



POWER USER

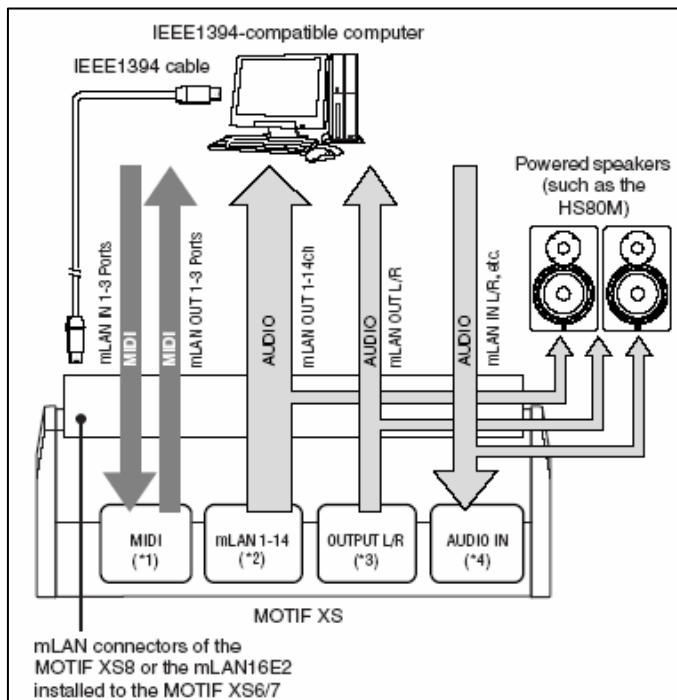
MOTIF XS

Audio Routing to Cubase Mastering mLAN (Routing)

This tutorial will take you through the process of getting to know your **Motif XS** and **Cubase AI4** a bit better. It will pick up from where the **Quick Setup Guide for mLAN** leaves off and concentrate on some of the audio routing issues involved with Firewire/mLAN. Please read the "QUICK SETUP GUIDE for Windows" or the "QUICK SETUP GUIDE for Macintosh" before starting here, this will deal with the routing of audio signal and will not require a different article for Windows or Macintosh as the functions here are identical.

This will help you understand the decision making process involved in doing a project and the reasons behind the decision will be discussed. It is highly recommended that you use the provided material so that you can follow along with decisions that are made. Then once you have a basic understanding of the workings, you can apply this knowledge to your own music and your own Project session. One reason the material is provided is so that you can concentrate on the signal routing (and not the music). A common complaint is that as technology becomes more powerful, you find some people feeling they cannot concentrate on their music. Technology should not be a distraction. If it is this is most likely due to the fact that they have not taken the time to develop a comfort zone with the technology **first**. As technology advances you are given more choices which can make life easier on one hand and more complex on the other. This tutorial is all about finding you a comfort zone so that once you have your hardware/software configured you can "get back to music"! Once you understand the technology it can be put to use with confidence.

The accompanying file is an ALL data file for the Motif XS (.X0A) – which we will use for examples. Please save your current data first, then load this file when instructed and follow along with the session. We must preface this tutorial with a statement that **there is no one way to work**. This tutorial is really just a method to show how the signal flows from one place to another. It is not necessarily how you *have* to work; it is simply one way to do so.



In order to work with this tutorial you will need to have an optional **mLAN16E2** expansion board installed in your Motif XS6 or Motif XS7. If you own a Motif XS8, the mLAN connections are already built-in to your instrument so all you will need is a single firewire cable connection between your unit and your computer. Firewire connections come in two basic types: 4-pin and 6-pin. The 4-pin connector is a small connector typically found on some laptops, while the 6-pin connector is the larger type that connects to the mLAN16E2. Please check your computer to determine if it is a 4-pin or 6-pin connector, then purchase the appropriate cable: 4-pin to 6-pin or 6-pin to 6-pin. There are also 4-6 pin adapters available. If your laptop or computer does not have a Firewire connector, you can add one with a PCMCIA or PCI card.

As shown at left, the single IEEE1394 cable will carry multiple type of data between your computer and your Motif XS. It will send MIDI to and from your computer on three separate PORTS, audio to and from your computer, and you will connect your XS to your sound system (via analog 1/4" cables). There are fourteen audio buses and a stereo (L/R) bus going **from** the XS to the computer (for a total of 16), there is an audio return coming from the computer back to the XS (for monitoring purposes). There are actually three pair of audio returns (we will simply be using a single pair for this tutorial).

Important: WHAT TO DO FIRST... Before loading this ALL data file to your Motif XS, please save your current data in your own ALL data file... This way you can return to any work you were doing prior to doing this portion of the tutorial. An ALL data file will always save all STORED items in your Motif XS as it stands now – so you can return to exactly where you left off.

It will be important to load the ALL data file as there are special VOICES we will be referencing in this portion of the learning process. We highly recommend you use this provided data, then apply this knowledge to your own session later.

File: **ROUTING TUTORIAL.X0A**

Recall **SONG 01 “Cool Funk”**

Note for Mac users: If you do not have a two zone mouse, the term “Right Click” means: CTRL + Click. If you are a Macintosh user you may want to invest in a two zone mouse – great invention – makes your life easier.

In order to work with this tutorial it assumes you have a **working** mLAN connection between your Motif XS and your computer. And that you have downloaded the latest tools as outlined in the QUICK SETUP GUIDE for your computer type. Please complete the setup and become comfortable with Cubase AI4 basics and the Studio Manager software running inside of Cubase. These can be very helpful. Do not attempt to do this tutorial until you have at least setup the basic configuration.

These Quick Guides can be found on Motifator.com at the following links:

[Quick Setup Guide: Motif XS & Cubase AI4 firewire/mLAN for Windows XP](#)

[Quick Setup Guide: Motif XS & Cubase AI4 firewire/mLAN for Macintosh OSX \(UB\)](#)

You will want to have SONG 01 **Cool Funk** called up in your Motif XS and an EMPTY Cubase Project with Studio Manager launched and running on your computer.

Background Information:

MIDI and AUDIO: *What's the difference?*

Let's start by discussing the difference between a **MIDI track** and an **audio track**.

A so-called **MIDI** track contains data that *represents* music, while an audio track contains actual audio. While an over-simplification that is what we want here (to keep it simple). MIDI data is a series of events (note-on events, controller events, etc.) that when sent to an appropriate MIDI tone engine can be interpreted and translated back into sound. Without a synthesizer tone engine to do the interpreting of this data, MIDI data **cannot** be heard. If you record to a MIDI sequencer middle “C” on your keyboard, and you hold it down for two beats, at 4/4 time; the only thing that the sequencer actually records is that note #60 was pressed at such and such a time and held for 2 beats. It cares not that you recorded it using a piano Voice; you can play it back to a flute Voice. That is MIDI data. If you can picture an old time player piano (the type that used rolls of punched paper to represent the music), you can understand that the piano roll was like MIDI data, you still need the hardware to interpret the holes in the paper and turn it back into music.

Audio data (keeping it simple) is an actual recording of the sound used. Eventually when working with your music, you may want to convert everything to audio. Audio will allow you to take your music with you and play it for your friends and send it to record companies and post it on the internet for all to hear. Because as hard as we here at Yamaha try, not everyone is going to have a Motif XS or a MIDI tone engine to playback your (MIDI) data. Audio file formats are things like .wav (spoken: “dot wave”) or aiff or the data compressed formats like mp3, and iPOD-type files. These are consumer formats that will allow anyone, even non-musicians, to playback your music. In general, the higher quality .wav and aiff formats (uncompressed data) are used to burn professional CDs. The compressed consumer formats (mp3 and iPOD-type) are smaller and more convenient for uploading and downloading to/from the internet and for use in small handheld devices with limited memory. In general they do not sound as good as .wav or aiff file formats.

Now this is all very basic and if you know this already, you are asking yourself, “Why explain all of this? I know this.” Trust me many do not. But here is the significance of this: It will be important to cover several different methods of working. And one is not better than another... they are just simply different ways of working.

- You record your initial MIDI tracks in the **Motif XS sequencer**. And wish to record them as audio to Cubase
- You record your initial MIDI tracks in the **Cubase sequencer**. And wish to transfer them to audio in Cubase

Those are two basic scenarios. It can get much more complex. This article will concentrate on the scenario where you are doing your initial sequences *in the Motif XS*. A separate article will cover sequencing in Cubase (or any external sequencer). We will start with tracks recorded initially in the Motif XS as MIDI data and learn about routing them as audio to Cubase via the mLAN/Firewire interface. Then hopefully you will be able to understand the other scenarios and what possible advantages they open up. Why would you record in one sequencer rather than the other? Is there a distinct advantage to recording in one or the other? Why record MIDI tracks in the first place?

These are all legitimate questions. We record MIDI data in the first place because it allows us to correct our performance. MIDI data can be easily edited, quantized (time corrected), the instrumentation can be changed, etc., etc. That is the main reason to record MIDI data – the ability to perfect our musical performance and change our minds before we **commit** it to a more permanent audio format. It is having the ability to try out different instrument sounds, and different arrangement possibilities and even to correct 'unfortunate' notes that makes MIDI an appealing first stop on the road to a finished project.

When would you choose to record your MIDI data in the **Motif XS** sequencer versus the **Cubase** sequencer? - Well, this one is really up to you. Convenience... The XS sequencer has some very unique and powerful tools for assembling music compositions - Pattern mode, Real Time Loop Remix, Performance Direct Record (arpeggio record) to name just a few. Cubase on the other hand, also has some unique tools to help edit and finish your project. They are two tools in your arsenal – knowing *when* to use the tools is going to be up to you. Remember there is no one way to work and you really need to explore this yourself.

Provided with this article is a Motif XS ALL data file (.X0A) which contains (among other things) a simple 5 PART sequence which we will use to learn about the routing of Motif XS PARTS to the assignable (mLAN) outputs. If you have never worked with routing signals before it is not that difficult as long as you understand how to make the routing decisions. So next we will spend a little bit of time explaining the mechanics of how to decide about what type of audio track to create.

We will learn about **audio buses**. A bus, in the real world, is a vehicle for moving people from one place to another. In audio, an audio bus is a way to move signal from one place to another. We will be routing signal on audio buses – they have source point and a destination and they travel a specific route.

This tutorial is useful for when you have done your initial recording of MIDI tracks in the Motif XS sequencer and are going to create audio files in Cubase AI4. There will be a separate tutorial about recording your initial MIDI tracks in Cubase AI4 and then creating audio tracks.

This tutorial is in three parts (experiments). Go through them in order to get a full sense of how the workflow and decision process happens. In the first experiment (simple stereo transfer) we will explain some of the basics to getting the best level and how to improve output levels from a soft MIDI recording. So there is information in each experiment that you can apply to whatever type of transfer you need to do...

HOW TO MAKE ROUTING/TRACKING DECISIONS

The SONG 01 (**Cool Funk**) included with this tutorial includes the following tracks:

Track 1: Drums

Track 2: Percussion

Track 3: Electric Piano

Track 4: Organ

Track 5: Bass

Many people believe that because the mLAN16E2 provides 16 audio outputs that their 16 MIDI tracks will turn into 16 audio tracks. In actual fact, it hardly ever turns out exactly like that. In fact, there are times when all you require is to record the audio outputs of the Motif XS to create a **stereo** finished product. Then there are times when you want to take individual XS PARTS and record them as audio in your computer sequencer each to separate tracks.

Some of these PARTS should be transferred to *stereo* audio tracks and some of the PARTS do not need to be stereo and are better recorded as *mono* audio tracks. What we need to understand is that there are 16 audio buses (outputs), and we can assign PARTS of the Motif XS MIXING setup to these audio outputs as necessary to artistically accomplish our musical goal. We then setup (in Cubase) VST CONNECTION INPUTS to accommodate the OUTPUT routing we have made. We will learn that we can SYNCHRONIZE the clocks of Cubase and the Motif XS so that we can transfer data in multiple passes (as many as required) to accomplish our goal.

How do you decide about assigning Motif XS PART Outputs?

This is really a personal preference. Let's start with the simplest transfer – which would be to record the audio L&R output of the Motif XS to a single stereo track in your computer. This is also the fastest method to create a .wav or aiff file that can then be burned to CD, converted to MP3, etc. You will be doing all the 'mixing' in the Motif XS. Your end result will be a documentation of the stereo mix output.

EXPERIMENT 1: The simple STEREO OUT transfer

By default each PART of your Motif XS mix is routed to the **L&R** (Main) output. Therefore, no special assignment needs to be done with each PART. You can use the panorama potentiometer (pan-pot or Pan control, for short) provided on each PART to make the sound more in the left or the right channel. Panning is the electronic result of adding resistance to the flow of signal to one channel so that more of it flows to the other channel in a stereo field. As you pan something from C (Center) to L (Left) you are actually adding electronic resistance to the signal path's right side. This makes it easier for signal to flow left. There are times when Panning is an artistic control – this is when you are using it to position a sound more left or more right in the mix. The signal is in both channels, just there is more in one than the other – the result is the illusion that the source is moving to one side or the other (positioning).

The main L&R output is simply two audio feeds (buses); one channel will be all the way left and the other all the way right. A Stereo Out transfer we will be using two buses. One bus strictly for signal left, and the other strictly for signal right. These will be panned "hard" left and "hard" right. You can with the artistic control (pan) in your Motif XS mixer position an individual Part more in the left or more in the right using the Pan control. An individual Part panned slightly to the left, will have more signal in the left bus than it does in the right bus. This is how it gets its position in the stereo field. So the L&R output in a stereo pair interact with each other.

Transfers via this method give you a "what you hear is what you get" result. However, it will be very important to setup the proper monitoring situation. When talking about listening during any recording the word "**monitor**" is used. When you *monitor* you are critically listening – you are examining the audio signal so that what you get is as good as it can be. If you do not have the proper monitoring situation, you will either get doubling or you may get no audio at all. There is a very good explanation on the difference between "listening" and "monitoring" in the Owner's Manual of the Yamaha Monitor speakers. We will explain the different monitoring scenarios as we go...

- In the Motif XS set the following parameter: [UTILITY] > [F2] I/O

Set the **mLAN Monitor Setup** = **with PC**; This will disconnect the Motif XS from its direct (analog) audio outputs. Signal will travel to the computer DAW first – where it will be eventually routed back via the Record Monitor function to the Motif XS via mLAN and on to the analog audio outputs. Do not panic if you can no longer hear your Motif XS – we have disconnected the normal output routing.

- In Cubase: Create or verify an Audio Input

Under DEVICES select VST CONNECTIONS **or** press [F4] to launch the VST CONNECTIONS dialog box.

Click on the "INPUTS" tab and verify that a STEREO IN option exists, if not, click on "ADD BUS" and create a Stereo Input bus.

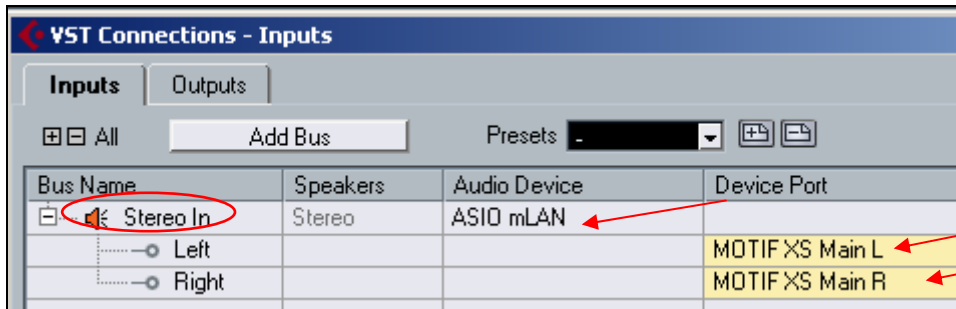
Note: Buses can be added or removed easily in Cubase. There is an ADD BUS button (explained below). If you want to remove a Bus, simply highlight its Bus Name and press the [BACKSPACE] button on your computer QWERTY keyboard (or you can right click and select "REMOVE BUS").

The **Bus Name** = **Stereo In**

The **Audio Device** = **ASIO mLAN**

The **Device Port** = **Motif XS Main L / Motif XS Main R**

You can select and change the AUDIO DEVICE and DEVICE PORT by placing you mouse on the setting and clicking to view your options. Your **INPUTS** setup should look like this:



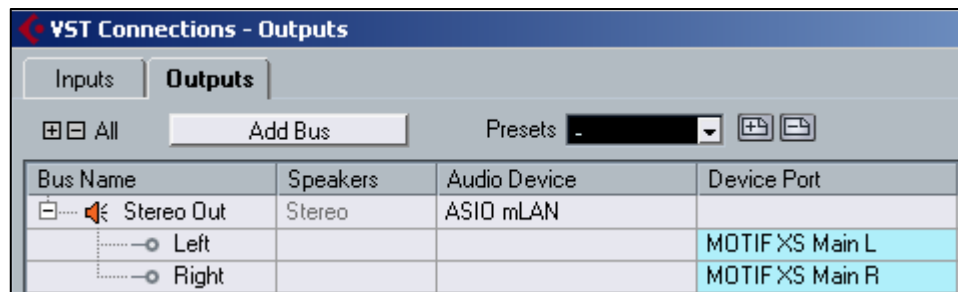
Later, you will see on the main track view in Cubase, the Audio Track Input →] may read "Stereo In". This will mean signal coming from the main Left and main Right (mLAN) outputs of the XS will arrive at this Cubase track. The designation you see next to the Input symbol: →] will be the Bus Name shown in the VST Connection – Input column (shown circled in red above).

If you click on the VST CONNECTIONS "OUTPUTS" tab, you will see that there is a Stereo output routed back to the Motif XS.

It is going to:

"MOTIF XS Main L"

"MOTIF XS Main R"



Normally this would setup a doubling situation – where you would possibly be hearing the audio twice – once as the Motif XS sends data **directly** to the audio L&R jacks on the back panel of your XS, and the second time as audio returns from Cubase. How do we prevent such a doubling situation? This is prevented because we selected the proper **mLAN Monitor Setup** situation in the Motif XS (**with PC**)¹. This allows us to hear what we are returning from Cubase while this setting is preventing the direct output of audio signal from Motif XS to the L&R outputs. If you do not make the proper "mLAN MONITOR SETUP" setting you will hear doubling of the audio. If you currently hear nothing – do not panic. Audio must be routed through a Cubase track and the track must be set to Record Monitor for signal to be heard. We will see how this occurs next.

mLAN MONITOR SETUP = With PC (from page 263 of the Manual)

This should be selected when you are using the MOTIF XS as an audio device with the DAW software. When this is selected, the audio signal of the MOTIF XS will be output to the DAW software on a computer via an IEEE1394 cable, merged and mixed with the DAW sound, returned back to the MOTIF XS, then output via the OUTPUT L/MONO and R jacks. Selecting this allows you to apply VST Effects within the DAW software to the MOTIF XS sound.

¹ **Warning:** Once you have changed your mLAN MONITOR setting here to "with PC" please be aware that this setting is for when you are using your Motif XS with a computer. It has a particular specific use. When you want to return to playing your XS normally you will want to remember that this setting is still current. Please change it back to "standalone" when you wish to play your Motif XS without your computer setup. Use the "with PC (Direct Monitor)" when you are performing (playing) live and transferring data to Cubase.



Create the AUDIO track:

On the main Cubase Track screen

- Right click and select **>ADD Audio Track**

You will be offered a COUNT (basically this is asking "how many")

- Create 1 Stereo Track (shown at left). Click OK

Once the track is created you will see a RED RECORD button on the track inspector and a smaller TAN SPEAKER ICON – when these are both selected you will complete the routing of the audio signal path for

recording – from the XS through Cubase back to the XS's analog audio outputs. The RED RECORD button arms the track; while the TAN SPEAKER ICON completes the audio routing. You should now be able to hear the XS through Cubase.

With this simple setup it is possible to record the stereo output of your Motif XS sequencer to a stereo track in Cubase. It will also be possible to add processing (VST Effects) in Cubase AI4 and to *monitor* the result of that processing. Monitoring, again, is simply listening. There are times we are listening to the SEND (signal being sent to the computer) and there are times when we are listening to the RETURN (the signal after it returns from the computer). If all you want to do is create a .wav/aiff file that you can then burn as a CD, or if all you want to do is create a quick mixdown for mastering, this will be an ideal method. If you want to transfer all of this and then add additional overdubs in Cubase you may want to setup so that the measures line up. In such a situation you might want to use clock synchronization. Even if you do not want to add additional information, it is generally a good idea to synchronize the clocks during a real time transfer of data – this is so that measures line up. If ever at a later time you want to do editing of any kind having the measure markers just makes things easier from a music standpoint. Setting up the clocks of the two sequencers is easy enough:

MIDI Clock setup

Cubase can be the master MIDI clock and the Motif XS can slave to it. We will use standard **MIDI clock**. Setting up Cubase to send MIDI clock is also easy.

- Click on "TRANSPORT" on the main Cubase AI4 menu bar
- Select "SYNC SETUP..."
- Under the MIDI CLOCK OUT check the "Motif XS" (port 1); Click OK
- On the main screen open the TEMPO Track: CTRL + T, or go to "PROJECT" and select "Tempo Track"
- On the Tempo Track screen set the Tempo = 96.000 BPM (that is the tempo of the "Cool Funk" data).

In the Motif XS we can use the default SEQUENCER QUICK SETUP to make all but one of our settings:

- Press [SEQ SETUP]
- Press [F3] QUICK
- Select Quick Sequencer Setup #1: **Using internal sequencer**²
- Press [ENTER]

We can manually set the MIDI SYNC parameter that we will need for this type of transfer.

- Press [UTILITY]
- Press [F5] CONTROL
- Press [SF2] MIDI
- Set the MIDI SYNC = **AUTO** (allows you to play the Motif XS sequencer independent of Cubase)
- Set SEQUENCER CONTROL = IN

Now when you start or stop Cubase the Motif XS sequencer will follow the commands of the Cubase transport. The Motif XS will playback at the selected tempo in Cubase, and you will be able to record the stereo audio output of the Motif XS Main L&R via firewire to your computer and to the audio track in Cubase. If you are hearing doubling of audio, make sure that you selected "with PC" for your **mLAN Monitor Setup**.

Levels

As a recording engineer (one of the many hats you must wear when you working with today's technology) you must be concerned with **record gain** ('levels', in the common language). Level is what you see on a meter. And we need to make a distinction between *volume* and the *level* you see on a meter (gain). Volume

² You may be wondering why we are not using Quick Setup #2. It is only used when you are actually transferring MIDI data in real time between the Motif XS and an external DAW. In our operation we are simply playing back the internal sequencer and recording the audio playback.

is subjective. This means it is a perception of the human ear/brain. You can turn the volume on your system completely down, yet your VU meters will still indicate that they are detecting level. Go ahead... lower the main Volume slider of the XS – the sound goes away but Cubase still indicates that it is receiving signal. You can record with the volume control all the way down, and get a perfectly good recording. **VOLUME** is what humans perceive as loudness. **LEVEL** (GAIN is the scientific word) is that which can be measured. So if a tree falls in the forest and there is no one there, does it make a sound? If there is no human or animal there, then there is no volume. But if you placed a microphone and level meter out there, you could measure that there was some disturbance of air molecules. And you could certainly record it (document its level).

So what's the point? Just because you are listening **loud** does not mean you have good record levels. The only way to know if you have a good record level is to look at your meters. Now there is no one way to work, but since there is a right and wrong in this aspect of the recording art and science, in this next section I will pass on only what I know as the correct information.

Call up your Cubase Mixer. This can be done by going to **DEVICES > MIXER** or by simply pressing the quick key **[F3]** on your QWERTY. (In a separate article we will deal with using the XS as your **REMOTE CONTROL SURFACE**)



At left you see our Cubase 'Mixer'. On the far left is a column of icons (as you get to know Cubase better you will know that you can very much customize the look and feel of the mixer – what you are seeing and what gets hidden from view. There are two Channels shown. "AUDIO 01" is our **INPUT**. "STEREO OUT" is our **OUTPUT**.

AUDIO 01, you know from above, is the Cubase Audio track that we created, connected to the VST INPUT bus we created and represents the signal from the Motif XS Main L and Main R Outputs.

STEREO OUT, is the signal being recorded as our final product here.

Notice both are set to a gain level of **0.00dB**. The setting for the Audio 01 channel is subjective... the setting of the Stereo Out is not. However, in this case they will probably be set the same. When you start any 'mixdown', your Stereo Output fader should be set to 0.00dB and you should never set it higher or lower than that. The level should never go above 0.00dB but clipping. Clipping is the enemy and it is no joke. Clipping (anywhere in your project) is a

very bad thing and although may not always make an ugly sounding blot, it will add to an overall harshness in your sound. In other words, you should not forgive (or overlook) even small clips. A Clip indicator is located directly below the words "Stereo Out" on the output fader. If you see the word "CLIP" there in red you have a problem. (More on this later...)

Just above the indication of the current position of the fader, you will see a smaller value (light blue circle above), the peak-hold indicator value. This will give you an accurate readout of the maximum gain reached by each channel. In the screen shot above it is indicating "infinity" on both input and output – which means that no audio has passed through them yet. This indicator is very helpful because it will show you have clipped even if you are not looking directly at the meter at the time. It will always show the maximum gain that has traversed this bus. Any value greater than 0.00dB (that is, any **positive** value) is a **negative** musically and technically speaking – it indicates the channel clipped. Any clipping should scream at you like a "flat note", like a thorn in your foot – it is a **call to action**. You must find the cause and cure it. In the digital world of today's audio, the clip indicator is **not** a casual suggestion. It needs to be taken seriously. There is no 'warm' distortion in the digital domain. Distortion simply adds up and even if it is not bad enough to totally obliterate the good signal, it will add to an overall harsh tone of your project. It is far better to err on the side of lower output level than to clip. It is far, far better to err on the side of lower level than to clip. It is far, far, far, better to... Enough said? Dynamics (the difference between soft and loud) is more important

than overall volume output. That said, (and mostly likely to be duly ignored by most) getting good level is an art. We will get to that as we go along.

Remember this – The one tool of audio that is approved for use by everyone is the VOLUME control. Your CD does not have to be the loudest one on the platter, initially. Every consumer knows how to turn up the volume – and they will, if they like your music. LOUD is not what you really want – you want PRESENCE. (...more on this difference later). Besides, it is in the “mastering” process that you worry about how LOUD your data is in comparison to the next CD. The object is to get a good balance between the instruments.

If your mix is clipping (distorting) turning the volume down does not change the fact that it is still distorted. Turning the volume down just means you are hearing the distortion less well, but it is still distorting. Pay strict attention to your metering. You must turn the gain (level) down to prevent the clip!

The Cubase ‘mixer’ here will be a simple single fader **input** and single fader **output**. Also affecting the level of your Motif XS audio channel is the volume level determined by the CS control for each PART. The Control Slider determines the individual output level of each PART (you may have noticed when using mLAN that your main volume slider no longer functions to influence the record gain level (only monitor volume) – this can be quite a shock the first time you discover this. The main Volume Control of the XS is an **analog** control – along with the A/D Input Gain control on the back panel, they are the only analog controls on the XS. The main Volume slider has no affect on the digital signal’s output). So each individual CS (five of them on this mix) must be used to control the corresponding PART’S output level – the level that will be recorded to Cubase.

Also affecting the level is the **velocity** of the musical performance and the main Volume of the Voice itself. When recording audio you want to (as an engineer) compensate for any poor or low output volume from a PART. Be careful about changing the musical performance just to get more level – this is very subjective – but as an engineer you should not change the way a musician performs just to accommodate your need for output level. The noise floor is a concept that is now truly negligible. What I am pointing out here is that as a rule you should start to become aware of your MIDI performance in terms of its velocity. “Velocity” is a MIDI parameter that is measured on a scale of 1-127. Many times different samples are triggered in what is called a “velocity swap”. Because of this, changing the velocity to increase the volume is not always recommended because you *may be* changing the dynamics of the performance. Now since most likely you are also the performer – it is really up to you. But I just point this out because turning something up by changing its output level is quite different from messing with the velocity values!

For example, think about a slap bass sound. This is a typical “velocity swap” type voice – once you exceed a particular velocity value the sampled “slap” sound will be articulated. As an engineer it is **not** your decision about where that occurs, it is clearly the musician’s territory. Now obviously you are probably both, but be aware when a decision is **musical** and when it is **technical**. If you are engineering someone else’s session, they will appreciate you “knowing” (and respecting) this difference.

- Press [MIXING]



Ways to adjust PART VOLUME for audio LEVEL

- Raise/lower the CS for that PART (PART VOLUME)
- EDIT the Voice’s Volume (this can be accomplished while in MIXING mode via the VCE EDIT function)
- Work with the PART Velocity (with knowledge of how it may affect performance parameters).

1-Raise/lower the CS for that PART

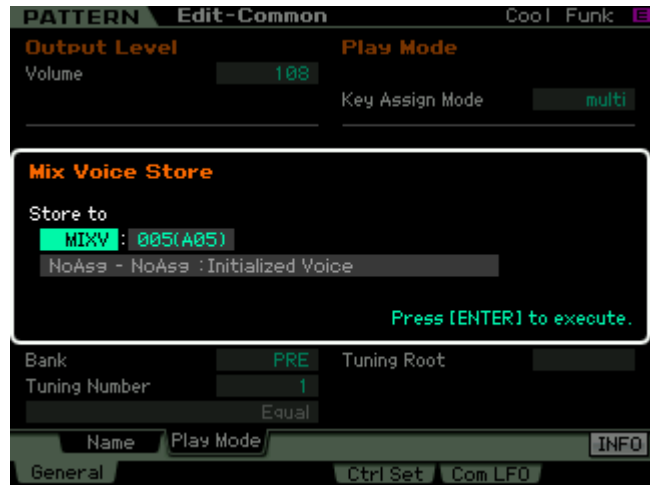
Spend some time with this exercise. Use the CS1 – CS5 to affect a balance for the five tracks. Reference the Cubase ‘mixer’ so that you can determine the overall level (with the METER). The object of this exercise is to get a good musical balance between the five PARTS yet without any clip indications. A clip would be any postive value in the meter or red “CLIP” indication. You can reset the indicator by clicking directly on the value. Practice this... Keep you ears on

the music and your eyes on your meters! Get a good mix (balance) with NO CLIPS!!!

2-EDIT the Voice's Volume

Pressing [F6] VCE EDIT on any Normal Voice (non-Drum Kit, non-Sequence sample) will allow you to drop into full Voice Edit on that sound. This will let you edit where necessary the Voice's overall VOLUME parameter. Here's how:

- Press [F6] VCE EDIT
- Press [COMMON EDIT]
- Press [F1] GENERAL
- Press [SF2] PLAY MODE
- Adjust the OUTPUT LEVEL parameter as necessary



Shown at left, is PART 05 (the Fretless bass). You can see that the OUTPUT LEVEL Volume is a very conservative "73" – so you have plenty of room to move the output level of the bass up or down. If you are getting low levels on your METER in the Cubase 'mixer', remember as engineer your job is to get the best recorded level on the media without destroying the musician's performance. So the engineer's job is strictly one of getting the sound recorded properly.

Once you have edited the Output Level Volume of the PART, you can store this edit to a MIX VOICE location provided for each normal Voice.

- Press [STORE] to keep the results in a 'local' MIX VOICE location. Shown at right above, the MIX VOICE STORE screen; Since we are editing the Fretless bass in PART 05 notice how MIXV: 005(A05) is the default destination. Press [ENTER] to execute.

By storing the Voice in the MIX VOICE bank, the Voice becomes a part of the local SONG MIXING or PATTERN MIXING setup. It will also be documented in the Studio Manager: Motif XS EDITOR – so it will automatically be saved and restored to your Motif XS when you save your Cubase Project. This special MIX VOICE location (there are 16 of them per MIX) is provided for all normal (that is non-drum, non-track sample) Voice. It is provided specifically so that you can edit a Voice and tailor it specifically for this particular mix. Take advantage of this memory location – it allows for all your tweaks to Voices for this Project without having to change the original source Voice. MIX VOICES are accessible in their own folder in the Motif XS Voice Editor and have their own bank (63/60). The XS can hold a maximum of 256 MIX VOICES.

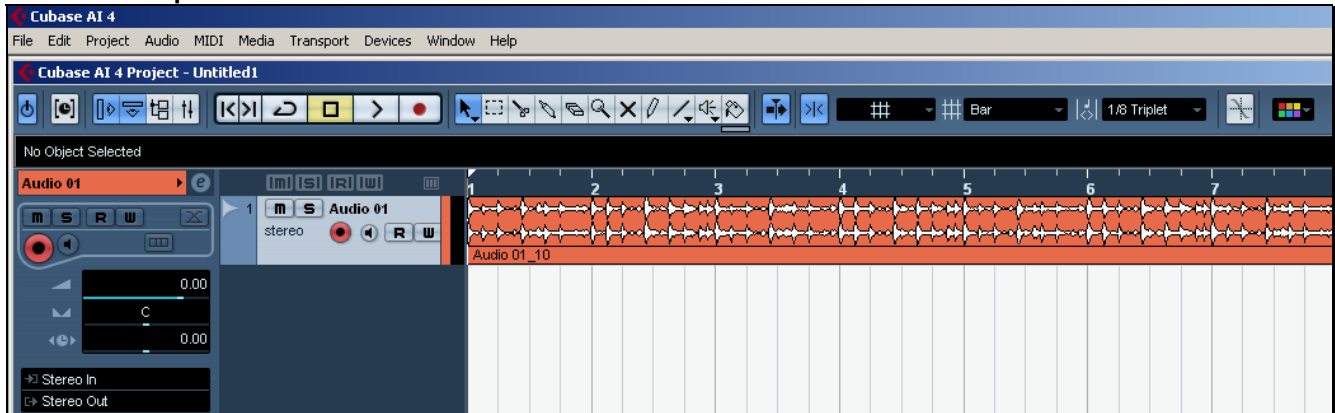
You will find that most of the Voices in the Motif XS have very conservative Output Level volumes – this is done purposefully so that you can 'mix'. Voices are used in combination when you are in Performance, or in Song/Pattern Mixing modes and therefore it can be quite easy to overload the input of a connected device. The Signal-to-Noise specification is so good in digital gear these days that you can use this "headroom" to your sonic advantage. A clip is a reason to do something over – there are **no** reasons to ever clip a signal. Every clip diminishes the total quality of your finished product. (I cannot repeat this enough)!

3-Work with the PART Velocity

Changing the velocity of the performance should be your last resort. As mentioned above, it does have much to do with the volume that you are able to achieve from each individual PART. Many times no attention is paid to how much velocity is used when recording MIDI tracks and you must compensate for extremely low

output from track data. Fortunately, there is plenty of room to edit XS Voice Volume data. However, the warning about changing the velocity of a performance is only given for those particular sounds that change character when velocity is altered. Velocity can be safely offset on many Voices in the Motif XS. One way is by artful use of the PLAY FX. These are found from the main SONG or main PATTERN screen by pressing [F2] PLAY FX. The last two columns under, **Velocity**: Rate and Offset, allow you to change the velocity of data on a Motif XS track either by percentage (rate), or by a fixed value (offset). 100% Rate equals no change, higher values increase the velocity. An Offset adds or subtracts a specific value to each velocity value. The former is proportional while the later is absolute...

Summary: Monitor your Cubase Mixer and play close attention to your input levels and the overall output level – which in this case will be the same. Your job is to juggle the balance between the instruments, getting the best overall level, without any clips. This is quite a task. The musical balance is very important, the fact that you are close to 0.00dB is slightly less important, and the fact that you cannot ever go over 0.00dB is the **prime directive**. Make it so!



The PARTS have all been set to a volume level of 100 on the Motif XS Mixer. You want to create a balance between them so that they sound good to **your** ear. This is mixing. It is subjective – this means, there is no right or wrong, it is simply a matter of taste. ...how much drums vs. how much percussion... and how much electric piano to how much organ, etc. The object of the exercise is to for YOU to get a balance without the clip indicator showing a positive value. Shown above is Cool Funk transferred to a stereo audio track. You can beautify the look of track data by adding color. Do not be fooled by the “size” of the waveform in the graphic. It is not what you go by in terms of record gain – record gain is always a function of the Meter. You can make the graphic larger or smaller using the slider control at the extreme right of the main Cubase Track window – it has no effect on record level – it only affects how the waveform looks on the screen. Many users conclude (wrongly) that their levels are low by how this graphic looks. The picture does not affect the level – it is strictly eye-candy. Only trust your METERS when it comes to level.

Try several different mixes – with different balances – listen back to your work.



Shown at left is the AUDIO 01 (Input) and the Stereo Output. The maximum level reached at this point in time is -3.3dB below the limit. This is absolutely fine level. Remember you do not have to reach 0.0dB – you want to get close but you never, ever want to go over.

“Transient” peaks are called that because they are very rapid and do not remain long. Percussion instruments tend to have spikes... In another Power User we will go over the use of the Multi-band Compressor. You would be amazed at just how much you can punch up a mix without increasing the metered level. In other words a multi-band compressor can make you perceive something as louder without actually increasing the overall gain. (It’s like the magic functions musicians dream about).

FACTS to KNOW: The human ear can barely detect a change of 1dB. Mostly only so-called “golden ear”

individuals can consistently detect a change of 1dB if they are not told it is coming (others are considered to be guessing that it changed). A 2dB change is perceptible by a large majority of humans. And by the time the signal has changed 3dB it is perceptible by all humans. Getting a handle on the decibel change and level is important so that you do not obsess over a barely perceivable change. It is the *perception of presence* that you want to obsess over. This is why we will cover Multi-band Compressors in a separate document at a future date.

The human ear can compress signal a trillion to 1. In other words your range of soft to loud is phenomenal – what is interesting to the ear is change in volume – not sheer volume. Dynamics in music make it interesting – become one who listens for dynamics.

EXPERIMENT 2: Routing PARTS to stereo and mono buses

In our next example we will take a look at a method that involves transferring individual PARTS of the Motif XS sequence to separate tracks in Cubase. You would do this if you feel the need to further process sound of the sequence. Routing PARTS to the assignable outputs is not something you HAVE to do, it is only necessary if you WANT to continue your session. For example, the Motif XS has a limit of 16 PARTS and 16 Tracks, transferring what you have recorded in the Motif XS to audio tracks of Cubase will allow you to reuse the hardware. Immediately you'll have 16 additional PARTS and 16 additional Tracks to work with.³

If a PART takes advantage of the stereo field (the spacious left-right panorama), you may want to capture that in your audio recording. Let's explore the provided data. For now just listen closely to the "Cool Funk" demo... then we will discuss a "plan" to proceed in transferring these MIDI tracks to Audio in Cubase.

- Press the [SOLO] button
- Press Track [1]

Isolate the drum PART. Press PLAY on the Motif XS sequencer and then hit the [SOLO] button and light the track [1] button, if not lit by default. On close listening you can hear that the drum kit takes advantage of the stereo field (if you are not listening in stereo – **stop now** and go and buy yourself some decent monitors and come back when you do!!!). Stereo is required if you are going to do a mix. Why? Because 99.999% of your potential listening audience is going to have some kind of stereo system and that is the reason you should be monitoring in stereo. I only leave the .001% open because there may be someone somewhere still living in the pre-1957 era. Learn to listen closely – hear every single drum instrument that is sounding. Test yourself see if you can hear all the different drums that are hit.

Isolate the percussion PART (track 2) – This PART takes advantage of the stereo field as well. Stereo is important because it gives your hypothetical band positions and lets the listener feel that there is a space that the musicians are occupying – instead of everyone standing on top of one another in the middle. Again paying close attention to all the different percussion instruments playing, see if you can identify each.

Isolate the Electric piano track – it is stereo as well, listen to the 'vibrato' effect move the sound left and right. In this case the Electric piano sound is very obviously moving in the stereo field

Isolate the organ track – and although the organ is, technically, a mono sound, the rotary speaker effect is utilizing the stereo field. We will want to capture that in our audio transfer.

Isolate the bass track – the final track, the bass player – as usual – will be holding down the funky **mono** bottom.

So we have 4 Tracks that will be stereo and one Track that will be mono.

Create the tracks:

- Right click and select **ADD TRACK > Audio**
You will be offered a COUNT (basically this is asking "how many")
- Create 4 Stereo Tracks (shown at right)

The Track window in Cubase will show you four tracks, named AUDIO 01, AUDIO 02, AUDIO 03 and AUDIO 04.

- Use the down cursor arrow to move to and highlight track 4, AUDIO 04.
- Right click, select **ADD TRACK > AUDIO**
- This time add a single MONO Track.

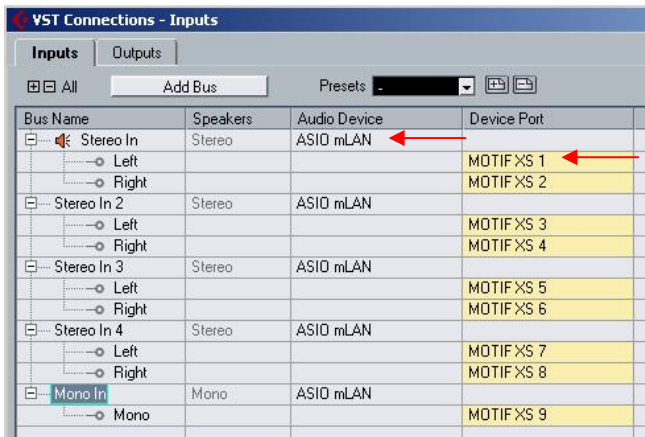
Once you have done this you will have a Track window with four **stereo** Audio tracks followed by one **mono** Audio track (shown below).



³ If you are one of these users who is always running out of polyphony, take note. This is how you can get an unlimited number of PARTS from your Motif XS and never, ever run out of polyphony.



By creating these audio tracks (destinations) we have setup so that each PART of our Motif XS MIXING setup can be recorded to a discreet (individual) audio track destination. Making a decision about what PARTS should be stereo and which PARTS should be mono is really a very subjective one – one that you will have to make yourself. It does not make sense to record everything as to stereo tracks, and it does not make sense to record everything to mono tracks. We only point this out so that you are aware of the possibilities available. Remember stereo can be a useful tool in setting mix balance levels... by spreading your instruments in the stereo audio field and using the left-right panorama, you can sometimes make the overall sound of your project more intelligible. A Stereo Track will use two connections, a Mono Track will use one connection.



- Click on DEVICES and select VST CONNECTIONS.
- Select the **Inputs** tab (shown at left).

Here you will want to create Inputs to Cubase to accept signals coming from the Motif XS. These will very much match the tracks that we just created in our previous step.

- Click on ADD BUS

A **bus** is vehicle that carries passengers from one place to another. In audio, a bus is a connection responsible for carrying signal from one place to another. In this case these inputs will be responsible for carrying signal coming into the computer from the

Motif XS and delivering them to specific tracks of the Cubase Project.

There may already be a STEREO IN setup. If this is the case, then you only need to re-assign it and add three more stereo inputs and one mono input (again to match the tracks we setup in the previous step).

- When the dialog box opens set the COUNT and ADD the appropriate number of tracks to achieve the above setup. Notice the AUDIO DEVICE = ASIO mLAN and the DEVICE PORTS have been set to Motif XS 1/2, Motif XS 3/4, Motif XS 5/6 and Motif XS 7/8 to accommodate the stereo inputs. And the MONO IN is set to Motif XS 9.

You can click on the AUDIO DEVICE and on the DEVICE PORT (shown by red arrow, above) as necessary, to make the changes to accomplish the routing shown above. The AUDIO DEVICE will be "ASIO mLAN" in each case. The DEVICE PORT will be the *bus* on which the signal will arrive.

We have setup TRACKS to receive audio data, we have setup INPUTS to receive the audio data, now let's see how we send this audio data from the Motif XS to take advantage of the setup we have just made. In the Motif XS you can route individual PARTS of your MIXING setup to the **assignable OUTPUTS**. This is accomplished as follows:

(On the front panel of the Motif XS)

- Press [MIXING]
- Press [EDIT]
- Press a TRACK button [1]-[16] to select a specific PART (in our example, Track 1-5)
- Press [F1] VOICE
- Press [SF2] OUTPUT

Normally, a PART is routed to the L&R OUTPUT SELECT (the main stereo outputs), however, by changing the routing to the assignable outputs each Part can be routed to either a pair of outputs (for stereo) or an individual output (for mono) as follows:



L&R = the main L and R channels (refers to both analog and via firewire/mLAN)

asL&R = analog jacks (back panel)

m1&2 = mLAN 1 & mLAN 2 **Part 1 _drums**

m3&4 = mLAN 1 & mLAN 2 **Part 2 _percussion**

m5&6 = mLAN 1 & mLAN 2 **Part 3 _e. piano**

m7&8 = mLAN 1 & mLAN 2 **Part 4 _organ**

m9&10 = mLAN 1 & mLAN 2

m11&12 = mLAN 1 & mLAN 2

m13&14 = mLAN 1 & mLAN 2

m1 = mLAN 1

m2 = mLAN 2

m3 = mLAN 3

m4 = mLAN 4

m5 = mLAN 5

m6 = mLAN 6

m7 = mLAN 7

m8 = mLAN 8

m9 = mLAN 9 **Part 5 _bass**

m10 = mLAN 10

m11 = mLAN 11

m12 = mLAN 12

m13 = mLAN 13

m14 = mLAN 14

drum = output assignments made in a USER kit are respected.



You can set this routing in the Motif XS EDITOR or from the front panel. [Learn to do both](#) so you know where this assignment happens in both the hardware and the software. Remember because the Studio Connections is **bi-directional and simultaneous** when you are ONLINE, changing it in one place changes it in the other. Cool!

On the Cubase Track Inspector the INPUT and OUTPUT are configurable on a per track basis. Highlight the track and click on the INPUT area "→"]"

Track 1 AUDIO 01: Input should be "Stereo In"

Track 2 AUDIO 02: Input should be "Stereo In 2"

Track 3 AUDIO 03: Input should be "Stereo In 3"

Track 4 AUDIO 04: Input should be "Stereo In 4"

Track 5 AUDIO 05: Input should be "Mono In"

Each track will be assigned to the Stereo Output "[→]" sending a mix back to the Main Left and Right of the Motif XS.

A stereo output is all that needs to be returned because we monitor in stereo.

We can now see completely how the signal is traveling. You have a track of MIDI data in the **Motif XS...** it will trigger an internal sound in the Motif XS tone engine. That sound is then routed to



an assignable output (mLAN output) that can be discreetly delivered (bused) via the mLAN16E2 to your computer. The **ASIO mLAN Driver** in the computer can be configured to receive the data in stereo pairs or mono inputs on the VST CONNECTIONS screen. And those stereo/mono inputs can be routed to **Cubase** stereo/mono tracks, as necessary.

We should mention here that in order for you to Record in Cubase AI4 you will need to “arm the track”; the



RED button on each track is the individual track arm device. Next to this RED button you will see a small speaker icon. Illuminate this speaker icon in order to *record monitor* through the track output.

You already know about how to setup the MIDI clock relationship (Master/Slave) between Cubase and the Motif XS (covered in the previous section). You already know about the **mLAN Monitor Setup** when transferring audio – (we are using the “**with PC**” option which let’s us hear post (after) going through Cubase, without hearing the direct Motif XS output). This is why the speaker icon must be activated in order to hear – the Cubase speaker icon, when active, routes the signal through to the OUTPUT we created in VST CONNECTIONS - OUTPUTS.

Troubleshooting: If you are getting no audio or you are getting doubling – this is a time to check your “mLAN Monitor Setup”. Remember it determines how you are monitoring (hearing) the sound.

Levels

In the previous section we discussed three methods of increasing individual PART volumes. You may notice that when you take individual outputs that now you require each PART to reach a greater gain level on the meter. We can add a fourth method of increasing the output level of the individual PARTS.

Press [UTILITY]

Press [F2] I/O

Here under the OUTPUT section you see you can increase the output level of the individual mLAN buses. If you require more level (and most likely you will) you can get an additional **+6dB boost** for each mLAN pair. The Cubase MIXER can add an additional +6dB of gain as well. Do not stress if your individual PARTS do not reach 0dB – your goal is to get a good sounding, clean recording of each Part so that when you do your final **mixdown** everything can be heard. That is it. You get no extra points for reaching 0dB on each PART. Quality of the Sound wins!

In fact you will find that certain Parts stand out without having the level maxed out... These can be because they are higher or lower in frequency or that they are percussive in nature.

This routing/monitor scenario also allows you to add additional processing in Cubase (via the INSERT and SEND functions) and hear that processing as it is applied. You can now arm all five tracks (record/speaker buttons) and begin your transfer. I like to refer to this as “committing the tracks to audio”. It is a commitment because you have made some decisions. You are not committing to the Cubase effects, however, these are applied without recording them. If you decide that you like them you can render the effects to a track by using the AUDIO MIXDOWN function inside of Cubase

This is really just a “getting started” guide. In later Power Users we will refer back to this guide and this data. But for now getting these basics of routing down is enough. Later you can add things like REMOTE CONTROL (where you can arm Cubase tracks from the front panel of the XS and start and stop the transport), and many other things. But take it slowly. We will come back to this example material in future Power Users because there is so much to learn and working with data that is not your project (I hope) helps you focus more on the task of the signal routing (and not the music, necessarily). As a musician, I know how the music-brain works... these tutorials are addressing the engineer-brain. Do not be afraid to develop your “engineer-brain”!

FYI: SONG 02 “Cool Funk Ex. #2” has the output assignments made for this experiment – You can use the Motif XS Editor to OPEN the “ROUTING TUTORIAL.X0A” file and send SONG SELECT: “Cool Funk Ex.#2.” I wanted you to experience making the assignments so that you understand where they are made and how they are made. The decisions are very subjective and you should feel free to make your own production decisions when you are working on your own projects. The purpose of this tutorial was just to give you an example of how the process works.

EXPERIMENT 3: (Advanced) Routing individual Drums to mLAN Outputs

If you decide you wish to route individual drums to audio outputs, this is accomplished (with planning) by editing a Drum Kit VOICE for this purpose. While there is no one way to proceed, we will give you an example. You will quite naturally need to know what drums you used and make the assignment in some kind of planned fashion that will make sense for your end goal. In our example, we have both a standard drum kit track and a separate percussion track. You will observe however that the two PARTS use the same Motif XS drum kit: Power Standard Kit 1. Shown in parenthesis are the type of routing I plan to use...

The following drums are used in the "Cool Funk" Song:

Kick	B0 (mono)
Snares	C#0, F0, C#1, F0 (mono)
Hi-hats	F#1, G#1, A#1 (mono)
Ride Cymbals	D#2, B2, F2 (mono)
Crash Cymbals	C#2, G2 (mono)
Toms	F1, G1, A1, B1, C2, D2 (stereo – panned within a pair of tracks)
Shakers	A3, A#3 (stereo – panned within a pair of tracks)
Tambourine	F#2 (stereo – panned within a pair of tracks)
Cowbells	G#2, G3, G#3 (stereo – panned within a pair of tracks)
Clave	D#4, E4, F4 (stereo – panned within a pair of tracks)
Triangle	G#4, A4 (stereo – panned within a pair of tracks)
Bongos	C3, C#3 (stereo – panned within a pair of tracks)
Congas	D3, D#3, E3 (stereo – panned within a pair of tracks)

What we will do is route each drum to an assignable output (this is done in VOICE mode), then create the audio connections in Cubase to receive the signal, then create the track layout to accomplish recording the drums. This is the logical signal flow from source (the XS drum), to the computer input, the input to the Cubase Project track. The editing of the Drum Kit must take place in **VOICE mode** of the XS. When we have made the assignments, we will [STORE] our Voice to a USER DRUM Kit, then place this Drum kit in our SONG. Once our edited kit is in our XS MIXING setup we will set its OUTPUT SELECT = "drum". This is a special setting that allows all the individual routings we made in our kit to access the assignable outputs.



You make decisions about what gets isolated according to the type of results that you wish to have for mixing. Here are the assignments that I decided to make:

Kick	m1	I only need a mono track for the kick drum
Snares	m2	I only need a mono track for the various snares used
Hihats	m3	All three high hat sounds to one mono track
Rides	m4	All three ride cymbal sounds to one mono track
Crashes	m5	Two crash cymbals to one mono track
--	--	
Toms	m7&8	The toms to a stereo pair so that they automatically pan right-to-left
Percussion	m9&10	The various percussion sounds are spread across a stereo pair
E.Piano	m11&12	The stereo effects of the Sweetness Rhodes sound are preserved
Organ	m13&14	The stereo rotary speaker effect is preserved
Bass	m6	The bass in gloriously mono

When editing a Drum Voice you must do it in VOICE mode. A Drum Voice in the Motif XS is really a super Voice – made up of 73 different instrument sounds. Each drum is considered an instrument – Each drum has its own KEY and that key has its own volume, pan position, routing to the effects, its own filter, its own envelope, etc., etc. And you can even route an individual drum to an individual output! You Edit each drum instrument as you require. Save that to a USER DRUM kit and then use that kit in your MIXING setup. (See "Editing A Drum Voice" page 127 of the Owner's Manual).

I then made the appropriate assignments to the Drum kit "Power Standard Kit 1" and stored those changes to the USER DRUM bank location: **"Edited Standard Kit" A01(001)**. Call up **SONG #03: Cool Funk Ex.#3** for a Song that uses this setup. Once this kit is placed in the MIXING setup, then the OUTPUT SELECT

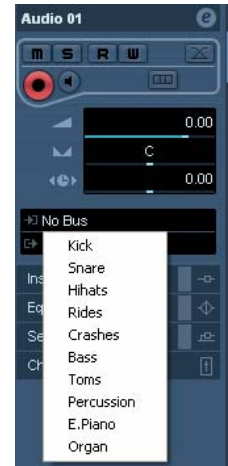
for that PART is set to “**drum**”. The individual output assignments that were made in VOICE mode will be automatically respected.

Inputs			
Outputs			
Presets			
Bus Name	Speakers	Audio Device	Device Port
Kick	Mono	ASIO mLAN	mLAN 01
Snare	Mono	ASIO mLAN	mLAN 02
Hihats	Mono	ASIO mLAN	mLAN 03
Rides	Mono	ASIO mLAN	mLAN 04
Crashes	Mono	ASIO mLAN	mLAN 05
Bass	Mono	ASIO mLAN	mLAN 06
Toms	Stereo	ASIO mLAN	mLAN 07
Percussion	Stereo	ASIO mLAN	mLAN 08
E. Piano	Stereo	ASIO mLAN	mLAN 09
Organ	Stereo	ASIO mLAN	mLAN 10
			mLAN 11
			mLAN 12
			mLAN 13
			mLAN 14

In the screen shot (left) you can see that you can name each input bus (if you wish). It is not necessary, but sometimes on a large project you may find it helpful to keep track of inputs in this fashion. In the screen shot of the Track Inspector (right) you can see these same Bus Names when you select an INPUT, (the symbol is: →)], for each track.

Remember the track input (name) will reflect the Bus Name.

Setup the INPUTS as shown and assign each to the DEVICE PORT.



It is important to understand that you can make several sub-mix decisions – these are commitments of a sort. The composite mix we made of the percussion tracks for example... if you determine at a later time that the tambourine (in particular) is not loud enough, well we have committed. What do you do in this case? We keep our original MIDI data in a safe place – it gives us a physical level of UNDO.

I mention this because it is always a concern... you certainly could record every individual sound used to a separate individual track (now some people do this but it is only because they are afraid of commitment or they just enjoy having a project with 48 tracks or 150 tracks or 300 tracks, whatever) – you are only postponing a point at which you need to make a combining decision. In general, we made some “sub-mixing” decisions when we combined the percussion instruments to a stereo track. The more experience you have doing projects the less you are afraid of commitment.

I don’t want to scare you but I must pass this gem on... when I was a young engineer in training, a veteran mix engineer told me, “You know, you never finish a mix... At some point you simply stop working on it.” What he meant was you never get to a point where you are 100% satisfied; you simply have to move on. You mix on Monday, and then on Tuesday you listen back to what you have done and think it is not quite right, the mix you do on Thursday is so different from what you did on Wednesday that it’s almost like two different compositions.

A word on sub-mixing: A good example of sub-mixing is any live sound engineer. Next major concert you go to, take a look at center-house, behind the mixing console (typically a Yamaha, by the way) you will see the main Front-of-House engineer. They may have a 96 or more input console. But when you see them making adjustments to the mix they are primarily working on just a bank of 16 faders. What they have done is a series of sub-mixes that make the large number of inputs deal-able in a live situation. There may indeed be 12 microphones on the drum kit. But they have them sub-mixed to four faders: Typically, kick, snare, Left and Right. There may indeed be 6 individual microphones on the background singers but they are sub-mixed to Left/Right.

The reason this is done because in the final analysis, there are individual controls for all the different inputs, but during the live show, if they need more drums, they do not want to have to tweak 12 faders... they have the basic balance between the drums, they just want to raise the overall drum mix.

Sub-mixing is an art and you get better at it the more you do it. Experience is something that you can only gain over time. So take your time and dare to fail – ultimately, you will succeed!

LEVELS

In the second Method we went over how to get more output level volume from each individual Motif XS PART. Use that technique to make sure that each of your input PARTS has optimum level on the METER. When you make the decision to create an individual output bus routing for a PART, you are taking on the responsibility of ensuring that that channel is recorded properly. The Cubase mixer will indicate the maximum level achieved by each input channel. If you register a clip – you must redo the level of that channel. Do not take any clip lightly – if you are tempted to say “Oh, I didn’t hear anything bad.” Remember it is a cumulative problem that moves from harsh to ugly and on to garbage. Think of a clip like a cut... the red warning will make this analogy work even better – you do not want your mix bleeding all over the place. Fix all nicks and cuts because they will cause an infection that may develop into gangrene – and you wind up losing the entire limb.

ADDITIONAL INFORMATION

- Press [UTILITY]
- Press [F2] I/O



mLAN MONITOR SETUP:

stand alone

This should be selected when you are using the MOTIF XS alone or are not using the DAW software even with a computer connected to the MOTIF XS via an IEEE1394 cable. When this is selected, the audio signal of the MOTIF XS will be output **directly** via the OUTPUT L/MONO and R jacks normally.

with PC

This should be selected when you are using the MOTIF XS as an audio device with the DAW software. When this is selected, the audio signal of the MOTIF XS will be output to the DAW software on a computer via an IEEE1394 cable, merged and mixed with the DAW sound, returned back to the MOTIF XS, then output

via the OUTPUT L/MONO and R jacks. (Ed. - *The **direct output** to the L/R output is defeated*). Selecting this allows you to apply VST Effects within the DAW software to the MOTIF XS sound.

with PC (DirectMonitor)

This should be selected when recording your keyboard performance to the DAW software on the computer. The audio signal of the MOTIF XS will be output **directly** via the OUTPUT L/MONO and R jacks with the audio signal sent from the DAW software via an IEEE1394 cable. Keep in mind that the Rec Monitor of the DAW software should be set to “off” in order to prevent “double” sound from occurring.

When to use each

- “**stand alone**” – Use this setting when you are using the Motif XS by itself. No computer
- “**with PC**” – Use this setting when you are playing back audio from the Motif XS and recording it to your computer. The “speaker” icon (Record monitor) in Cubase should be used because you have no direct output from your XS to your speakers... all audio travels first to Cubase first, the speaker icon ensures it will be routed back to the audio outputs.
- “**with PC (DirectMonitor)**” – Use this setting when you are overdubbing (performing) your Motif XS to data already recorded in your DAW software. This will mean you get ZERO LATENCY (“zero latency” is one of the terms that is a no-brainer in hardware...) There is no latency because you are hearing your instrument routed directly to the audio outputs. Not after it is received in the computer and sent back – so direct monitoring is of course, zero latency. You are listening to your DAW tracks output and playing to them. All timing compensation is handled in Cubase. Notice that you do not activate the “speaker” icon in Cubase (Record monitor) as this would be the “latent” audio coming from the computer.

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