event in VocAlign

If you have used VocAlign to process many Dubs in a Logic Pro project you may want to display a specific Dub/Guide pair. To do this, simply click on the Dub or Guide in Logic Pro X, tap the spacebar twice and VocAlign will display that Dub/Guide pair in its windows.

Changing the plug-In's settings

In the ARA version of VocAlign Pro you will find a **Settings** button at the top right of the plug-in window. It enables you to change how audio events are described in the drop-down menus for Guide and Dub selection.

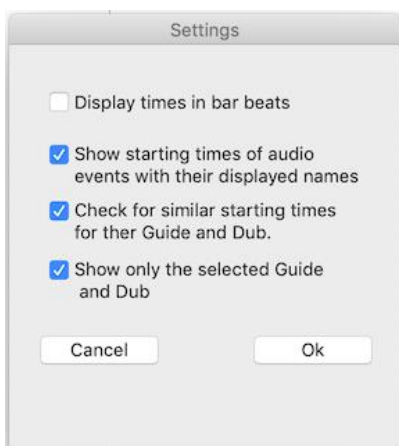


Figure 33. Options in the Settings menu of the ARA plug-in.

Display Times in bar beats allows you to change the format of the displayed times to bar beats. VocAlign will use the current setting of the project's beats per minute.

Show starting times of audio in its displayed name enables you to choose whether the starting times of events are shown with its name. (This can help to distinguish between copies of events with the same name located at different playback times.)

Check for similar starting times when capturing Guide and Dub checks that the events being captured have similar starting times in the session. This checks the suitability of the Guide and Dub for correct alignment, and guards against capturing unintended events.

Show only the selected Guide and Dub enables you to choose whether VocAlign shows only the selected Guide and Dub in its Guide and Dub graphs.

Normally the selected Guide and Dub are shown highlighted and all the other captured Guides and Dubs are shown at a reduced brightness. Dub signals that overlap or are close to each other can make the graphical displays a little confusing. Selecting this setting will make it easier to see what you are currently processing.

If there is no selected Guide or Dub, then VocAlign will always show all its captured audio at a reduced brightness.

Capturing audio in real time using Basic AU mode (as an Audio Fx)

Although VocAlign Pro can process audio almost instantly in ARA mode using the steps described above, it can also be operated in Basic AU mode (see [Section E](#)). The plug-in is used as an *Audio Fx* on the Dub track and the audio is captured in real time while playing. This can allow for finer control over what is captured as you can select the exact start and end points required.

The basic steps are almost identical to the introduction to Logic given above:

1. To use the basic AU version, add the plug-in named “VocAlign Pro AU” (**note:** there is no “(ARA)” in the plug-in’s title) as an Audio Fx to the Dub track.
2. From VocAlign Pro’s window set the sidechain to the Guide track.
3. Locate the playback cursor in Logic to the start of the audio to be captured. Press **Capture Audio** in the plug-in. Play the audio in Logic. Stop playback. Press **Stop Capture**.

I. VocALign PRO 4 screen contents and controls

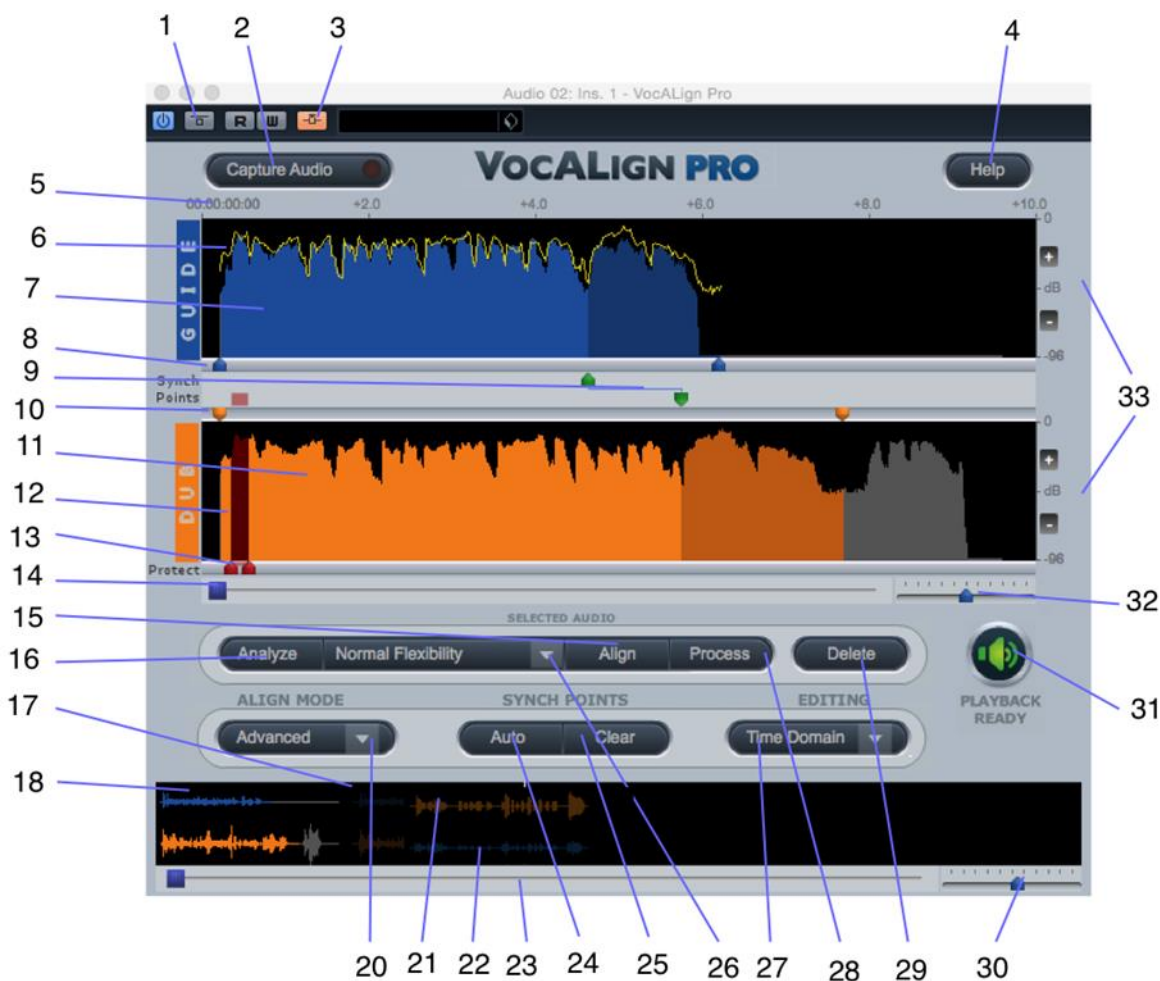


Figure 34 Key to VocALign screen contents and controls (AU version shown, see previous section for explanation of differences with ARA version)

- 1) **Bypass button:** bypasses any VocALign processing applied on this Insert. If bypass is OFF (grey), VocALign will play the aligned Dub, if the aligned Dub is ready (i.e. indicator (31) is green). If bypass is ON (yellow), VocALign will play the original (unprocessed) Dub audio. (AU only.)
- 2) **Capture Audio button:** arms VocALign to receive Guide and Dub audio from the editor during a play pass. (Yellow when waiting for audio, flashing green when capturing audio.)
- 3) **Side chain button:** turns on the side chain input to VocALign (normally routed from a Send of the Guide track). (Orange when ON.)
- 4) **Help button:** click to access help tips.
- 5) **Display start time and time offsets** – shows position of captured audio referenced to the editor timeline.
- 6) **Aligned audio trace:** a representation of the energy of the new aligned signal.
- 7) **Guide energy:** a profile of the energy of the Guide signal in time. Display elements relating to the Guide are coloured blue.


- 8) **Guide start point selector:** adjusts processing start. (The corresponding end point selector is shown further to the right).
- 9) **Synch point pair:** click in this region and drag the green blobs to create and adjust pairs of synch points (see [Section K](#)).
- 10) **Dub start point selector:** adjusts processing start. (The corresponding end point selector is shown further to the right).
- 11) **Dub energy:** a profile of the energy of the Dub signal in time. Display elements relating to the Dub are coloured orange.
- 12) **Protected region** (see [Section K](#)).
- 13) **Protected region start and end markers:** drag the red sliders to mark regions that will remain unaffected by processing (see [Section K](#)).
- 14) **Scroll bar:** use slider to move waveform position in window.
- 15) **Align button:** click this to generate and display the aligned Dub audio energy trace in Guide window (does not create aligned audio).
- 16) **Analyze button:** click to analyze and display the energy plot of the Guide and Dub. VocALign displays the energy in only one band (500Hz – 1kHz) but actually splits it into four bands.
- 17) **Overview window:** shows multiple captured regions. If more than one independent audio region has been captured these will be shown as separate waveforms in the Overview display area. Clicking one of them selects the Dub and Guide waveforms to be processed. Selected waveforms are highlighted in bright blue and orange, whereas unselected waveforms are dimmed.
- 18) **Selected Guide waveform:** Guide audio that will be processed.
- 19) **Selected Dub waveform:** Dub audio that will be processed.
- 20) **Advanced/Basic mode selector menu.** Use Advanced mode unless you specifically want compatible behaviour with the Project version of VocALign.
- 21) **Unselected Guide waveform:** Guide audio that will not be processed (shown as darker waveform). (These will only be visible if multiple regions occurring at different time values have been separately captured into the plug-in.)
- 22) **Unselected Dub waveform:** Dub audio that will not be processed (shown as darker waveform). (These will only be visible if multiple regions occurring at different time values have been separately captured into the plug-in.)
- 23) **Overview waveform display scrolling:** slide to move display.
- 24) **Automatic synch point setting:** press to let VocALign pick possible synch points.
- 25) **Clear synch points:** press to delete all synch points.
- 26) **VocALign settings** controls the characteristics of the alignment processing (see [Section J](#)).
- 27) **Editing basis:** click to choose between time and frequency basis for non-linear time compression and expansion.
- 28) **Process button:** click to generate aligned audio. (31) will indicate when done.
- 29) **Delete button:** click to remove the selected waveforms from VocALign.
- 30) **Overview waveform display scaling:** slide to zoom in and out.

- 31) **Editing complete indicator:** If the indicator is green ('Ready'), the edited (aligned) audio has been processed and is ready for playback. If the indicator is red ('Not Ready'), the aligned audio is not yet ready to be replayed.
- 32) **Selected waveform display scaling:** slide to zoom in and out.
- 33) **Energy scale:** shows range of display.

J. Important tips for effective operation

Assuming you have mastered either the Quick Start introduction or the Tutorial in the previous sections, the following will help you to get the best results from VocALign. The text refers to use with Logic Pro X, but in most cases the same principles apply when used with other supported DAWs.

Logic Pro X with VocALign Pro (ARA)

- It is important to <Play> momentarily in Logic Pro X before you add any audio to VocALign (ARA). This ensures that VocALign (ARA) and any other ARA plug-ins get updated correctly. The need to do this is a quirk of Logic's implementation of ARA over which VocALign Pro AU has no control.
- Select the plug-in's link button  with <Ctrl><Click> to set the "Link mode" to "Single" for all VocALign AU's windows. This avoids having too many windows open at once and it removes unnecessary clutter from your screen.

Capture

- In Logic Pro, you will start with a session in which there is Guide (original) audio contained on one track and Dub (replacement or new) audio on a second track.
- In the Logic Project window, drag the timeline (current play time) so that it starts just before the desired portion of the Guide and Dub audio regions for processing. The captured material can include any individual region or multiple regions. Your selection can begin and end in the middle of a region. (To have this fine control over start points with the ARA version, you will have to use it in Insert mode, as described in [Section G](#), or adjust the Guide start point selector in VocALign once the audio is captured.) VocALign PRO works best when working on relatively short regions at a time, for example from 20 seconds to, say, a minute. But effective alignment will depend on many things: e.g. gaps in the signals, how similar they are and other features. Some experimentation will help the user find the best lengths to process for each signal.
- Try to capture up to around 0.25 to 0.5 seconds of 'background' or 'leader' audio at the beginning of your Guide audio selection. This will assist VocALign to set the noise floor levels and allow better alignment at the start of the signal. (In the current version of VocALign PRO 4 AU, the selected audio can be up to five minutes long and must be longer than 0.25 seconds.)
- The Dub does not have to start at the same time as the Guide. In other words, the timecode position of the Dub is not used. The Guide's timecode is important and so is the amount of 'background' captured before the Guide and the Dub.

- Try to leave as much or slightly more background audio before the start of the Dub signal than there is before the start of the Guide.
- If you capture an audio region that begins in digital silence, VocALign may generate an error as it needs to be able to detect a signal to enable it to set its analysis parameters. Try to start capturing where there is at least some low level background noise within the audio region.

Overview window

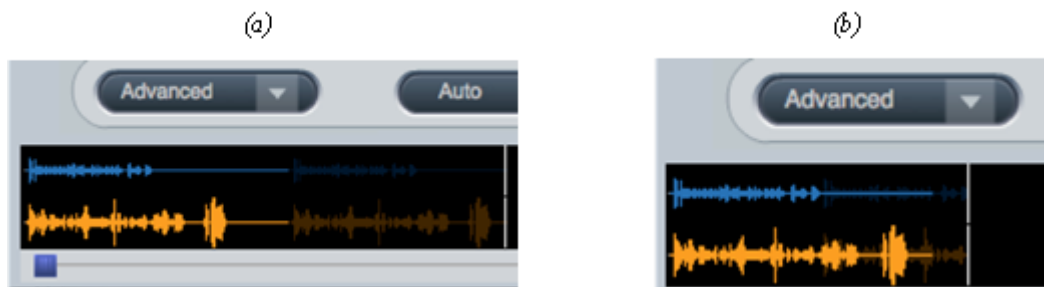


Figure 35. (a) Overview display showing dimmed waveform (to the right) for unselected audio that is separate in time from the selected audio. (b) Showing overlapping regions that have been separately captured

- If you capture more than one audio region (in separate capture passes) while the VocALign plug-in is open these will show up as separate waveforms in the overview window at the bottom of the display. Click on the section of the waveform that you want to align, and it will appear in the upper displays ready for processing. The unselected regions' waveforms are dimmed as shown in Figure 35(a) above. In this case the two regions occupy separate periods in Logic's timeline, so it is easy to tell them apart in the overview window.
- Selected (highlighted) waveforms in the overview window are those that will be processed by VocALign. If you press **Delete** only the highlighted waveform will be deleted.
- If you have accidentally or intentionally captured more than one region (in separate capture passes) within the same period on Logic's timeline, one will be overlaid on the other(s) in the overview window, as shown in Figure 35(b). The latest captured one will be highlighted, and the other(s) will be dimmed. If they overlap completely you will not be able to see those lying behind and the only way to reveal the hidden material is to delete the highlighted material this is hiding it. Nonetheless, if part of the dimmed waveform is visible in the background, you can click on it to select it.

Trimming the captured material

- Captured audio material may need to be trimmed before alignment in order to ensure that the extracts are optimised for processing. VocALign will work best if Guide and Dub material start at a similar point in their energy profiles, and both have a small period of background noise before they begin.
- It is preferable to trim starts and ends of extracts using the energy display. You can help VocALign do a better job by trimming the audio to match initial energy profiles

and ensure that there is a good chance of starting the alignment accurately. To convert a captured audio waveform into the energy display press **Analyze**.

- **IMPORTANT:** There is currently no way to return to the waveform display once an energy analysis has been done. The current contents must be deleted and recaptured if you need to start again.
- You can optionally perform several operations on the energy display waveform itself before alignment:
 - a) The start and end boundaries of the selected regions can be modified by dragging the blue or orange pointers at either end of the audio selections as shown in **Error! Reference source not found.**, left. The waveform turns grey to indicate unselected audio energy. Alternatively, you can position your cursor at the boundary of the coloured audio material (the cursor changes into a pair of horizontal arrows) and drag the boundary left or right.

- b) The display can be scrolled horizontally with the scroll bars to examine the captured waveforms. You may need to scroll right to see the end point adjuster.

- c) The scale control (Figure 36, right) can be used to expand or contract the horizontal time scale (slider) or alter the range of the vertical scale in dB (+) (-).

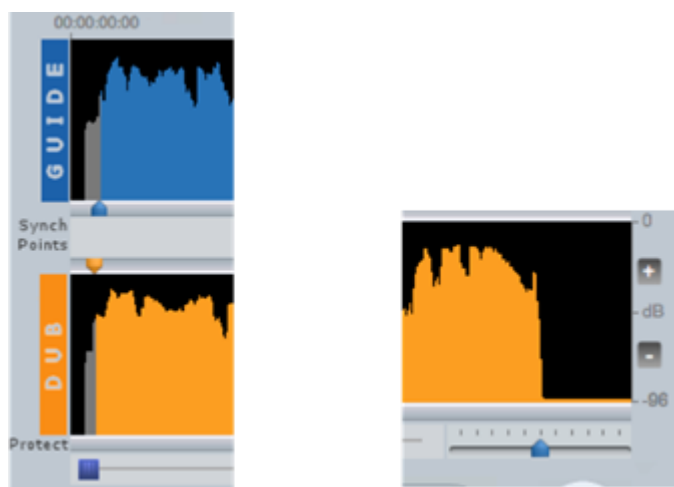


Figure 36. (left) Pointers to adjust start of Guide and Dub energy; (right) scale control.

Alignment

- Choose an appropriate VocAlign setting before pressing **Align** (e.g. if the Dub is very long compared to the Guide, try 'Maximum Compression'). Guidance is offered in the following section 'Alignment settings'.
- After clicking **Align**, visually inspect the results in the Guide window. The peaks and troughs of the yellow (Aligned Dub) energy trace should line up generally with those of the Guide as in Figure 37.
- If the alignment looks satisfactory, generate the aligned audio by pressing **Process**. This creates the aligned audio.

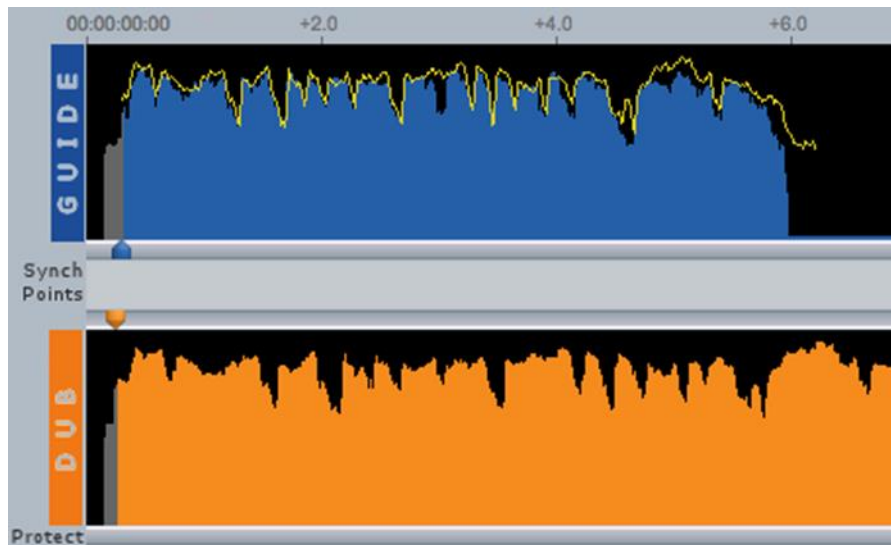


Figure 37. Checking the aligned energy (yellow trace)

- A shortcut is to simply press **Process** after capturing the audio as this will run the Analyze and Align steps first.
- Preview the results by using Logic's play controls.
- If the alignment is satisfactory, transfer the edited audio to Logic by using the 'Bounce in Place' function, as described in the tutorial.
- If you make any changes to the selected waveform or settings after the initial alignment, the yellow trace of the aligned signal will disappear, and the **Editing complete indicator** will glow red. After having made any changes, simply press the button **Process** to regenerate a new aligned output.
- If the alignment does not look or sound satisfactory, there are a few options:
 - a) Select another setting or alignment mode (which will clear the aligned trace), click **Align** again, and examine the results.
 - b) Adjust the 'leader' audio before the start of the Guide and Dub to be roughly equivalent, with the Dub leader being slightly longer.
 - c) Adjust the end of the Guide or Dub (see previous [section](#)).
 - d) Reselect and recapture the Guide or Dub audio in Logic, if the original selection is thought to be causing the problem.

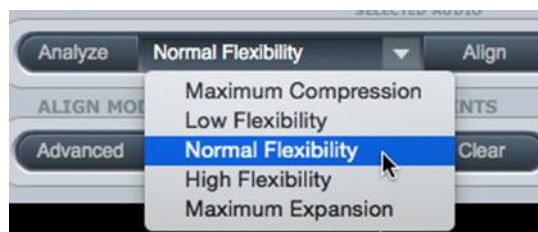


Figure 38. Selecting alignment setting

Alignment settings

You can control the alignment settings, which greatly affect how the alignment performs. Use the alignment settings menu to select which preset is active, as shown in Figure 38 above. The main setting characteristics are described in Table 1.

<i>Setting</i>	<i>Main characteristics</i>
Low Flexibility	Alignment is not very flexible; sound quality may be best.
Normal Flexibility	(Default): it is recommended to try this first as it works best in most cases.
High Flexibility	Alignment is the most flexible of the settings but may compromise sound quality.
Maximum Compression	Tries to match the Guide by time compressing the aligned audio as much as possible.
Maximum Expansion	Tries to match the Guide by time-expanding the aligned audio as much as possible.

Table 1 Alignment settings

In general, you will achieve better results by selecting the ADVANCED alignment mode. BASIC mode is provided to offer compatible behaviour with the Project version of VocAlign.

Editing modes

VocAlign PRO offers two methods of editing the Dub audio. The differences are highlighted in Table 2.

<i>Editing mode</i>	<i>Optimum requirements</i>	<i>signal</i>	<i>Advantages</i>	<i>Speed of editing</i>
Frequency	Audio contains only a single pitch. (e.g. one voice or one single – pitched instrument)		Good for reducing editing artefacts in transients and rapid pitch changes when expanding.	Slower
Time	Audio can be single voiced or contain complex signals.		Good for compression and maintaining musical beat.	Fastest

Table 2 Editing modes

Further tips and tricks

Latching

To align just the start of the Dub with the Guide (and leave the rest of the Dub unprocessed), use the Guide End Point Selector to use only select 0.25 to 1.0 second of the Guide audio for processing and keep the Dub signal full length.

Reverb tails

To stop the end of a Dub from being stretched to wrongly match a noisy or reverberant Guide, stop the end of the Guide for processing to be 0.25 to 1.0 second before the Guide signal of interest ends and use the entire Dub.

Controlling the plug-in status

After having first added VocALign as an Insert on a track, the name of the plug-in will appear on the relevant Insert slot. To change or remove the plug-in, click and hold on the Insert slot and select the appropriate plug-in (or 'No Plug-in'). To reopen the VocALign window once the plug-in window has been closed, click on the *Audio Fx* button for the track and select VocALign Pro AU.

Previewing material

Once the Dub track has been provisionally aligned (before mixing down the aligned audio to an audio file) you can listen to either the Guide track or the Dub track separately by using the track mute or solo controls in Logic. Mute the Guide track to hear only the Dub track, for example. Use the Bypass control in VocALign to turn the alignment effect on or off. Remember to remove these modifications before mixing down a processed track.

K. Advanced mode operation

Synch points

Synch points are used to pick target points where VocAlign will try to ensure that the two extracts remain in synch. In essence this enables you to attempt to 'force' VocAlign to match the audio at these points. Synch points are created as pairs (displayed as linked green pointers) – one relating to the position in the Guide and one relating to the position in the Dub audio. You can move each point in the pair independently of the other, so that the synch point can be different in the Guide and Dub tracks.

Synch points can be set either automatically or manually. In this example (Figure 39) from the speech material at the beginning of the tutorial audio, automatic synch point selection was chosen. The display shows one synch point detected where a particularly high energy peak is present in both versions. The plug-in attempts to match alignment at this point, adjusting the sections before or after it separately. A shading change is shown at the synch point boundary.

You can add synch points manually by clicking in the synch points area between the start and end selection pointers, then dragging the green pointers to the appropriate locations. In the example (Figure 40), two synch points have been manually inserted.

Synch points can be deleted by right- or control-clicking (Mac single button mouse) on them. They can all be deleted at once using the **Clear** button.

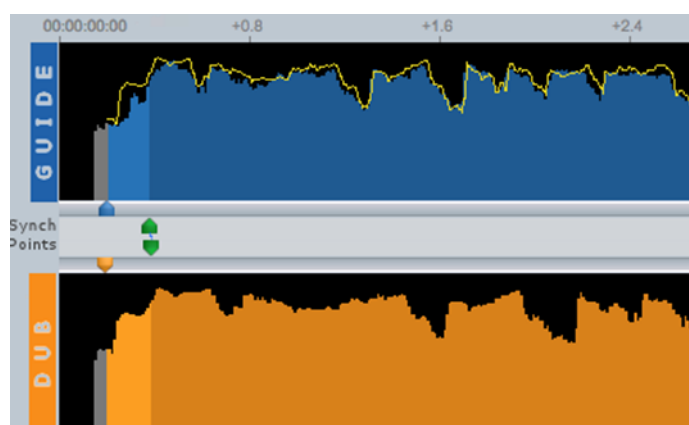


Figure 39 Automatically selected synch points shown in green

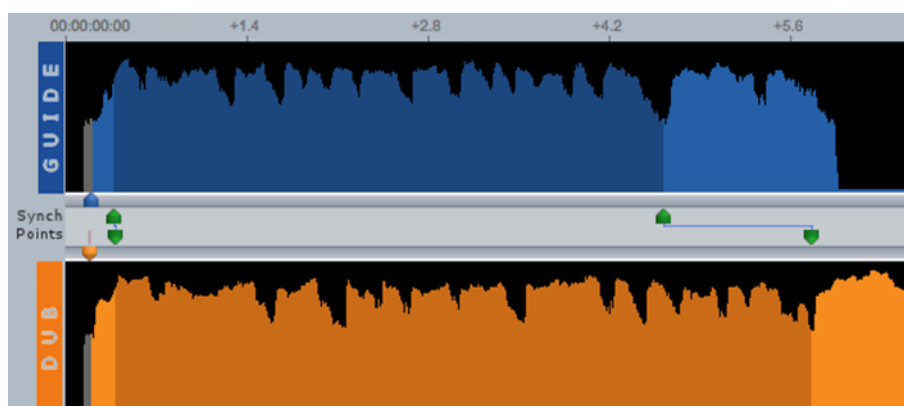


Figure 40 Manually inserted synch points

Protected sections

Sections of the Dub track can be protected so that they are not edited by VocAlign. Click in the 'Protect' bar below the Dub display to add a red pointer at the start of the intended section, then drag it to highlight (in red) the relevant area.

The example in Figure 41 uses the material from the tutorial examples. Here the phrase 'unreal time' has been protected so that, after processing, it remains spoken in the rather more languid way used on the Dub track, as opposed to being shortened as on the Guide track. This can be useful, for example, in foreign language dubbing when you want to avoid inappropriate modification of certain words in the dubbed language.

Drag the pointers to alter the starts and ends of the protected section, remembering to press **Process** again in order to perform a new alignment. Click and drag again in the same bar to add further protected sections. Red pointers can be deleted by right- or control-clicking on them.

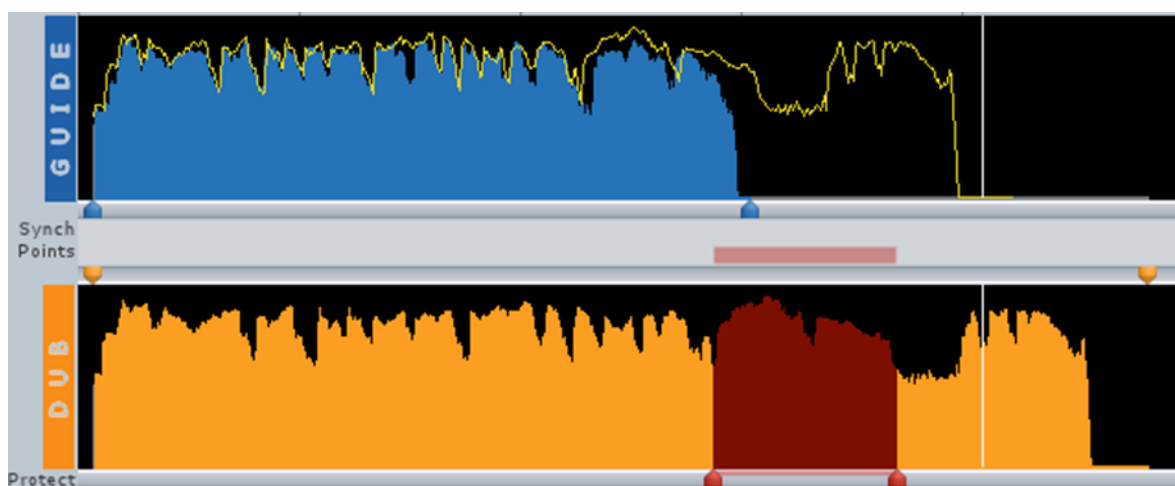


Figure 41 Selecting a protected section using the red sliders



L. Troubleshooting

For help and advice, visit the Synchro Arts support website at:

<http://www.synchroarts.com>