

Audio Sequencing mit Pulsar

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A couple of useful tips concerning Steinberg Cubase VST

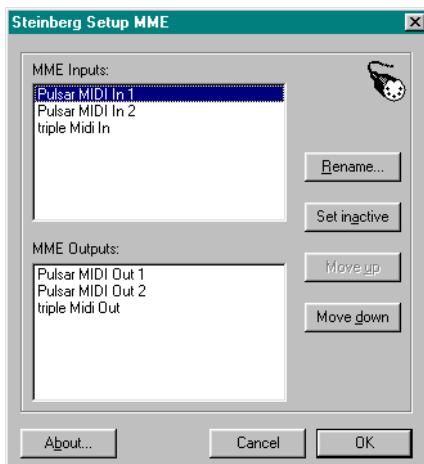
Simultaneous operation of Pulsar together with Steinberg Cubase VST is easy to achieve and quite reliable, as long as you're aware of a couple of things.



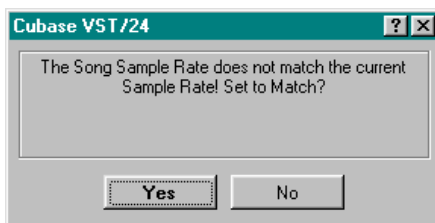
Two important features make these programs compatible with one another: identical sample rate settings in both programs and the use by Cubase of ASIO drivers, which are provided by Pulsar for audio playback. (Also, you should use a version of Cubase no older than VST 3.55R3!)

When Windows starts, a Pulsar project is automatically loaded in the background. This project is set up to use a **sample rate** of **44.1kHz**. By default, Pulsar is configured as a **wordclock master**. Additionally, the project makes **ASIO drivers** available and connects these to the 16 ADAT I/Os on the Pulsar card.

After installing Pulsar, and before starting VST, you should run the Steinberg setup utility **Setup MME (Start .. Programs .. Steinberg Cubase VST ..)** and verify that the MIDI inputs and outputs are activated:

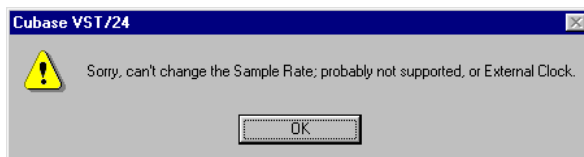


Now, upon starting VST you may see the following message, if the sampling frequency in Pulsar (or in the background project Winstart.pro) is not set to 44.1 kHz:



Click on **NO**, and VST will use Pulsar's sampling frequency anyway.

If you click on YES, the following message appears:



After confirming with **OK**, VST will again use Pulsar's sampling frequency.

This example makes clear that Pulsar determines the sampling frequency.

If you want to work in VST with a sample rate other than the one established in advance by Pulsar via the background project, you can open the appropriate dialog via the Pulsar icon which appears in the Windows Task Bar (at bottom right on your screen). If you've started Pulsar, you can find the same dialog within the program itself as "Sample Rate Settings" under the Window menu.

INFO

If you at some later point modify your Windows start project so that it no longer includes ASIO modules, you will obtain the following error message upon starting VST:



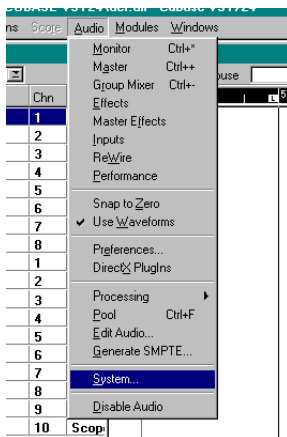
This message comes up when you start VST and there are no **ASIO modules** in the Windows start project (or the one currently loaded in Pulsar).



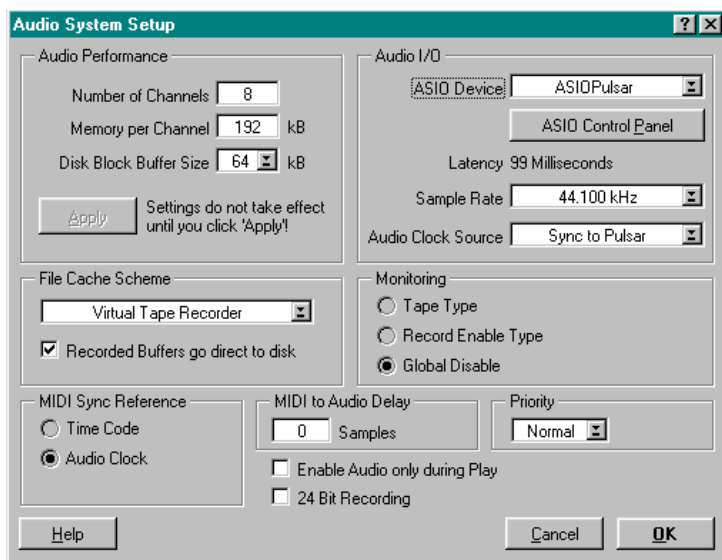
When you want to end your Pulsar/VST session, close Cubase VST **first, before** closing Pulsar. Otherwise you'll get this message and possibly others as well.

For MIDI integration, the **Pulsar MIDI Source/Dest** and **Sequencer MIDI Source/Dest** modules are already included in the "default project". Once you've selected the desired master sample rate in Pulsar (via the **Samplerate Settings control panel**), you can go ahead and start VST. Depending upon the rate you've selected, the '**Song Sample Rate does not match ...**' message may still appear. If this occurs, click on **NO**.

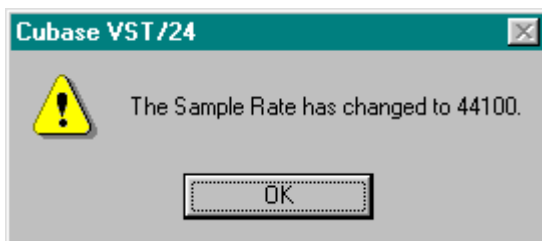
For seamless integration of the driver modules provided by Pulsar, your first step in VST should be to open the **Audio System Setup dialog**.



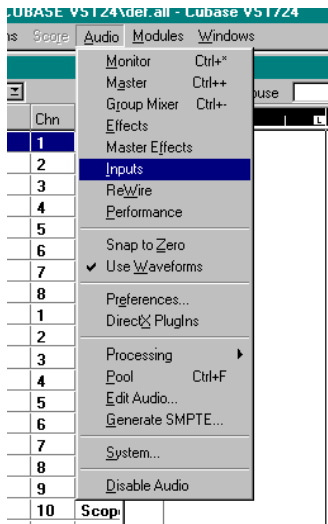
The following dialog box appears:



Select ASIO Scope as the **ASIO Device**. Directly below this are the **Sample Rate** and **Audio Clock Source** settings, which cannot be changed, since VST must use the same settings as Pulsar for proper synchronization. If you change the sample frequency in Pulsar, you will obtain the following message (in this case, upon a change from 48kHz to 44.1kHz). Simply confirm with **OK**.



Next, the VST **audio inputs** should be selected. This selection is reached as follows:

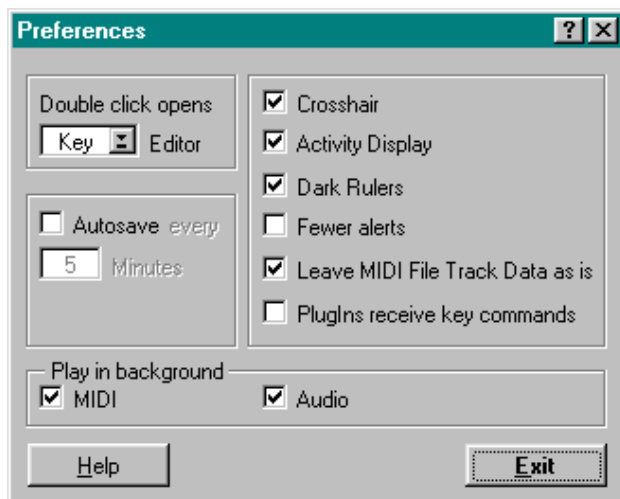


The VST Inputs window appears. It will show you eight stereo inputs, if you have selected 16 as the number of channels for the **Pulsar ASIO dest** module (via the the **Channel Settings** control panel of this module). Set all to active.

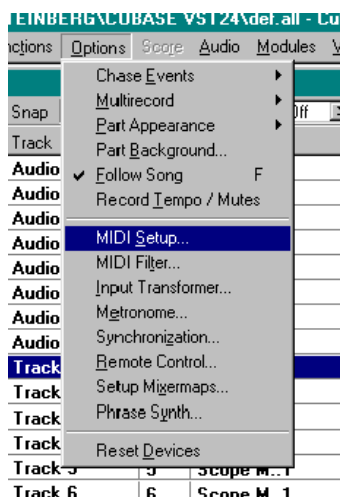


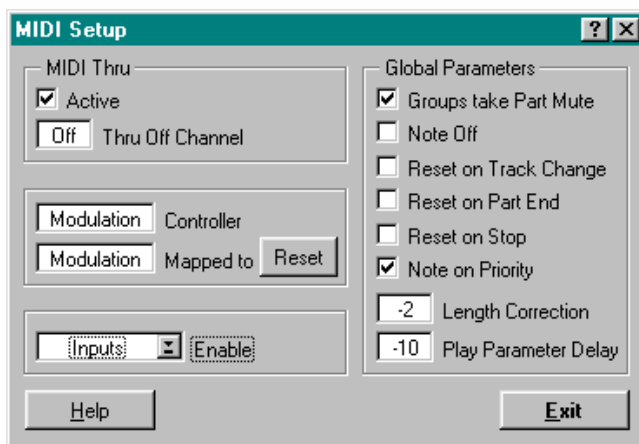


In order to enjoy uninterrupted MIDI and audio output during simultaneous operation of Pulsar and VST, you need to make sure that the **Play in background: Audio and MIDI** options in the **Preferences** dialog are activated:



For **MIDI integration setup**, go into the **VST MIDI Setup** dialog:



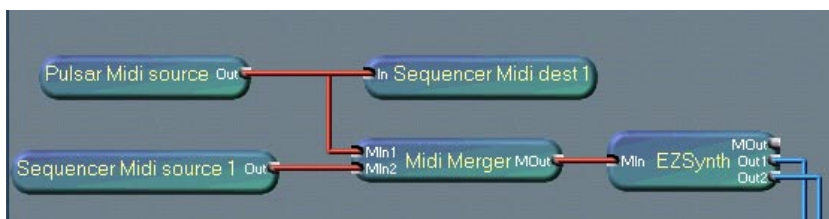


In the **Enable .. Inputs** pop-up list, activate the Pulsar **MIDI inputs**:

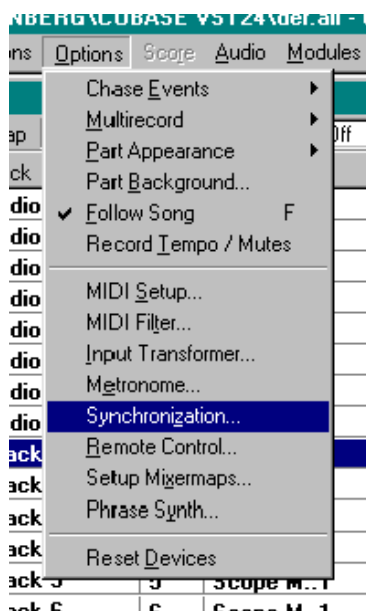


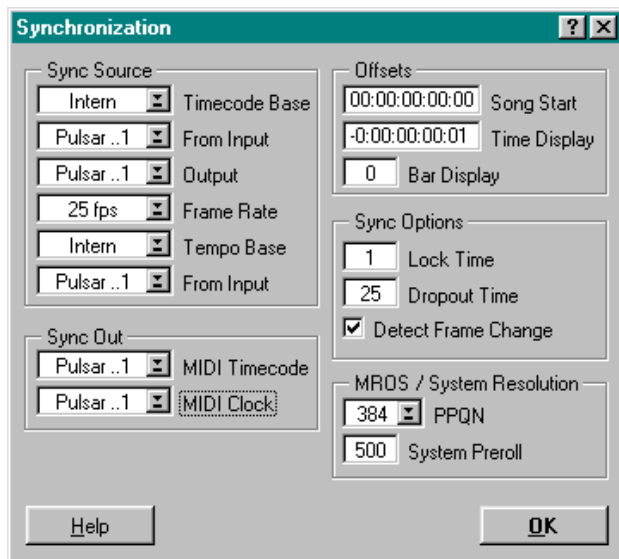
In order to have the MIDI messages which come in via the physical MIDI input of the Pulsar card be immediately available in both programs, the Pulsar MIDI Source module must be cabled to both the Sequencer MIDI Dest module and to any synthesizers you wish to hear during MIDI recording. Previously recorded MIDI events which are played back by VST appear in Pulsar via the Sequencer MIDI Source module, and can from there be routed to Pulsar devices as desired. If there is already a connection to the MIDI input of a particular device (e.g., from Pulsar MIDI Source), you can connect both MIDI signals to this input using the Pulsar MIDI Merge module (see illustration on next page). In addition, when you do this, you should make sure to disable the "MIDI Thru" option in Cubase (Options .. MIDI Setup).

EXAMPLE

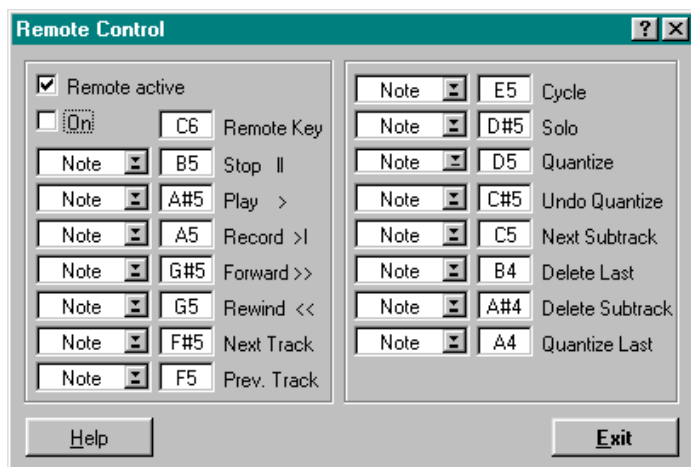


Specific **synchronization settings** can be made via the appropriate VST dialog:

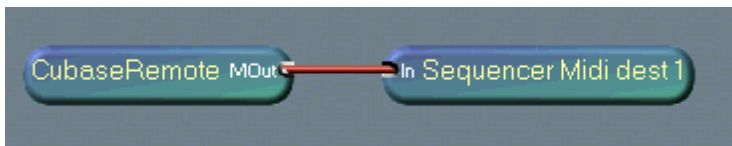




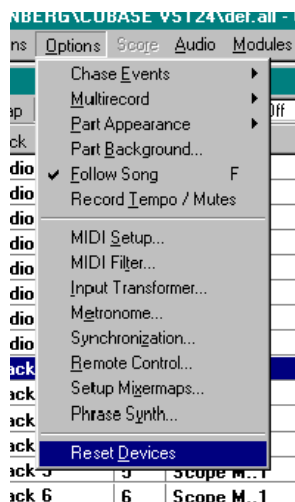
If you want to use the Pulsar **Sequencer Remote device**, which allows you to remote-control Cubase VST from within Pulsar, open the **VST Remote Control dialog** and turn on the **Remote active option**. The Pulsar Sequencer Remote device is pre-configured to work directly with the standard VST remote control values.



With this done, a simple connection in Pulsar between the **Sequencer Remote module** and the **Sequencer MIDI Dest module** is all that is needed to enable **remote-control operation** (refer to the previous Pulsar diagram).



In the course of normal operation it can sometimes become necessary to reset your MIDI devices. This can be done via an item at the bottom of the VST **Options** menu:



Record and Playback of multiple audio tracks with Cubase VST



Note: Our example involves 16 audio channels. Setting up Pulsar and Cubase for any other number of channels (2-32) is done in a similar fashion.

How does Pulsar communicate with Cubase VST?

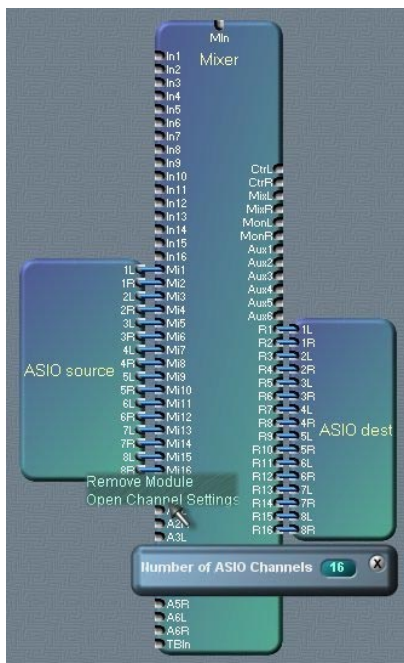
Pulsar supplies Cubase with audio channels via the ASIO interface. You can load ASIO source modules and/or ASIO dest modules.

Alternatively, you can use the Windows MME interface (Wave source and Wave dest modules). However, we do not recommend this approach, because it usually suffers from noticeable audio signal delays (latency).

The following example shows you how to set up Pulsar and VST to play 16 audio tracks from VST into Pulsar's BigMixer and to record the BigMixer's busses in Cubase.

1. Load the required ASIO modules in Pulsar.

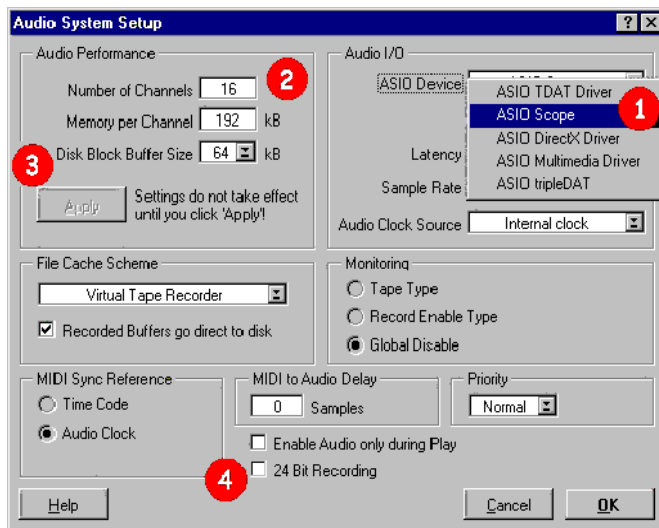
If you want to assign audio signals from your Pulsar project to Cubase, use an ASIO dest module. Use an ASIO source module to assign Cubase tracks to your Pulsar project. The following screen shot shows an example of how to connect the ASIO modules:



The dialog for adjusting the number of ASIO channels can be called up using the context menu or by double-clicking on the ASIO module. In our example, we've connected an ASIO source module with 16 channels to the BigMixer's Mix inputs for mixdown of audio tracks from Cubase. You can additionally connect other Pulsar devices to the mixer inputs. The BigMixer's busses are connected to the ASIO dest module for routing back to Cubase, where they can be recorded.

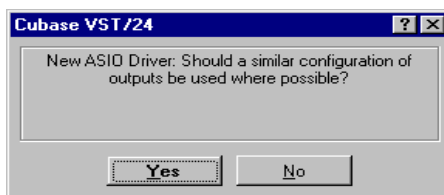
2. Tell Cubase to use Pulsar's ASIO interface!

Start Cubase and open the dialog "Audio Systems Setup" (menu Audio/ System..):



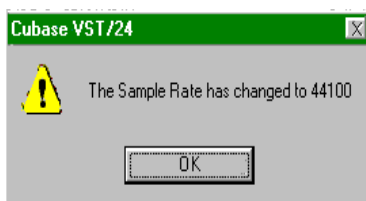
2.1. Select Pulsar's ASIO interface:

Select the device "ASIO Scope" (1). If the number of channels of the ASIO devices differ, you will be asked to save your song and you will obtain the following message:



Press "No". We will reassign all inputs and outputs later.

If the sample rate of your Cubase song does not match that of Pulsar, you will obtain the following message (in this case, upon a change from 48kHz to 44.1kHz):



Simply confirm with OK. Now your Cubase song and your Pulsar project use the same sample rate.

2.2. Tell Cubase how many audio channels you want to use:

Select the desired number of audio channels (2).

In our example, 16 audio channels are being used. If you select more channels here than you have specified in your Pulsar project, you will not be able to use the additional channels.

Confirm with the Apply button (3).

3. Configure Cubase to work with Pulsar

3.1. Enable "Play in background: Audio"

Refer to page 8.

3.2. Enable the inputs you want to use

Open the "VST Inputs" window (menu Audio/Inputs, 5 see illustration on page 7).

The inputs listed at left represent the Pulsar ASIO dest module channels. At right you can see which Cubase input each Pulsar channel is assigned to.

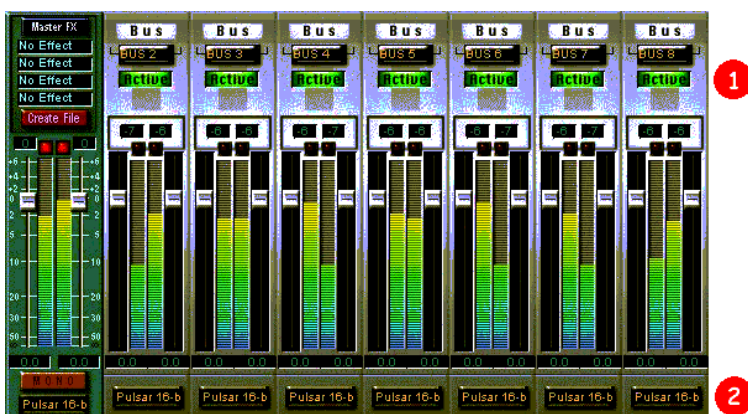
Enable the desired channels with the "Active" button — in our example, all channels have been enabled, so that we can record on all 16 tracks simultaneously.

3.3. Assign the Cubase tracks

So you won't need to keep jumping around from window to window, all of the settings for each window are listed together here.

Master Settings

Open the Master window:



You can assign two channels from Cubase to Pulsar using the Master Out. To send more than two channels to Pulsar, you must use Cubase busses. The busses are stereo channels, so you need one bus for every two additional channels. Click on the "Active" button to enable as many additional busses as you need (1).

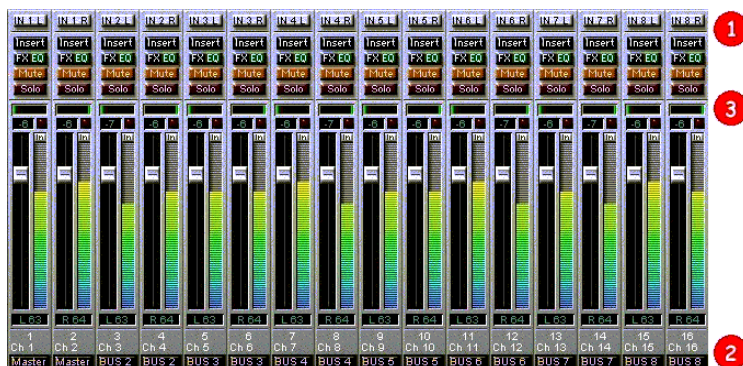
In our example, all 7 busses are enabled, so that we have 8 stereo channels (for 16 mono audio tracks)."

Select the outputs for the Master and all busses (2).

The Master has been assigned to "Out1L Pulsar 16-bit " (the display cannot show the full label). In similar fashion, busses 2 - 8 have been assigned to outputs "Out2L Pulsar 16-bit " through "Out8L Pulsar 16-bit" respectively. The Master and all busses are now assigned to Pulsar ASIO source module channels in the correct order.

Mixer Settings

Open the Cubase Mixer:



First assign the inputs (Pulsar ASIO dest channels) to the audio channels (1). For each channel, select the input you wish to record from (Ctrl + left mouse button).

In the example, we want to record 16 bus signals from the BigMixer on 16 audio tracks in VST, so we've assigned the inputs to the corresponding channels. Later we'll assign audio tracks to these channels.

Next, assign the channels to Cubase outputs (2). We want to assign the 16 Cubase tracks to the Pulsar ASIO source module, so we select the Master out for channels 1 and 2, and busses 2 - 8 for the remaining ones. If the busses do not appear in the menu, you have probably not enabled them in the Master window (see "Master Settings")

Finally adjust the pan settings (3). Be aware that a channel receives full signal level only if its pan control is set full left or full right. As the Master and the busses are stereo channels, you must pan to the left to assign the signal to the left master or bus channel only. In our example, all odd channels have been panned to the left and all even channels have been panned to the right.

Enable Multi Record

Enable "Options/Multi Record/active" to record on several tracks simultaneously. In the arrangement window, a new column with the label "R" (Record) will appear. Here you can select the tracks you want to record on.

Arrangement Settings

Spurinfo	A	M	C	R	Spur	Kanal	Ausgang
Audio 4					Audio 1	1	VST
					Audio 2	2	VST
					Audio 3	3	VST
0 Verzög.					Audio 4	4	VST
4 Kanal					Audio 5	5	VST
IN 2 R 1					Audio 6	6	VST
FX 10					Audio 7	7	VST
Aufnahmeinfo					Audio 8	8	VST
Channel 4#					Audio 9	9	VST
Freigabe Status					Audio 10	10	VST
IMo 2					Audio 11	11	VST
					Audio 12	12	VST
					Audio 13	13	VST
					Audio 14	14	VST
					Audio 15	15	VST
					Audio 16	16	VST

For each audio track, assign the desired playback and record channel. If you select a single track, its channel settings are displayed in the Info column.

In the example, we've assigned the 16 channels one-for-one to the 16 audio tracks. The 4th track is highlighted, so its settings are displayed — for example, the assignment to input "IN 2 R" (1). As this channel is connected to the 4th channel of the ASIO dest module, this channel will be recorded to Cubase track 4.

To record on a different track, select the track in the "R" column, or click on the "Enable" (2) field of this track. In the example, we've activated all tracks, for a 16-track recording.

4. Assigning record busses in Pulsar's Bigmixer

Assign your input channels to the busses. We assigned channel 1 to bus 1, 2 to 2, and so on, using the upper Bus Select. Set the pan control of all input channels hard left to assign the signal to the upper Bus Select. Unmute the busses.

Press the Mix button in the bus channels and use the bus pan control to adjust the panorama as you want to hear it while recording. This does not effect the recorded signals.



More extensive and detailed information can be found in the VST and Pulsar Users Manuals! Try to familiarize yourself with the step-by-step operation of both programs before contacting Creamware or Steinberg Customer Support for help. With a little time and patience, you'll soon know your way around in the program options.

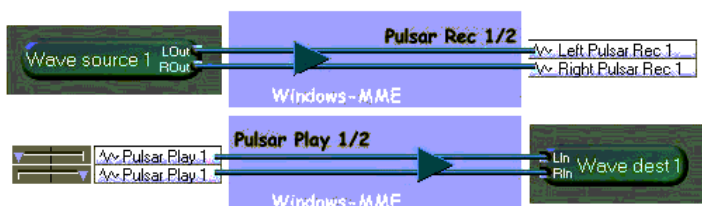
Have fun sequencing with Pulsar and VST!

Some useful tips on using Pulsar with Cakewalk

INFO

Our example is for 16 audio channels, setting up Pulsar and Cakewalk for any other number of channels (2-32) is similar.

Pulsar supplies other programs with audio channels using the Windows MME interface. You can load Wave modules in Pulsar that represent MME drivers. These modules appear in other programs as "Pulsar Rec" and "Pulsar Play" drivers. The following diagram shows the routing for the first two tracks:



To use this interface, proceed as follows:

1. Load the required Wave modules in Pulsar.

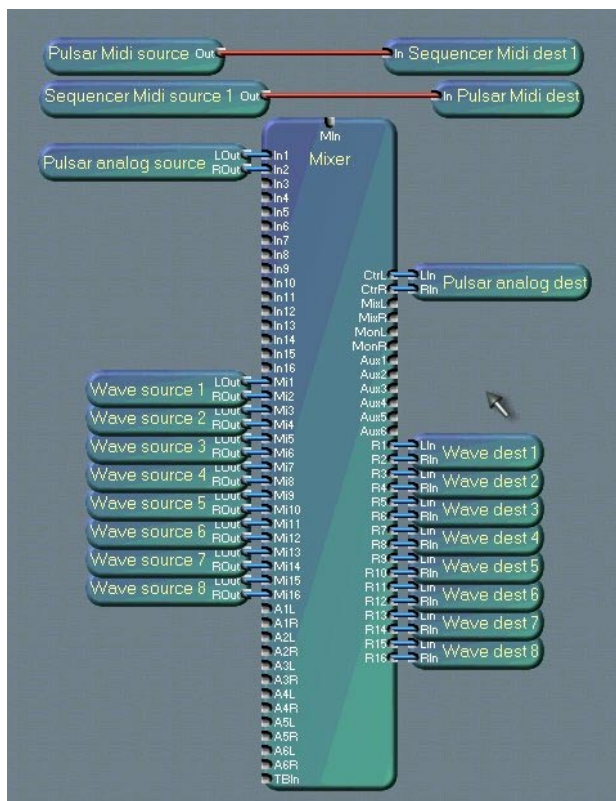
Generally you can record as many audio tracks in Cakewalk as you have loaded in Pulsar. Since a Wave dest module is a stereo device, you need 8 Wave dest modules for 16 audio tracks. Make sure your Pulsar project includes 8 Wave dest modules.

The same applies to the Wave source modules; load as many you need for the playback in Cakewalk.

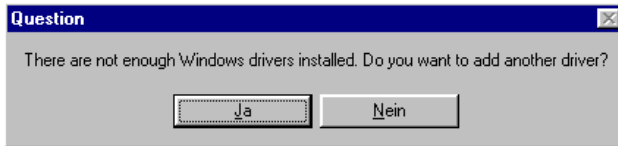
The screen shot shows how to connect the modules to record the BigMixer's busses in CakeWalk.

In this configuration, Pulsar serves as a complex digital mixer for recording audio signals routed into In1 - In16 of the BigMixer. In the example, Pulsar's analog input is connected to In1 and In2. The input channels must be assigned to the busses.

For controlling Cakewalk audio tracks during the mixdown process, 8 Wave source modules are connected to the BigMixer's Mix Ins.



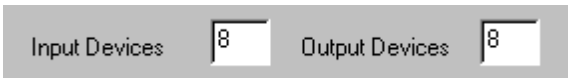
Sooner or later, when adding modules, you'll probably encounter this dialog:



Pulsar is letting you know that there are not enough reserved Windows drivers and asks you if you want to introduce another driver to Windows. Click on "Yes", and Pulsar will tell you that Windows must be restarted for the new driver to be activated. Before you do so, load the required number of modules and save your project. Then restart Windows.

2. Load the Pulsar MME drivers!

Now Windows supplies other programs with MME drivers. You can check the number of drivers in the Driver Setup of Pulsar (Control Panel -> System -> Device manager -> Sound, video and game controllers -> Pulsar -> Properties -> Settings):



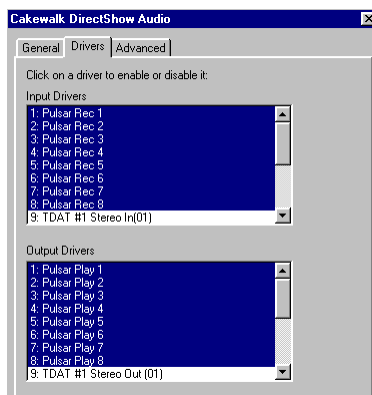
The "Input Devices" are represented by Wave source modules, the "Output Devices" are Wave dest modules.



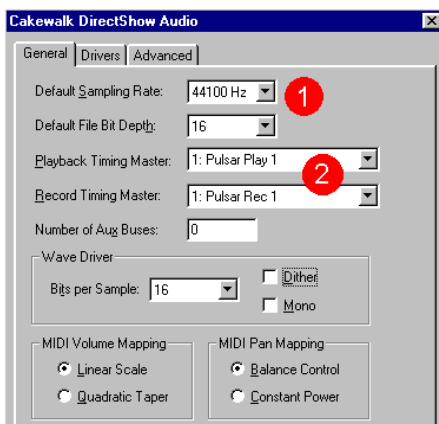
If you want to make use of these drivers, you must start Pulsar and load the previously created project - with it, you load the MME drivers.

3. Tell Cakewalk to use the new MME drivers!

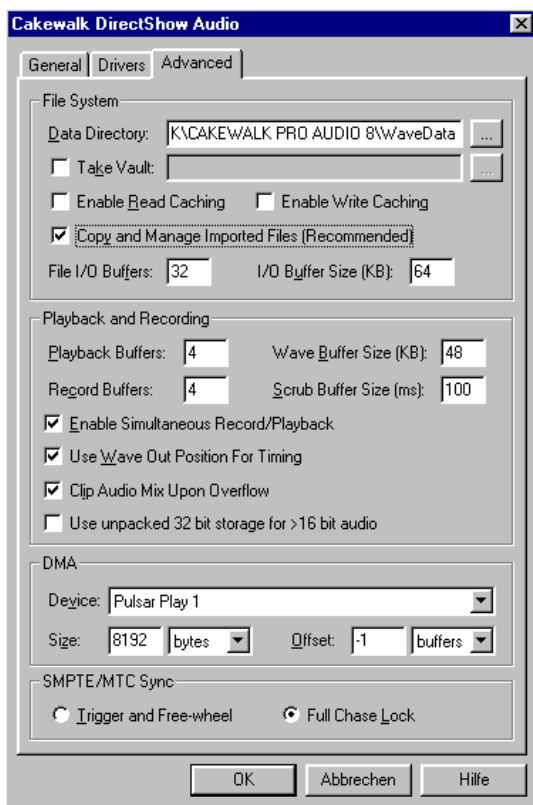
Start Cakewalk and open the "Cakewalk DirectShow Audio" dialog (Tools -> Audio-Options ...). In the "Drivers" panel, you will see the new Pulsar drivers. Highlight all Pulsar drivers to enable them.



In the "General" panel make sure the selected sampling rate (1) is the same as in Pulsar (default 44.1kHz). Select Pulsar Play 1 and Pulsar Rec 1 as timing master for playback and record (2):



Next click on the 'Advanced' tab. The only changes we made was to disable 'Take Vault' and read and write caching.



Next, assign the Cakewalk tracks to the Pulsar ins and outs.

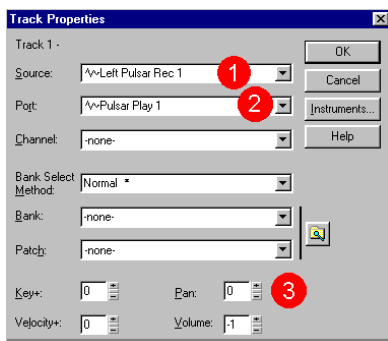
Record:

Select the driver to record from under "Source". For example, if you want to assign the left channel of Pulsar's first Wave dest module to the first track, select "left Pulsar Rec 1" under "Source" (1).

Playback:

In the "Port" field of a track you can select the driver to which you want to send the track. For example, if you want to assign the first track to the left channel of Pulsar's first Wave source module, select "Pulsar Play 1" in the "Port" field (2). In addition, you must set the track pan hard left (value 0) to make sure the signal appears only on the left channel of the Wave source module (3).

In our example, all odd tracks have pan set to 0 and all even ones have pan set to 127. All track signals will appear in their proper places in the BigMixer.



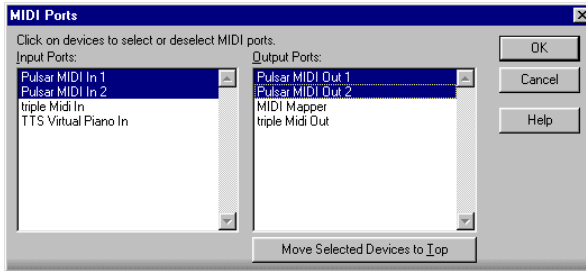
	Source	Port	Pan
R	^~ Left Pulsar Rec 1	^~ Pulsar Play 1	0
R	^~ Right Pulsar Rec 1	^~ Pulsar Play 1	127
R	^~ Left Pulsar Rec 2	^~ Pulsar Play 2	0
R	^~ Right Pulsar Rec 2	^~ Pulsar Play 2	127
R	^~ Left Pulsar Rec 3	^~ Pulsar Play 3	0
R	^~ Right Pulsar Rec 3	^~ Pulsar Play 3	127
R	^~ Left Pulsar Rec 4	^~ Pulsar Play 4	0
R	^~ Right Pulsar Rec 4	^~ Pulsar Play 4	127
R	^~ Left Pulsar Rec 5	^~ Pulsar Play 5	0
R	^~ Right Pulsar Rec 5	^~ Pulsar Play 5	127
R	^~ Left Pulsar Rec 6	^~ Pulsar Play 6	0
R	^~ Right Pulsar Rec 6	^~ Pulsar Play 6	127
R	^~ Left Pulsar Rec 7	^~ Pulsar Play 7	0
R	^~ Right Pulsar Rec 7	^~ Pulsar Play 7	127
R	^~ Left Pulsar Rec 8	^~ Pulsar Play 8	0
R	^~ Right Pulsar Rec 8	^~ Pulsar Play 8	127

4. Assigning record busses in Pulsar's BigMixer

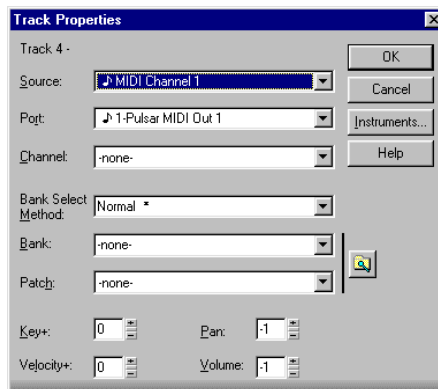
This is done in exactly the same way as described on page 21 in the preceding chapter on Cubase VST.

5. The MIDI setup

Open the MIDI Ports dialog of Cakewalk (Menu: Tools -> MIDI Devices). Enable the Pulsar MIDI Ports. The default is two MIDI ins and two MIDI outs. You can specify the number of Pulsar MIDI ports in the Pulsar driver setup dialog (in the Windows Device Manager).



Assign sources and ports for each MIDI track in the Cakewalk Track Properties dialog which appears when you double-click on the source or port field:



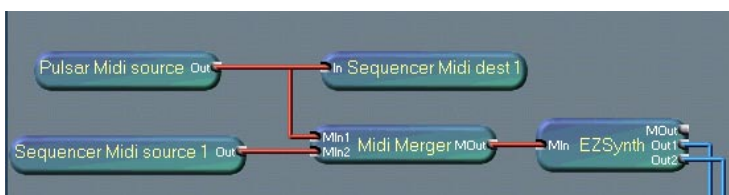
This example shows how to record MIDI from your keyboard into Cakewalk using Pulsar.

The keyboard is connected to the Pulsar MIDI input, represented by the 'Pulsar MIDI Source' module. This module is connected to 'Sequencer MIDI Dest 1' so that the MIDI signal will appear as an input in Cakewalk.

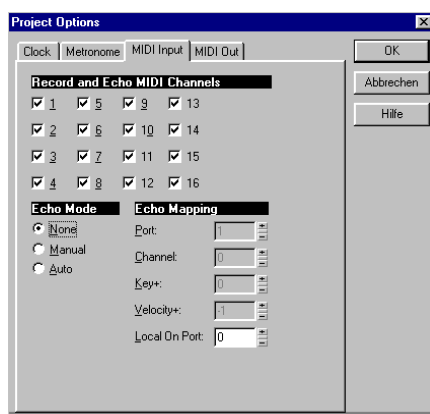
We want to record a solo using the EZ Synth. The MIDI signal from ,Pulsar MIDI Source' is also connected to the input of the EZ Synth, so we can hear the synth while playing the keyboard,

In addition, ,Sequencer MIDI Source 1' is connected to the input of the EZ Synth, so we can hear the recorded solo when it is played back from the sequencer.

The MIDI Merger is required in order to connect both ,Sequencer MIDI Source 1' and ,Pulsar MIDI Source' to the EZ Synth at the same time.



To avoid a doubled sound while recording, disable echo for the MIDI channel you are recording or for all MIDI channels (Echo Mode: None) in Cakewalk's Project Options dialog (Tools -> Project Options -> MIDI Input).



Some useful tips on usings Pulsar with Emagic Logic Audio

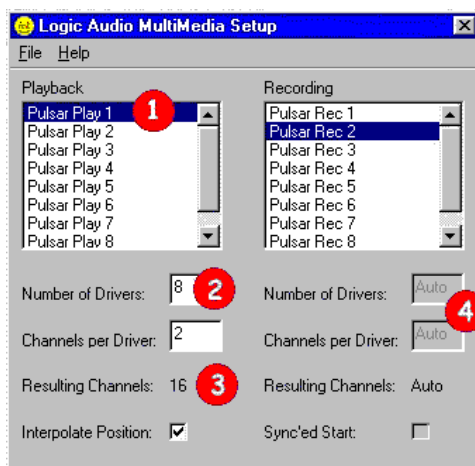


For more information how to use Pulsar with the new Logic 4.0, please refer to the Installation Guide

Proceed at first exactly as described in points 1 and 2 in the preceding chapter on Cakewalk.

3. Tell Logic to use the new MME drivers!

In your Logic directory you will find the program MMSetup.exe. Start it, and the following dialog will appear:



Click on "Pulsar Play 1"- (1) , and under (2) the number of Pulsar playback drivers you have used so far is displayed - probably 2. Enter the number of drivers you want to use to play audio tracks from Logic into Pulsar - in our example 8. This results in $8 \times 2 = 16$ channels (3).

Follow the same procedure for "Pulsar Rec 1"

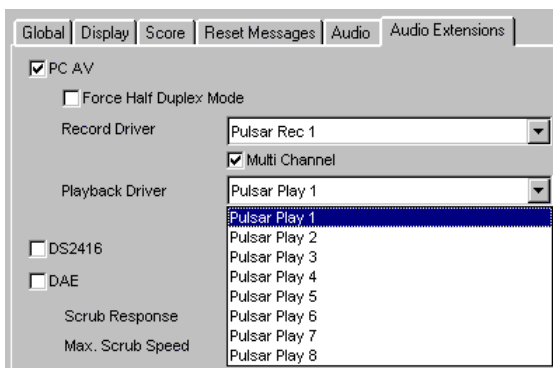
If you click on a different driver (2 - 8, as shown in the Recording list), the fields "Number of Drivers" and "Channels per Driver" should display the value "Auto" (4).

Note that the number of drivers you specify here must correspond exactly to the number of Wave Source/Dest modules previously loaded in the Pulsar project. If the numbers don't match correctly, you will obtain the following error message upon starting Logic:

PCAVError:5

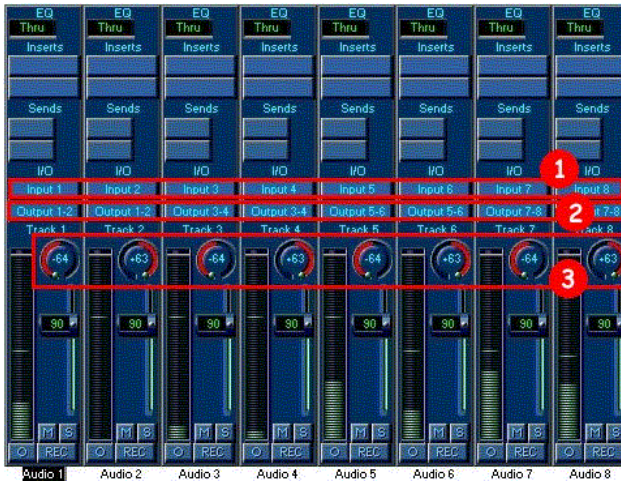
Failed to recover device from playback/recording

Start Logic and open the "Audio-Extensions" dialog (Options -> Audio-Setup -> Audio-Extensions). You will see that the new playback and recording drivers are now available in Logic:



Next you can route the audio tracks to the desired Pulsar channels in the Track Mixer.

(The picture shows the channels 1-8 only; repeat the same procedure for channels 9-16)



Record:

To record an audio signal that is routed to a Wave dest module in Pulsar, select the respective Logic input for the track you want to record to. The first Wave dest module is assigned to Logic input 1 and 2, the second to 3 and 4, and so on. In the picture the first 8 busses of the BigMixer are recorded on the first 8 Logic tracks (1).

Playback:

To play a Logic track into a Pulsar project, set the output of the Logic track to the respective Logic output. Logic output 1 and 2 are assigned to the first Wave source module, and so on. In the picture, the first 8 Logic tracks are routed to the Mix Ins 1 - 8 of the BigMixer (2).

As you probably want to assign tracks 1,3,5,..., 15 to the left channels and tracks 2,4,6,...,16 to the right ones, adjust the pan control for all odd tracks to left and for the even ones to right. This ensures that track one is routed to channel 1, track 2 to channel 2, and so on.

4. Assigning record busses in Pulsar's Bigmixer

This is done in exactly the same way as described on page 21 in the preceding chapter on Cubase VST.

Now you can mix 16 Logic tracks in your Pulsar project and record the signals from the BigMixer's busses in Logic. Please see your Logic manual for further details.