# NUAGE

## COURSEWARE

## POST PRODUCTION AND MUSIC RECORDING WITH NUENDO AND CUBASE
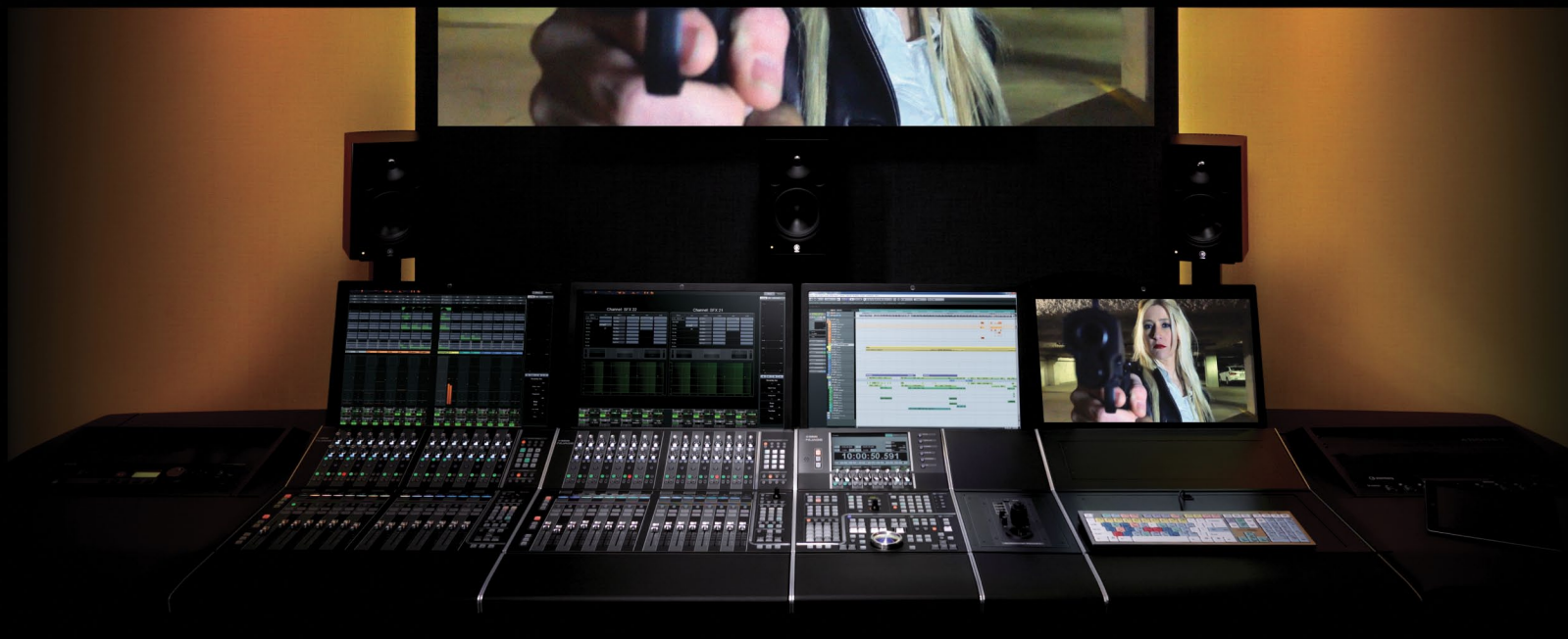
BY ASHLEY SHEPHERD

**NUENDO 7**
Advanced Audio Post-Production System

**YAMAHA**

**CUBASE PRO 8**
Advanced Music Production System
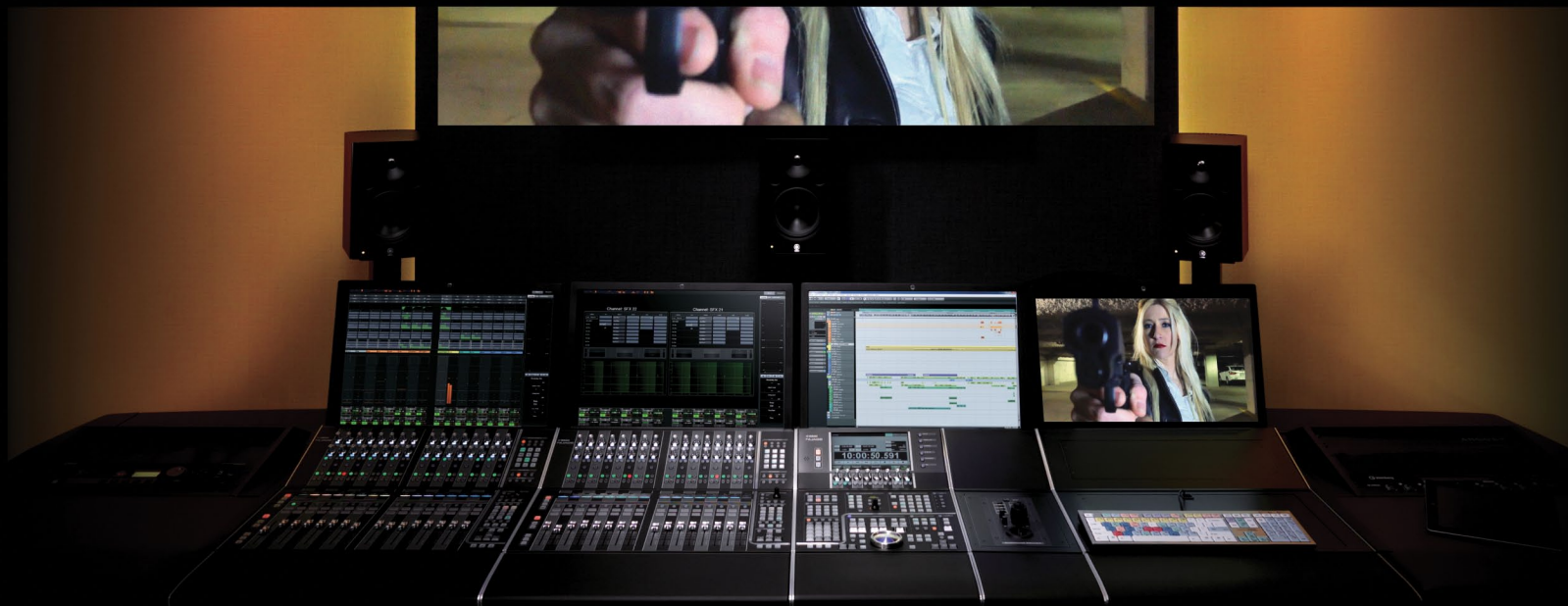
# NUAGE
## COURSEWARE

by Ashley Shepherd

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## Introduction

# NUAGE

## Introduction

- ❖ The System
- ❖ Audio Hardware
- ❖ Dante (by Audinate)
- ❖ Yamaha Nuage
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Audio production has come a long way since its inception in the early 20th century. With the advent of digital audio recording and cheap computer processing, the possibilities have become virtually unlimited today. However, all of these possibilities can only be achieved through the interactions of the audio engineer and the sounds themselves. That's where the computer comes in. Now that we have digital audio workstations such as Nuendo and Cubase, the audio engineer is given all the tools necessary to manipulate sound in endless ways.

The interface between the sound itself and the audio engineer is made up of three parts: the DAW software, audio interfaces, and hardware controls. This composite interface is critical because it allows the creative decisions made by the engineer to be applied to sound in the digital medium. Mastering this interface is the skill set needed to be a successful audio production engineer today.

Nuage Courseware is designed to give you the skills necessary to apply your creative decisions in audio production using the software tools from Steinberg and audio hardware and tactile controllers from Yamaha. Yamaha Nuage Integrated Audio Production System is the most advanced hardware and software solution available today for audio post-production for video, sound for gaming, and music production.



**Figure IN.1**
Edison wax cylinder phonograph c. 1899

# The System

The Nuage system can be broken down into three areas: audio software, tactile control, and audio hardware (AD/DA conversion).

## Audio Software

### The DAW

At the core of audio software in any audio production system is the DAW (Digital Audio Workstation). For our purposes, this will consist of either Nuendo or Cubase software. The DAW software is the engine that allows editing, recording, and mixing of all the audio in any production. This is the single most complex piece of software you will use. However, there are other pieces of software that will be involved in the process.

### Plug-ins

Plug-ins are modular pieces of software that work within the DAW software and process audio in various ways. Plug-ins can be from other software manufactures such as Universal Audio (UAD), Waves, or SoundToys. The great benefit of this is that you may use any tool necessary to achieve the sonic results you desire. Both Nuendo and Cubase come with built-in plug-ins such as the ModMachine delay shown in Figure 3, that are very effective and provide great results for most situations. However, the ability to choose a third-party plug-in adds flexibility to the system.



**Figure IN.2** Nuendo and Cubase DAWs



**Figure IN.3** ModMachine delay plug-in

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## Video

When working with audio for video post-production or sound for gaming, it is necessary to synchronize audio and video. We have to be able to see the video in order to create appropriate sounds to go along with it.

Both Nuendo and Cubase provide a software video engine that allows for video files to be played in sync with audio. The video engine relies on the video capabilities of the host computer in which Nuendo or Cubase is installed. You will need to become familiar with various types of video files and formats in order to work with them inside Nuendo and Cubase.

## Synchronization

It can be necessary to synchronize one DAW with another system either for video or more audio. There are various methods to do this, some using software only and others that require hardware devices such as Steinberg's SyncStation, shown in Figure 4, to interface with other systems outside the DAW.



**Figure IN.4** Steinberg SyncStation

# Tactile Control

In order to control all of the software, there needs to be some sort of physical interface between the human and the software. We have to use our hands, eyes, and of course our ears to control the software and then hear the results.

This is such a crucial aspect of the system because it is where the creative decisions are translated into actual commands to the software. Any delay, confusion, or misinterpretation of your intentions as a result of bad interface design will result in perhaps a less-than-perfect audio output.

In order to minimize these problems, great care has been taken to design the graphical user interface of the software, the tactile controllers for Nuage, and even the language of instructions given here and in the manuals.

## Keyboard and Mouse

In its most basic form, tactile control is the combination of the keyboard and mouse of your computer such as the ones shown in Figure 5. With just a keyboard and a mouse you can control every aspect of the DAW, the plug-ins, and synchronized video. There are definite limitations to this basic tactile interface.

The first and foremost limitation is that you can only do one thing at a time with a mouse: point and click. Your hands, however, are capable of controlling several different things at once. And your brain, of course, can think about many different things at once. With the mouse, you can only click on one thing at a time.

The next limitation is the keyboard. An ASCII keyboard is designed primarily for typing words, not controlling DAW software. We have come up with solutions such as key commands and modifier keys to overcome this limitation, but the realities remain the same. The keyboard is designed for typing.

Finally, there are only buttons on the keyboard and the sliding action of the mouse. Our hands are capable of operating other types of mechanical devices such as knobs and faders.

There is a reason for having faders on a mixing console. Faders are very intuitive for adjusting the levels of audio signals. Also, knobs are the logical choice for adjusting everything from plug-in parameters to transport controls.

The mouse is capable of mimicking all of these types of mechanical devices, but only in a limited fashion. There comes a point where using dedicated hardware controls will seriously increase the efficiency and efficacy of your work.



**Figure IN.5**
Standard keyboard and mouse

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# Control Surfaces

The idea behind a dedicated control surface is the creation of mechanical devices that are ideally suited for the purpose of controlling various parameters. The Nuage Master and Fader units shown in Figure 6 have been designed from the ground up to provide tactile controls for Nuendo and Cubase in a tightly integrated system.

When you operate the DAW software using one of these tactile controllers, there is no delay between your action and the result in the software. Furthermore, you may operate multiple parameters at the same time and get instant feedback and results from your actions. This helps promote the creative process, allowing you to conceive, execute, and evaluate creative decisions much more quickly than when using just a keyboard and mouse.

The Nuage controllers each have a constellation of faders, knobs, buttons, and the control wheel to give you access to every feature within the software. Bringing the features out of the key command and menu system and into your hands right in front of you has an amazing effect on the operator.



**Fig IN.6**  Nuage Master and Fader units

# MIDI

MIDI (Musical Instrument Digital Interface) is a technical standard that describes a protocol, digital interface, and connectors, allowing a wide variety of electronic musical instruments, computers, and other related devices to connect and communicate with one another.

While MIDI is most commonly used to transmit musical information between devices, it has been harnessed to provide tactile control of DAW software. This allows hardware devices such as MIDI keyboards, pad controllers, and even portable devices such as smartphones and tablets to control DAW software.

Through the use of Generic MIDI and the Mackie Control protocols, access is gained to parameters such as channel volume, pan, aux sends, plug-ins, and other commands within Nuendo and Cubase.

Using these tools you could call up the Quantize function in Nuendo simply by pressing the low C note on a MIDI keyboard. You could create a remote control for your DAW by using an iPhone to operate the transport controls in Cubase using the Cubase iC app.

# Multi-Touch Screens

Multi-touch screens are now becoming commonplace with the advent of Windows 8 and other operating systems such as iOS, shown in Figure 7 with the iPad. They can utilize multiple points within their GUI, thus controlling multiple parameters at once. As these systems become more developed, you will be able to take advantage of multi-touch within the DAW.



**Fig IN.7**  iPad running TouchOSC

**Fig IN.8**  Windows 8 Multi-Touch screen

The ability to touch and activate more than one item simultaneously within the GUI offers unprecedented utility from the screens. However, touching graphic elements on the screen is still very different from touching real knobs, faders, and buttons on a tactile control surface. The ability to feel your way across the control surface rather than searching with your eyes across the GUI delivers a much more immediate response. That being said, multi-touch screens offer a bright future for the graphical user interface.

# Audio Hardware

The third element in the system is the audio hardware itself. It is where the audio signals are converted from analog into the digital medium and vice versa. This is the critical step in the quality of sound for any digital audio system.

While the other elements of the system are designed to help the operator interface with all the controls within the DAW, the audio interfaces allow your ears to interface with the sound directly. This is, after all, the end goal of audio production: to hear the sound that we imagine in our minds.

## Studio AD/DA Converters

The Nuage system can use various audio interfaces, depending on the needs of the studio and the type of recording required. There are three studio audio interface configurations called the Nuage I/O's. Each unit has 16 inputs and 16 outputs:

❖ 16A (16 analog inputs and 16 analog outputs)

❖ 16D (16 AES/EBU digital inputs and 16 AES/EBU digital outputs)

❖ 8A8D (8 analog and 8 digital inputs and 8 analog and 8 digital outputs) (Figure 9)



**Fig IN.9**  The Nuage IO 8A8D

## Additional Yamaha Audio Interfaces

Other interfaces within the Yamaha product range can be used directly with Nuage. All of the R-series interfaces are controllable remotely from the Nuage hardware units, providing microphone preamps and AD and DA conversion all in one unit such as the Rio3224-D shown in Figure 10.



**Fig IN.10**
Rio3224-D
Stage Box

The RMio-64D shown in Figure 11 is designed to work with existing MADI interfaces (Multichannel Audio Digital Interface) for large-scale setups involving third-party equipment. It converts 64 channels at 44.1 or 48 kHz (32 channels at 96kHz and 16 channels at 192kHz) of audio on MADI to the Dante network protocol.
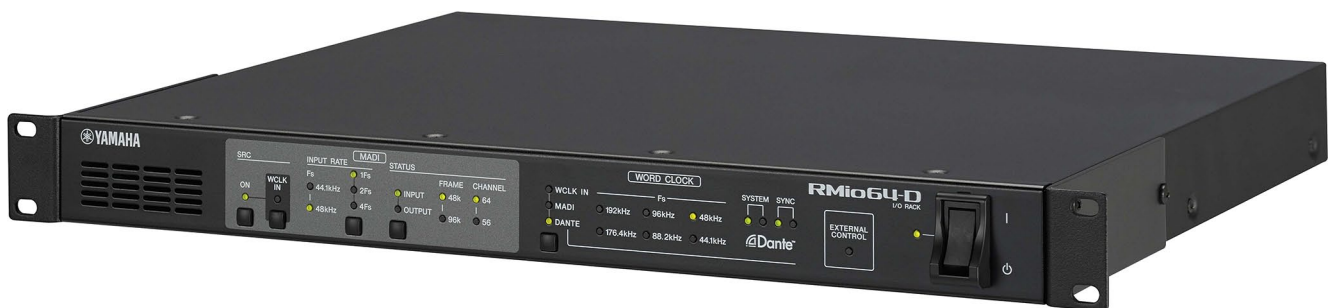


**Fig IN.11**  The RMio-64D MADI to Dante interface

**Fig IN.12** AD8HR remote-controlled microphone preamp

The AD8HR shown in Figure 12 is a remote controlled, 8-channel studio microphone preamp that can be directly operated by the Nuage hardware.

Other Yamaha audio consoles, such as the QL and CL series, can interface with Nuage in more complex scenarios involving live sound, broadcast feeds, and multi-track recording all within one event, such as the Grammy Awards for example.

# Dante (by Audinate)

All of these audio interfaces have one thing in common. They all use the Dante audio networking protocol to route signals between devices.

Dante is an audio networking protocol that utilizes Gigabit Ethernet to route up to 512 audio signals between various devices. The result is that you can use off-the-shelf networking hardware (with certain exceptions) to build a scalable audio network for use in the studio or in live applications. (See www.audinate.com.)

It also happens that the Nuage hardware controllers also use Gigabit Ethernet to communicate control signals between hardware units in the DAW software. This makes it extremely easy to set up an entire system using one Gigabit Ethernet switch and very little cabling to route a great number of audio channels and controller data all within one system.

## Other Audio Interfaces

Both Nuendo and Cubase will operate with just about any audio interface available, including the audio on most laptop computers. This offers a great deal of flexibility when moving projects between studios, working at home or while traveling, or simply exchanging project date between various contributors.

Steinberg offers a complete line of audio interfaces suitable for Nuendo and Cubase. The only requirement is that the audio interface is ASIO compatible. In the Windows environment, this is a function of the driver software. In Mac OS X, if the audio interface is compatible with the Mac, then it will work with Nuendo and Cubase.



**Fig IN.13** Third-party audio interface brands

This opens up a world of possibilities for audio interfaces including devices from RME, Apogee, Focusrite, Universal Audio, and many more.

# Yamaha Nuage

Yamaha Nuage is the integration of all three parts of the system: software, control surfaces, and audio interfaces. The partnership between Steinberg and Yamaha has allowed for an incredibly tight integration of these three parts to make a whole that is greater than the sum. The workflow and output quality are the result of this integration and workflow improvements.

**Fig IN.14**  The complete Nuage system

# The Course

This course will teach you how to produce audio for any type of multimedia using this system and its components in a fashion that affords greater creativity while also maintaining efficiency in achieving superior results. It will take you through the process of setting up a system, recording various types of projects, editing those projects into a final form and then mixing the projects in preparation for delivery in the final format.

We will use real-world examples including lab material prepared just for this course so that you will learn by doing. Of course there will be sections purely devoted to operating the software and understanding key functions, but those functions will then be used in real-world examples that put your skills to the test, and you'll finish with a final product that is tangible.

Hopefully you will find this experience rewarding and come out of it with a strong skill set that will allow you to pursue a career in audio production.

# Prerequisites

This is not a basic audio course. There are some assumptions about basic audio knowledge that you'll need to succeed in this course.

## Basic Audio Theory

It is assumed that you have fundamental knowledge in the following areas:

❖ fundamentals of sound waves, speed, and propogation

❖ anatomy of sound waves: amplitude, frequency, phase, polarity, etc.

❖ decibels: dbSPL, dbFS

❖ dynamic range: noise floor, operating level, headroom

❖ audio processing

❖ equalizers

❖ compressors

❖ time-based effects: delay, pitch change, reverb, etc.

❖ gain staging: mic level vs. line level vs. speaker level

❖ signal flow

❖ mixing, summing of signals, panning

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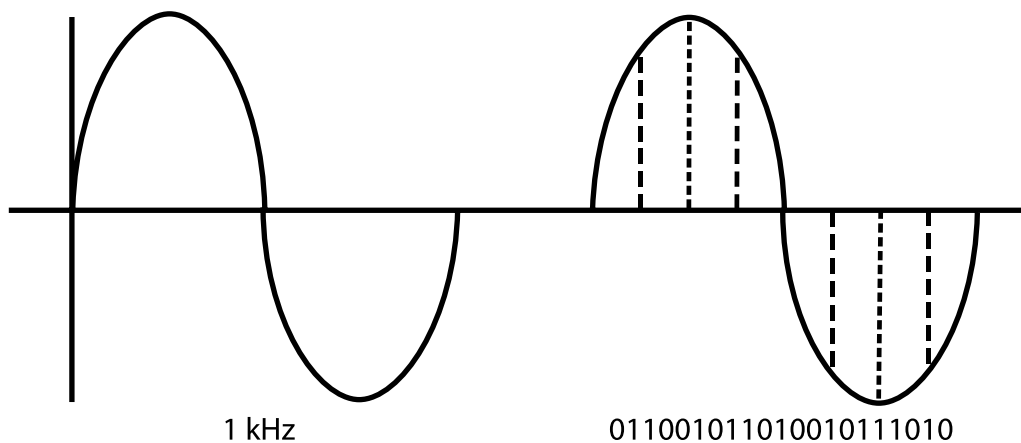
**Fig IN.15**  Analog versus digital

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## Basic Digital Audio Theory

In the area of digital audio, it is assumed that you have fundamental knowledge in the following areas:

- ❖ Nyquist theorem
- ❖ Bit depth and dynamic range
- ❖ Dithering
- ❖ 32-bit floating point vs. 24-bit fixed point audio
- ❖ Digital file formats: WAV, AIFF, MP3
- ❖ Digital level metering: peak vs RMS, K-system, LUFS

## Basic Computer Knowledge

Is also required that you have a basic understanding of the computer system that you will be using for this course, whether Windows or Mac OS X operating system. You should have knowledge in the following areas:

- ❖ File system navigation: drives, paths, folders, etc.
- ❖ RAM vs HD (Hard Disk) storage
- ❖ File formats: .wav, .npr, .mpeg
- ❖ Digital video files, QuickTime
- ❖ Computer connectivity: PCIe, USB, FireWire, Thunderbolt, Ethernet, DVI, HDMI, VGA, etc.
- ❖ Software installation conventions
- ❖ Internet file downloads
- ❖ Basic Ethernet: 100baseT, Gigabit, switch, router, hub

## Nuendo and Cubase

Nuendo and Cubase are very similar. The only differences that exist between the two are cosmetic differences in the GUI and additional functionality that's only found in Nuendo. Every feature in Cubase is also in Nuendo but not all features that are in Nuendo can be found in Cubase.

For example, the networking operation features found in Nuendo do not exist in Cubase. The ability to have more than one video track is a feature exclusive to Nuendo.

The audio engine and processing in Cubase are the same as in Nuendo. If you mix a project in Nuendo, you can open that project in Cubase and it will sound exactly the same so long as the same plug-ins are available on both systems. This makes it very easy to move projects back and forth between Nuendo and Cubase workstations.

For the purposes of this book and for the course, we will refer only to Nuendo throughout the text, except to note when the function under discussion is not available in Cubase. For all intents and purposes, the interface and functions are the same for both pieces of software except for those features available only in Nuendo.

A note about Nuendo and NEK (Nuendo Expansion Kit (optional)): Nuendo alone is missing some features designed primarily for music production (certain VSTi sound modules for example). In order to have those features available, the NEK package must be installed for Nuendo. Then Nuendo truly has all the features of Cubase. For this course we will also assume that the NEK package has been installed for Nuendo.

## The Method

The method of teaching in this course is based around workflow. Instead of just explaining a bunch of features and functions of the software, we are going to go through the process of doing real work. This will show you how all the features and functions work together to achieve results. This course is as much about the creative process of audio production as it is about the details and specifics of the software and hardware.

Then there is the collaborative aspect of any multimedia production. When working on any type of project, whether film, video, gaming or music, you are working within a team of individuals. It is imperative that you understand how to interact with and share your work with others on the team.

The need for teamwork is most apparent when dealing with video. The video editor and the audio engineer have to work closely together to maintain proper synchronization between the visual image and the sound. This involves some technical steps when you exchange information between the video editing workstation and the audio workstation. Nuendo provides specific features that help this process run smoothly.

It is also necessary to be able to share audio material between workstations from different manufacturers. This requires an intermediate exchange format that allows both workstations to access the same project with certain limitations. Formats such as AAF and OMF are most commonly used for this purpose.

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It is quite possible that you will have to work with somebody who is using a DAW that is not Nuendo or Cubase. For example, many audio engineers use Avid Pro Tools software and it is quite common to have to share material created in Pro Tools with Nuendo and vice versa. This course will take a close look at how to exchange projects between Nuendo and Pro Tools.

## Lab Material

In order to learn how to produce audio you must work with real material. To that end, we will be working with lab materials created specifically for this course.

### *50/50* Film Production

These materials include a complete film production focused on sound design. The scenes include interior and exterior locations, dialogue, action sequences with firearms and cars, slow motion, and other surreal cinematics. Every aspect of film sound is represented in this production.

You will use all of the raw material from this production to create your own final mix for the project. This is the best way to learn how to do it. There is no substitute for the real thing.



Mathew Senatore

**Fig IN.16**  Scene from 50/50

## Music Recording: Live Band

We will also cover techniques for music production. Although the primary focus of the course is audio production for video, we will have some music recording material for you to work with.

In addition, there will be music in the form of the score for *50/50*. Mixing music for cinema poses different challenges than mixing music alone. This will test your skills in both areas of music production.



**Fig IN.17**
Drums in the studio

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## PART I: SETTING UP

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NUENDO 7
*Advanced Audio Post-Production System*

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*Advanced Music Production System*
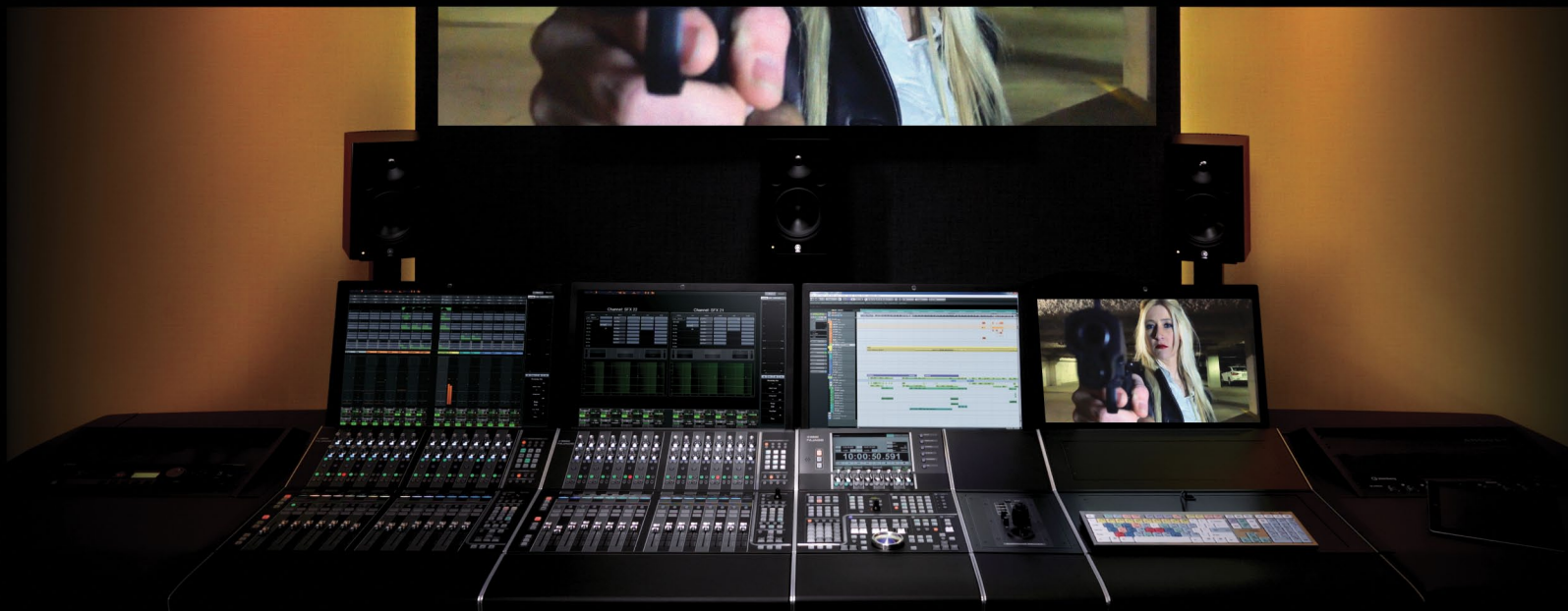
In the first part of this course we will cover setting up a Nuendo system starting with the computer itself and all the hardware of a Nuage system. Then we will move into the configuration of Nuendo's features and preferences. We will also set up a laptop system that has virtually no hardware and that can be used with headphones as an alternative to the full Nuage system.

Nuendo is the centerpiece of your studio environment. We will take a close look at how to connect the Nuage system to all of the other gear in your studio from MIDI controllers and keyboards to microphone preamps and studio monitors.
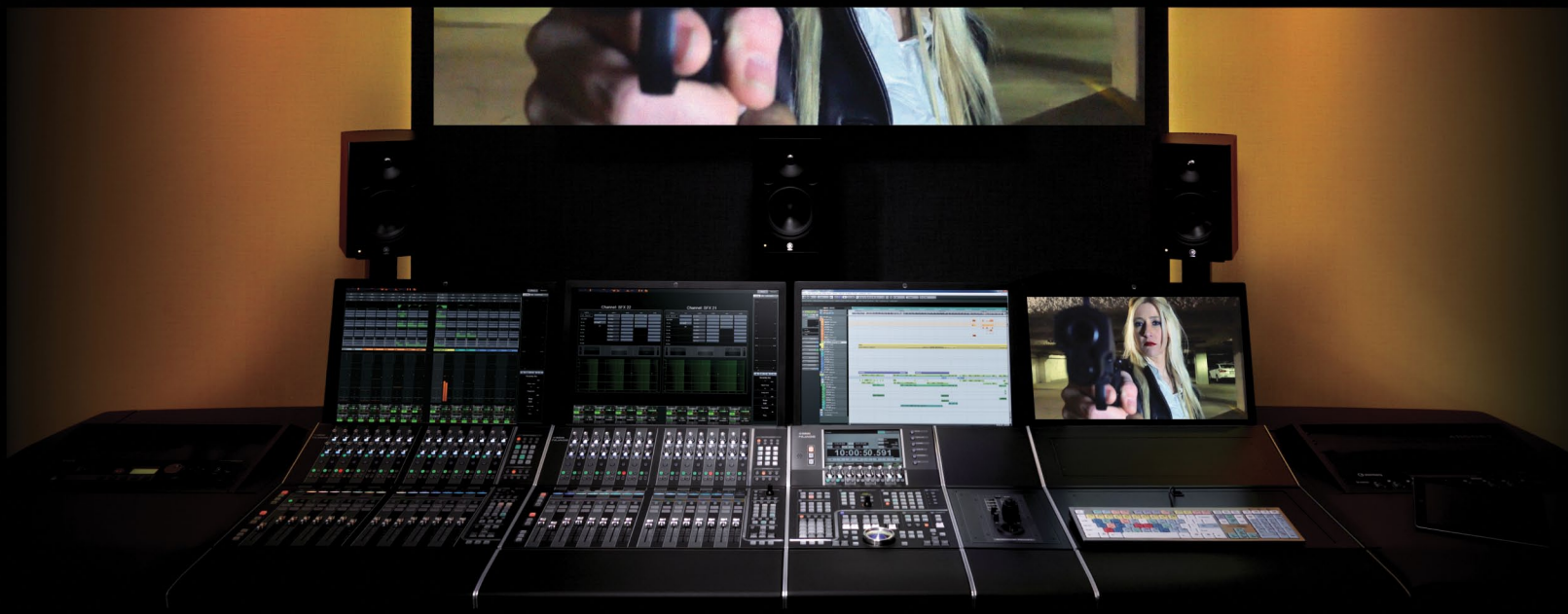
Next, we will examine the file structure of a Nuendo Project and how Nuendo organizes the various files it creates and uses. This will help you keep all of the critical data safe, organized and backed up.

We will then take a tour of the Nuendo GUI, learning its basic layout and the various windows used in Nuendo. Then we will look at the extended layout with additional windows that delve deeper into the software.

Finally, we will cover techniques for navigating the channels and timeline of the project. The ability to move about freely and quickly in a Nuendo project is critical. This is what you need to learn first before we can move on to actually recording audio.

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**PART I: SETTING UP**
by Ashley Shepherd

# Chapter 1
# Planning

# NUAGE

## Planning

- ❖ Questions
- ❖ Computer Choices
- ❖ Audio Interface
- ❖ Speaker Systems and Monitoring
- ❖ Multiple Workstations

In order to properly set up your system, it is a good idea to sit down and plan everything ahead of time. Knowing what type of audio production you will be involved with, the hardware that's available to you, what type of monitoring situation you will be in, and other possible uses for the workstation are all necessary to properly set up a system.

# Questions

First, consider a few questions about what type of audio production you intend to do. Of course Nuendo can be reconfigured later if your needs change, but it helps to outline your intended uses before moving ahead with installation and configuration.

❖ **Are you producing music or mostly sound design?** Nuendo has extra options specifically for music production contained in the NEK package that might not be necessary for sound design or dialog work alone.

❖ **How many speakers will you monitor through?** Will you primarily mix in 5.1 surround or in traditional stereo? It could be both. It is also possible to have multiple sets of monitor speakers, including headphones, all controlled by Nuendo.

❖ **What type of audio interface will you be using?** It could be as simple as the built-in audio of your laptop or a Dante Accelerator card with 128 ins and 128 outs!

❖ **Will you be recording MIDI from a keyboard controller?** This includes drum programming with a pad controller or drum triggers.

❖ **Will you be using some type of control surface?** This could be in the form of a simple MIDI controller, the Steinberg CC-121, an iPhone, or a complete Nuage controller system with three Fader units and one Master unit.

❖ **Will you be working to picture and require video playback?** Nuendo supports the use of Apple QuickTime video inside the program. This can be displayed onscreen or through special video playback hardware such as the Blackmagic Design video cards. External video playback systems may also be used with synchronization.

❖ **Will you be synchronizing with other audio and video systems?**
You might need to lock to a house sync generator or even integrate Nuendo
within a large dubbing theater with other DAWs, consoles, recorders, and
video systems. This could require Steinberg's SyncStation to ensure sample-
accurate synchronization.

❖ **Will you be using any DSP hardware to augment the computer's
processing power?** UAD, TC PowerCore, and SSL Duende are just some
examples of DSP processing hardware that increases the processing power of
your system beyond the host CPU's capacity.

❖ **Will you be using an analog console or summing device for mix-
down?** Many music mixers use some form of analog summing during mix-
down, creating a hybrid mixing environment where the best of both analog
and digital can be achieved.

❖ **Will you be using outboard gear for processing?** Vintage analog out-
board gear never goes out of style. Plus, there are new digital outboard pieces
such as the Bricasti and Cedar processors that offer the latest algorithms.
Nuendo allows you to seamlessly integrate your existing compressors, EQs,
and other analog and digital outboard gear into the Nuendo mixer.

❖ **Will you be collaborating with one or more other users on the
same project?** Nuendo allows you to collaborate with other users on a single
project using network connections between workstations.

# Computer Choices

Once you have answers to these questions, you can determine what type of computer is most
appropriate for your uses. For many, this choice may already be made, but if you have the
opportunity to choose the computer you will use for Nuendo, factor your needs carefully into
this decision.

Nuendo is a cross-platform application. It functions identically on both Windows and Mac OS
X operating systems. So the choice of operating system is more of a personal preference or
perhaps dictated by the hardware that is available.

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# Laptops

Obviously laptops are most appropriate for mobile work such as location recording or for those users who travel often and need a system that can travel with them. Modern laptops are very powerful and can do an amazing amount of work in a small package.

For example, I used an aging MacBook to record on location for an MTV reality show, capturing 16 channels at 48 kHz for two hours straight directly to the internal drive. This is not for the faint of heart, but I had no complications and I was even jam-synchronized to their time-of-day SMPTE timecode while running house sound out of the interface's mixer at the same time.

Editorial tasks such as dialog editing are easily handled by a laptop computer. Even large complex projects can be "off-lined" to a laptop for basic editing and then brought back to the main system for final mixing. Many EDM (Electronic Dance Music) productions are handled entirely within a laptop. They become more powerful every day.

## PLUG-INS ACROSS SYSTEMS

If a project created on a system with special plug-ins is taken to a laptop (or other system) that does not have the same plug-ins or necessary DSP hardware, Nuendo will disable these plug-ins but still retain their settings so that when the project is opened on the original system, those plug-ins will load and operate just as they did before. This allows you to migrate projects across multiple systems without losing any valuable data or settings.

The primary limitation with laptops is the use of large-scale audio interfaces. While USB and Firewire offer a decent choice of I/O options for laptops, professional-level interfaces offering over 24 channels of I/O at high sample rates usually require PCIe cards to move that amount of data. With the advent of Thunderbolt-enabled interfaces, the same level of performance can be achieved on a laptop.

However, with Nuage and Dante, a laptop with Gigabit Ethernet can use the DVS (Dante Virtual Soundcard) to create 64 inputs and 64 outputs over one Cat 5e connection. This does require external Dante interfaces to be used.

The internal hard drives on most laptops are designed for energy conservation rather than streaming data performance. This trade-off suggests that for laptop recording, it is advisable to use an external hard drive with its own power supply and a drive that spins at least 7200 rpm. As the saying goes, "Your mileage may vary," and internal drives are capable of some amount of recording if necessary.

# Desktop Computers

Desktop computers offer a greater amount of processing power and disk capacity than laptops. For many users, a modern desktop is sufficient for just about all tasks in audio production. With modern processors having multiple cores and high-capacity SATA hard drives providing huge amounts of high-speed storage, the modern desktop computer has plenty of power to run Nuendo even in the most demanding situations, such as a feature film mix, which can contain hundreds of audio tracks.

## High Performance Graphics Cards

Since so much of our audio work is now handled visually, the GUI (graphic user interface) of Nuendo can get quite large if desired. The dedicated graphics processors in desktop computers handle these needs better than their laptop counterparts. It is quite common to see two or more monitors (computer screens) being used to display all the GUI elements of Nuendo. This can really help speed up workflow as you do not need to search through a bunch of stacked up windows to find what you need.

A typical setup might have the project window (the basic multi-track edit screen in Nuendo) on one monitor, with the mixer and transport controls on another. For Nuage, each Fader unit requires its own dedicated 24-inch monitor to display the channel strip information above each hardware fader. On a full-sized system, you will have a minimum of four monitors (one for each Fader unit, plus another above the Master unit).

An additional monitor could be dedicated to video playback when working to picture. This can be connected to a large flat screen TV in the front of the studio or a projection system for even larger images.

We are now up to five monitors for one computer! Only a high-performance graphics card can handle these demands without putting undue strain on the host processor. Yamaha has recommended video cards that are tested with the system. These and other recommendations can be found at: http://www.yamahaproaudio.com/global/en/products/daw_systems/nuage/lineup.jsp.

## Connectivity

Desktop computers offer more choices for connectivity to other devices, including PCIe cards, Thunderbolt, USB 3.0 and FireWire. Having more choices allows the use of the optimum connection for the activity you are doing most. For high-demand activities such as orchestral recording and film mixing, PCIe audio interfaces will offer better performance than USB 3.0 interfaces. Having the choice is easier with desktop computers.

## Ever-Changing Technology

Computer technology changes every day, so the choices you have for computers will also change. When configuring a system, it is wise to keep up to date on the latest technology to ensure you take advantage of advances in computer systems.

# Audio Interface

The two examples for audio interfaces that we will use in this course are the built-in audio of a standard laptop and a Dante network audio system used with Nuage. There are many other choices for audio interfaces between those two extremes. The best audio interface for your needs is determined by the type of recording you will be doing.

If you are recording many musicians simultaneously, a very high channel interface is the best choice. Conversely, if you will only record the voice with one microphone, a simple two-channel interface might be the best choice.

With Dante, you have greater flexibility regarding audio interfaces. For example, if you are recording large film scores, requiring many inputs for the orchestra, rhythm section, and additional soloists, you could use the Yamaha Rio3224-D as your Dante interface with 32 microphone preamps that you can control directly from the Nuage Fader units.

There are also 16 analog outputs that could be used to feed headphone amplifiers for the musicians. In the studio, you could have a Nuage I/O 16A for speaker monitoring in 5.1 surround plus other inputs such as the talkback microphone.

This entire system is connected by Gigabit Ethernet and Cat 5e cabling. With traditional systems, this complex setup would require a great deal of expensive cabling and hardware.

**Figure 1.1**
Yamaha
Rio3224-D

# Speaker Systems and Monitoring

Nuendo and Cubase both feature a separate mixer designed to operate speaker and headphones systems in the studio called the Control Room Mixer. The Nuage Master and Fader units both utilize this feature. You must consider all of the various speaker systems and headphone systems you will be using in the studio. When using the Control Room features, each speaker channel will need its own audio output from your interface.

For example, if you are mixing 5.1 surround sound, you will need at least six output channels from your audio interface to feed the six speakers and a 5.1 speaker system. If you are using multiple surround sound speaker systems you will need additional audio outputs to feed those speaker channels.

Additionally, each headphone amplifier requires two channels to output channels from your audio interface. When you total it all up, quite a few output channels might be necessary for a complex studio monitoring system.

❖ 5.1 main speaker system = 6 channels

❖ 5.1 auxiliary speakers = 6 channels

❖ Stereo speakers = 2 channel

❖ Engineer headphone amplifier = 2 channels

❖ Studio headphone amplifier = 2 channels

In this example, we will need 18 output channels to configure the Control Room in Nuendo.

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# Multiple Workstations

Nuage can control more than one DAW. In fact, the hardware units can control three different workstations on separate computers. The first workstation must be either Nuendo or Cubase. The second and third workstations can be either Nuendo, Cubase, or Avid Pro Tools. Complex studio configurations with multiple workstations can easily be configured together to work with Nuage as one system, total integration.



**Figure 1.2** Multiple Workstation Control of Nuendo, Cubase, and Pro Tools

These workstations must be connected over the same Gigabit Ethernet network as the Nuage hardware. The displays from each workstation can be routed to the monitors above each Nuage hardware unit and switched using a set of KVM switchers that are controlled by Nuage. Yamaha recommends the Gefen brand of KVM switchers that offer RS-232 control as shown in Figure 1.3.

The KVM switch will direct the mouse and keyboard to each workstation while also connecting the displays to the monitors above each Nuage hardware unit. Switching between workstations is as simple as pressing one button.



**Figure 1.3** Gefen 4x1 DVI KVM DL
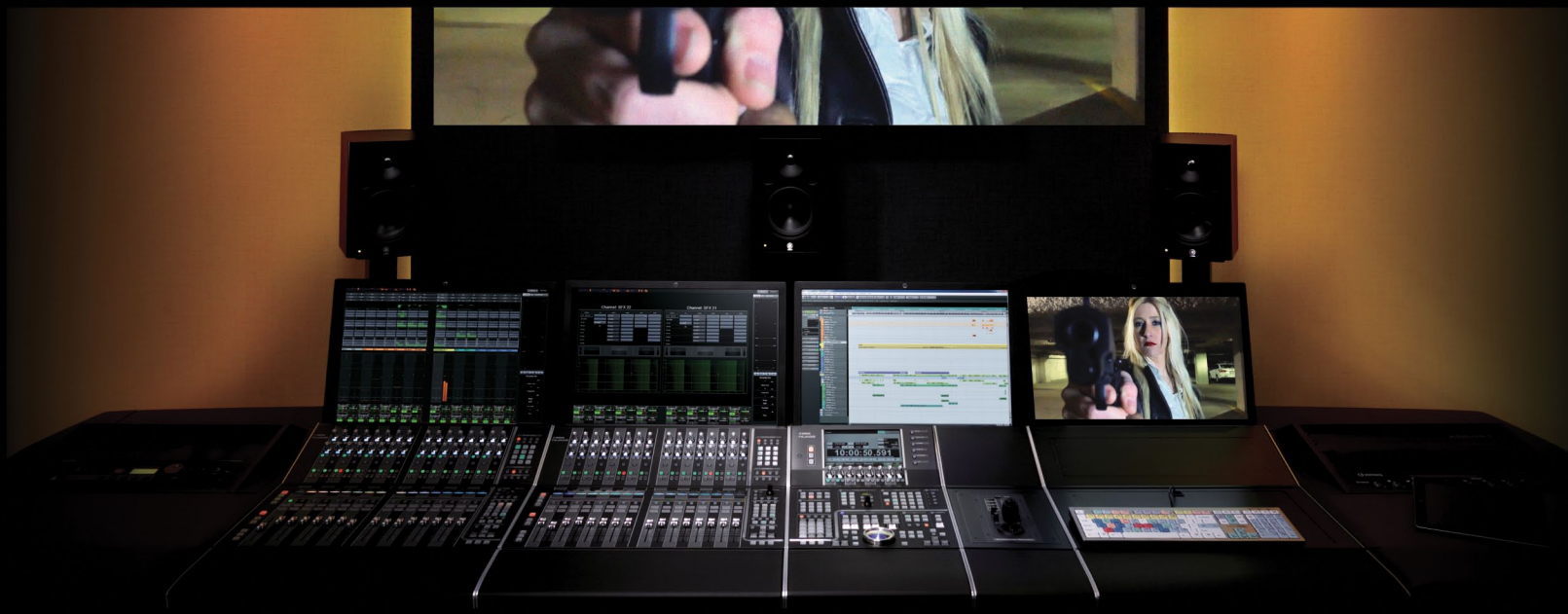
You will need one KVM switch to handle the main monitor, keyboard, and mouse plus one video switcher (Gefen 4x1 DVI DL) for each Fader unit in the Nuage system. These will be connected to the Nuage hardware units with RS-232 cabling in order for the switching to be controlled by Nuage.

Now that the planning has been done, it's time to install the hardware and software for the system and configure them to be ready for the first project.

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# NUAGE
## COURSEWARE

PART I: SETTING UP
by Ashley Shepherd

# Chapter 2
# Hardware Installation

**NUENDO** 7
Advanced Audio Post-Production System

**YAMAHA**

**CUBASE PRO** 8
Advanced Music Production System

# NUAGE

## Hardware Installation

- ❖ The Workstation Computer
- ❖ Dante Accelerator
- ❖ Gigabit Ethernet Managed Switch
- ❖ Interface ID Setting
- ❖ Connect it All Together
- ❖ Dante Secondary Port
- ❖ KVM and Monitor Switching

Here is a list of hardware that needs to be installed for the example Nuage system:

❖ Workstation computer

❖ Dante accelerator card (PCIe)

❖ Nuage Master unit

❖ Nuage Fader unit

❖ Gigabit Ethernet managed switch

❖ Nuage I/O 16A

❖ Rio3224-D

❖ KVM and video switchers

# The Workstation Computer

Depending on what type of computer you're using, its installation could be fairly complex or quite simple. For a Nuage system, the main piece of equipment that is necessary is the high-performance graphics card. Ensure that this graphics card is properly installed according to the manufacture's instructions.

Additionally, you will need to have one 24-inch monitor for each of the Nuage hardware controllers. These should be connected and operational before proceeding.

## Install Hard Drives

Depending on your system configuration, you may need to install internal hard drives for audio recording, video, and sample library storage. For laptop systems, these may be external drives. Here are some guidelines for hard drives:

❖ Use drives with speeds of 7200 rpm or greater.

❖ Have separate physical drives for audio recording, video files, sample libraries and backups.

❖ For most applications, the SATA interface is sufficient. For huge track counts (+250) and moderate track counts at higher sample rates (+100 @ 96kHz) it might be necessary to go to a RAID array for greater disk throughput.

❖ Use more drives with less space per drive rather than one larger drive. One terabyte per drive is a good size. Larger drives can exhibit performance issues once they get over 50% full depending on their physical platter and head design.

❖ Have duplicates of each drive for backups. Hard drives are cheap. Re-doing work due to a hard drive failure without a backup is much more expensive.

❖ Keep a spare unused drive around for emergencies.

### DISK DOCKING STATION

With several internal hard drives and then duplicates for backups, the number of hard drives one needs to deal with grows every year. One item I have found extremely handy in dealing with so many hard drives is a disk docking station. These units (one shown below) usually have one or two slots in which you can insert a SATA hard drive. They can have USB 3.0, FireWire and/or eSATA interface connections on them to use with your computer. It is possible to "hot swap" drives in and out of the bays without shutting down your computer. This also eliminates the need to temporarily install hard drives in your computer just to see what's on them. Your costs go down since you do not need to buy an external enclosure for each drive.

Some units can also accommodate the smaller 2.5" drives used in laptops such as the one shown in Figure 2.1. For backup drives, this is a very handy tool. When used with good backup software, these docking stations can make life much easier when dealing with many different hard drives. Using the eSATA interface, any hard drive in the docking station will perform just as well as an internal drive, allowing you to record audio directly to them.



**Figure 2.1**
Hard drive caddy

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## BACK UP YOUR SYSTEM

This point in the installation is where you have the most stability with the hardware you have installed in your system. Creating a backup here ensures you have a stable system to revert to in case of problems in the future. Most system instability problems are due to the interaction between various plug-ins and Nuendo. If a serious system stability problem occurs that cannot be solved otherwise, revert to this system backup to regain stability. You may then add plug-ins one by one to see where the problem lies.

# Dante Accelerator

In order to achieve the highest audio performance from the Dante network you will need to install the Dante accelerator PCIe card into the workstation computer as shown in Figure 2.2. Once installed, you'll have access to 128 inputs and 128 outputs from the workstation to the Dante audio network.

1. Physically install the card in an available PCIe slot in the workstation. For both Windows and Mac Pro workstations, install the card into a slot that is a x4 lane or faster slot. For a Mac Pro, the Dante Accelerator must be installed in Slot 2 (right above the one for the graphic card).

2. Install the driver for the card by following the instructions from the software package.
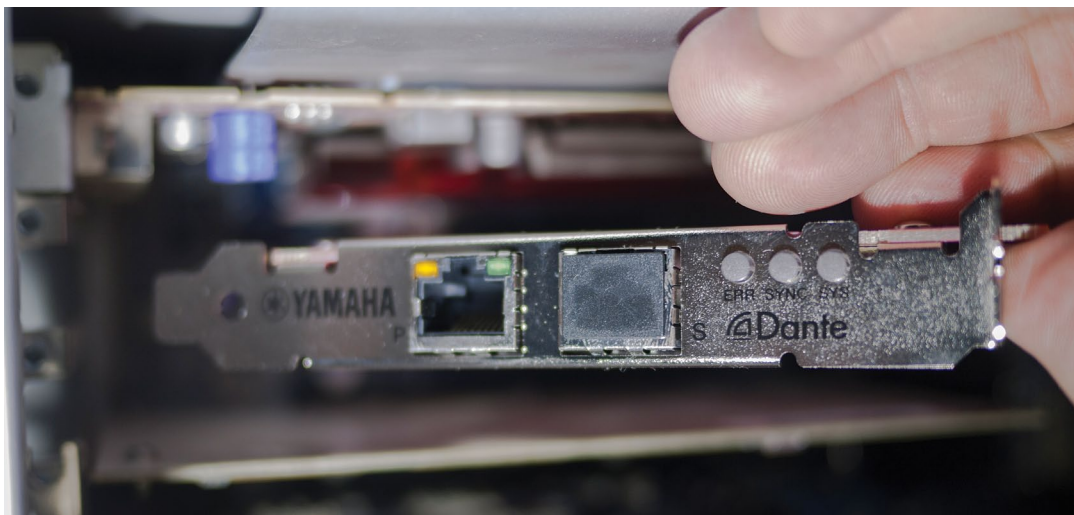


**Figure 2.2**
AIC-128 Dante Accelerator PCIe card being inserted

# Gigabit Ethernet Managed Switch

Dante will run over 100 base T Ethernet networks but it is preferred always to run Dante in a gigabit Ethernet environment. Any gigabit switch will work, but for larger systems, such as a big Nuage system, an "enterprise level" or "managed switch" is preferred.

Managed switches provide QoS (Quality of Service) features. There is a key setting that is part of the QoS features that will improve the performance of Dante. DSCP(DiffServ Code Point) should be set on the switch. It can be referred to as the "trust mode" of QoS or port priority.

Most managed switches are programmed by using a web interface from a computer connected to the switch. Follow the instructions for your gigabit switch in order to configure the DSCP parameters for QoS.



**Figure 2.3**
Linksys managed switch

# Interface ID Setting

Each interface in the Dante network needs to be uniquely identified. This is achieved through the use of ID settings. On the back of each Dante interface there's a rotary switch used to set this ID, as shown in Figure 2.4. You should set the ID numbers such that the first interface with the lowest ID number is the first interface you want to see listed in the Dante controller.

For our example there are two interfaces, the Rio3224-D and the Nuage I/O 16A. Since I want to see the Nuage I/O first, I will set its ID to 1 and then set the Rio interface to number 2. Only the interface boxes have ID numbers. The rest of the system is self-identifying.

You can have up to eight interfaces in a single Nuage workgroup for a total of 128 channels.

**Figure 2.4**
Rotary switch
for device ID

# Connect it All Together

Now it's time to connect all the devices together. This is the simplest part. Everything is con-
nected to the Ethernet switch. The Nuage Master and Fader units have Ethernet ports on the
rear panel. The audio interfaces each have an Ethernet port. Connect each of these ports to
the gigabit switch such as the one in Figure 2.5.



**Figure 2.5**
Connecting the
Nuage system
to a Gigabit
Switch

However, the workstation computer requires two connections to the gigabit switch, one from the Dante accelerator card and the second from the normal network connection on the computer. The second connection is what allows the control surfaces to communicate with Nuendo.

# Dante Secondary Port

Each Dante device in the Nuage system has two Ethernet ports: Primary and Secondary. The primary port can be used by itself as described in the previous section. The secondary port can be used in one of two ways: in a daisy chain system or as a redundant backup system. Both configurations are best suited for live situations. They will be briefly discussed here.

## Daisy Chain

Yamaha consoles and stage interfaces support a daisy chain mode. No Ethernet switch is required for this configuration and it is most useful where cable runs prevent reaching each device from a central location.

This mode uses the secondary port to carry Dante signals to the next connected device in the chain. The last device will only have the primary port connected, as shown in Figure 2.6. The network is set up automatically but each device in the chain must be set to daisy chain mode.
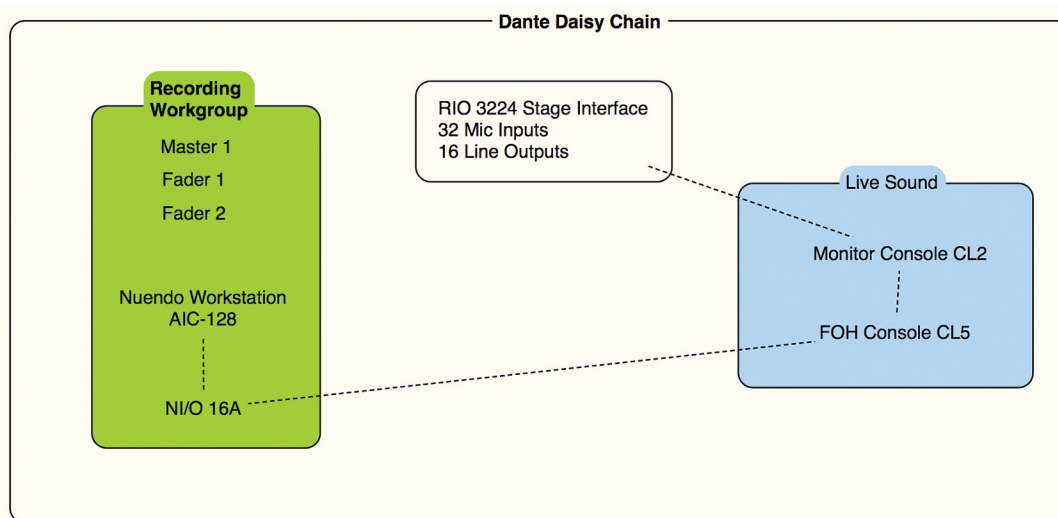


**Figure 2.6**
Dante daisy chain mode

## AIC-128 SECONDARY PORT

Note that the secondary port on the AIC-128 cannot be used to daisy chain devices. It must be the last device in the chain.

The Nuage I/O's have DIP switches on the rear panel to switch the secondary ports between redundant and daisy chain, as seen in Figure 2.4. For normal operation using a network switch, leave this set to redundant.

# Dante Redundant Network

It is possible to set up a secondary Dante network for fail-safe operation. In case of a cable or network switch failure, the secondary network will take over instantly so that no audio samples are lost. Figure 2.7 shows how a secondary network could be set up for Nuage in a live event situation.

The two Dante networks should not be connected directly. The switches need to operate completely independent of each other to ensure fail safe operation.
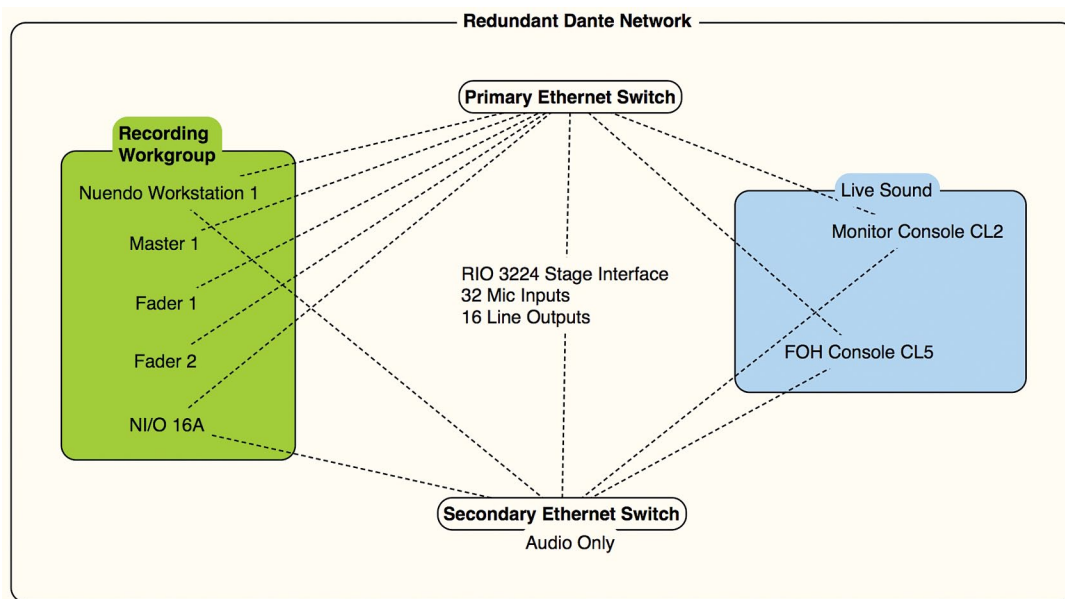


**Figure 2.7**
Dante redundant secondary network configuration

# KVM and Monitor Switching

If you are going to use Nuage with multiple workstations, you will need to connect each workstation to the KVM and video switchers. Then the KVM and video switchers are connected to the displays above each hardware unit along with the keyboard and mouse.

Each switcher is also connected to the Nuage hardware units by a RS-232 serial cable, allowing the Nuage hardware to control the switching. Figure 2.8 shows a diagram of how this is set up.

## Video Connections

❖ Connect the main workstation's first display output to the first input of the KVM switch.

❖ Connect the first display output of the secondary workstation to the second input of the KVM switch.

❖ The video output of the KVM switch is then connected to the main display positioned above the Nuage Master unit.

❖ Connect the second display output of the main workstation to the first input of the video switcher.

❖ Connect the second display output of the secondary workstation to the second input of the video switcher.

❖ Connect the output of the video switcher to the secondary display positioned above the Nuage Fader unit.

Now when both switchers change from the main workstation to the secondary, the displays will show the secondary workstation screens.

HP Z800
Workstation #1
Nuendo, Cubase

Mac Pro
Workstation #2
Nuendo, Cubase, Pro Tools

DVI

DVI Splitter

DVI

Main Display

DVI Switch

KVM Switch

USB

Z24i IPS Display

Z24i IPS Display

Second Display

Main Display

RS-232
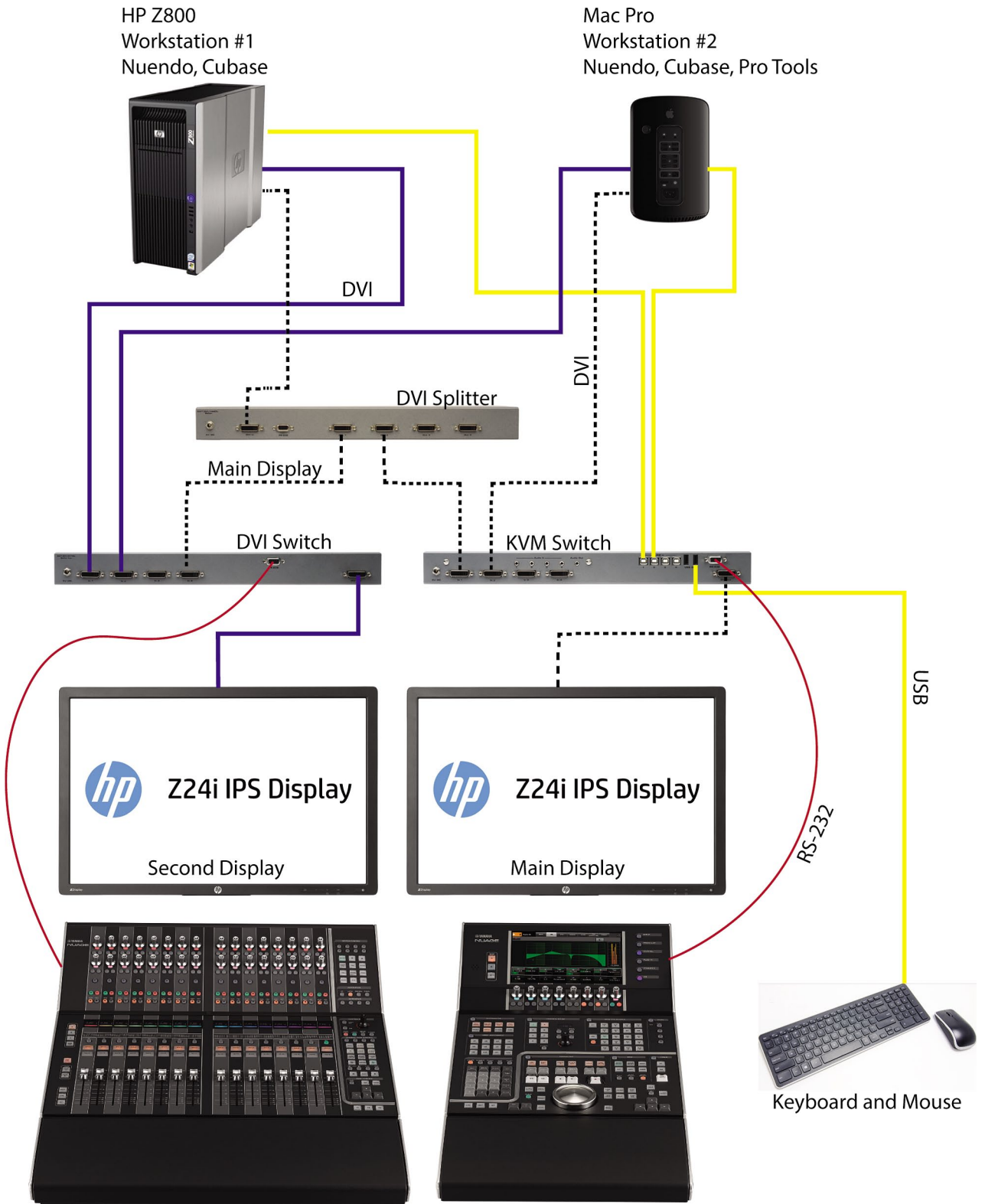
Keyboard and Mouse

**Figure 2.8** KVM and monitor switching diagram

# USB Connections

❖ Connect the keyboard and mouse to the USB ouputs of the KVM switcher.

❖ Connect the first USB input of the KVM to a USB port on the main workstation.

❖ Connect the second USB input of the KVM to a USB port on the secondary workstation.

Now when the KVM is switched to the secondary workstation, the keyboard and mouse will be directed to that computer.

# RS-232 Connections

Using DB9 cabling, connect the RS-232 output of the Nuage Master unit to the RS-232 input of the KVM switch. Also connect the RS-232 output of the Nuage fader unit to the RS-232 input of the video switcher. This allows the Nuage hardware units to operate the KVM and video switchers, making workstation switching happen with the touch of a button.

# Video Splitter

The use of a video splitter facilitates the display of the main screen (the one for the Master unit) on any other display monitor in the Nuage system. By splitting the main display signal and routing it to other inputs of the video switcher, the secondary display can also show the main screen. The permutations of these configurations are specific to the needs of each facility.

The Nuage Workgroup Manager is designed to manage how the KVM and video switchers are controlled. This depends on the specific configuration. For the purposes here, this will be limited to a primary and secondary workstation.

Now that all the connections have been made, its time to install and configure the software.

**NUAGE**
**Yamaha & Steinberg**
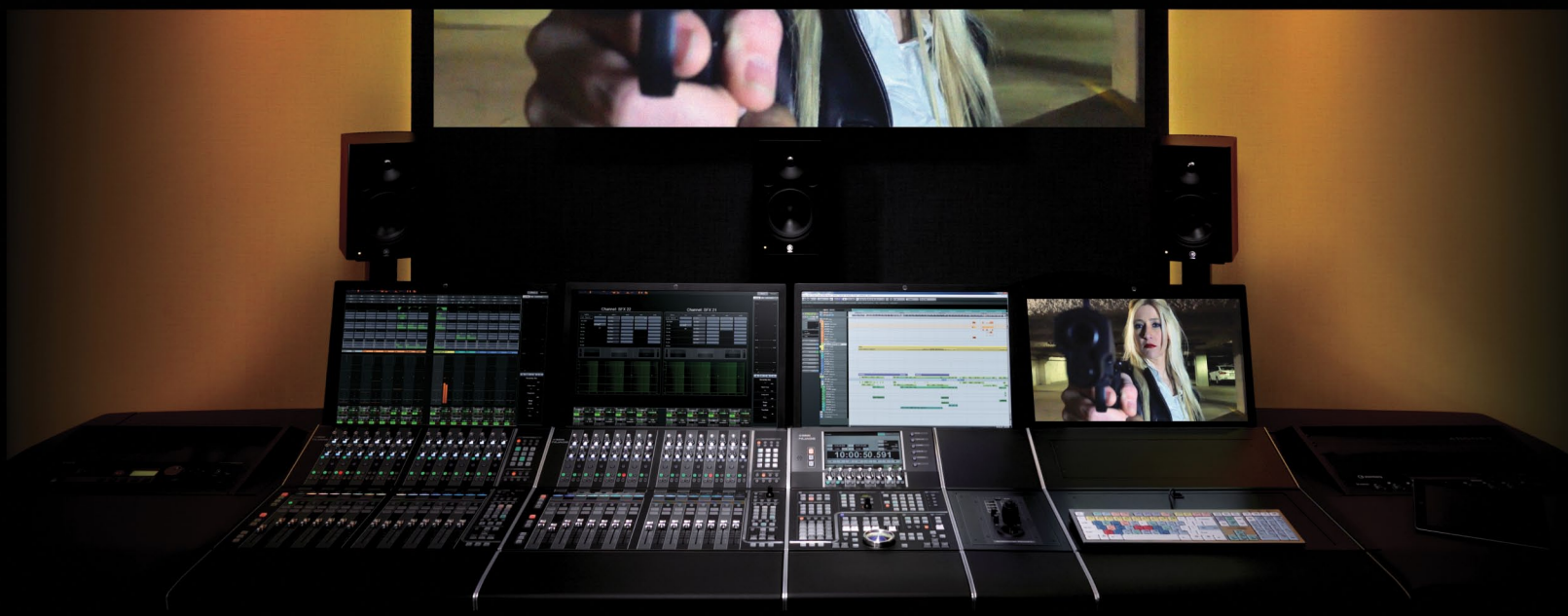
# NUAGE
## COURSEWARE



PART I: SETTING UP
by Ashley Shepherd

# Chapter 3
# Software Installation

NUENDO 7
Advanced Audio Post-Production System

✦ YAMAHA

CUBASE PRO 8
Advanced Music Production System

# NUAGE

## Software Installation

- ❖ Install Nuendo (or Cubase)
- ❖ Install Tools for Nuage
- ❖ Dante Network
- ❖ Install Dante Virtual Soundcard (DVS)
- ❖ After Configuration
- ❖ Yamaha Nuage Installation Guides

The Nuage system requires several pieces of software in order to run:

❖ Nuendo (or Cubase) 6 or later

❖ Tools for Nuage (The Workgroup Manager and drivers)

❖ Dante Controller (for administering the Dante network)

❖ Dante PCIe accelerator driver (installed with the hardware)

❖ Apple QuickTime (for video playback)

❖ Dante Virtual Soundcard (for laptops and other computers on the Dante network)

Beyond that, there may be third-party plug-ins that have to be installed, virtual instruments (VSTi), DSP accelerators, MIDI interfaces, or other hardware drivers. Save these for later, after the system is up and running.

# Install Nuendo (or Cubase)

To install Nuendo, simply follow the instructions that come with the installer package or DVDs. If you are installing the student version of either Nuendo or Cubase, the process is still the same. You may also need a USB-eLicensor to operate the software once installed. Please follow the instructions that came with your installer package.

## 32-bit and 64-bit Versions of Nuendo

You may have the choice of installing the 32-bit or 64-bit version of Nuendo. There are only some situations where the 32-bit version is necessary. The operating system, drivers, and plug-ins all need to be 64-bit in order to work together. With a new system and up-to-date software, there should be no need to work in 32-bit.
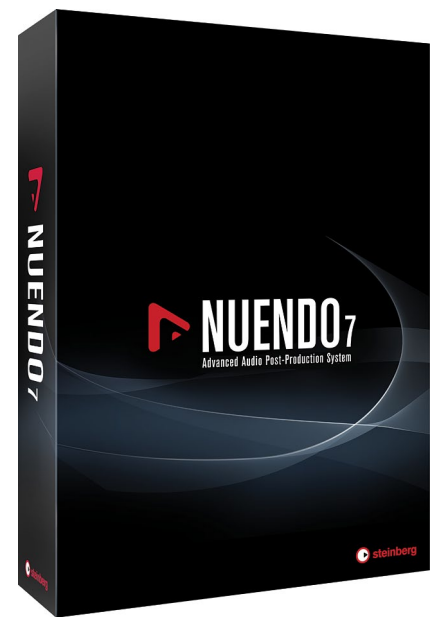
**Figure 3.1** Nuendo 7 Installer Package

The 64-bit version of Nuendo is capable of addressing much more memory than the 32-bit version. This is very helpful to those who use large VSTi sample libraries. Many sample-based VSTi's pre-load portions of their sample data into memory for faster access. This eats up memory. Having 64-bit access to memory solves this problem by giving you access to a much larger amount of memory (RAM).

Also, users in the feature film post-production world can have projects in excess of 400 tracks. Add to that external control surface usage and a pile of editing and you can chew through memory fast. This type of use will also benefit from the 64-bit version of Nuendo.

---

### 32-BIT OR 64-BIT?

Understand that the 64-bit version of Nuendo does not sound or operate any differently than the 32-bit version. The only difference is in how much computer memory the application can access. The audio engine uses a 32-bit floating-point audio signal format that should not be confused with 32-bit memory addressing from Windows XP and older versions of OS X (pre-Snow Leopard).

This is also true for other audio hardware and third party plug-ins being used in conjunction with 64-bit Nuendo. The plug-ins and drivers for audio interfaces, PCI cards, and DSP accelerators must also be 64-bit even if the audio they process is 32-bit floating-point.

---

# NEK (Nuendo Expansion Kit)

Nuendo's NEK package installs additional items that are primarily designed for music production. They include additional VSTi's, music notation features, and added MIDI features. While these are intended for music production, they may also find use in a sound design role. For example, the Padshop VSTi is very well suited to creating background ambiences using granular synthesis.

In order to have access to these advanced music production tools, you must install Nuendo and the NEK package separately. Please follow the included instructions with the install package.

# Install Tools for Nuage

Tools for Nuage is the software package that installs the Workgroup Manager and drivers for the Nuage control surfaces. Follow the instructions with the latest version of the installer package. It can be found at: http://www.yamahaproaudio.com/global/en/products/daw_systems/nuage/downloads.jsp

There are three tools in the installer:

❖ Workgroup Manager (required on primary workstation)

❖ Nuage Extension (required on all workstations)

❖ PT Bridge (required on workstations using Nuage with Pro Tools)

## Nuage Extension and PT Bridge

Each workstation requires either the Nuage Extension or the PT Bridge in order to be part of the Nuage system. The PT Bridge only needs to be installed on computers that are running Pro Tools that you wish to control using Nuage. Nuage can control up to three workstations at once. For example, the main workstation would have Nuendo installed along with the Workgroup Manager and Nuage Extension. A second workstation could have Cubase installed along with the Nuage Extension. A third workstation could have Pro Tools installed along with the PT Bridge. Once each workstation has been configured, all three can be controlled from the Nuage hardware units.

## Audio Routing

The hardware control of Nuage is independent of the audio routing. If you are working with multiple workstations, audio routing must be correct in order to hear each workstation in the Control Room of the main Nuendo workstation.

Once the Tools for Nuage package is installed, you should have a new icon in the system tray (Windows) or in the menu bar of OS X as shown in Figure 3.2. This is how you can access the Workgroup Manager.
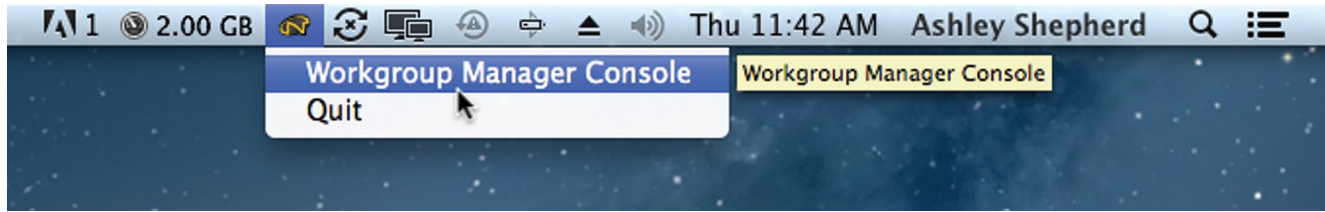
**Figure 3.2** Nuage Workgroup Manager icon

# Dante Network

The Dante network requires installation of devices, controller software and, optionally, the Dante Virtual Soundcard in computers that have no sound card.

## Install Dante Controller

The Dante Controller allows you to configure the Dante network, including clock settings, audio patching, and the naming of devices and pathways in the system. The latest version can be found at: www.audinate.com.

This piece of software can be installed on any computer connected to the same network as the Dante devices. You can control the Dante network from any computer, including one that does not play any audio role in the system. Normally, the Dante Controller would be installed on the main workstation computer for convenience.

## Yamaha AIC128-D PCIe Card

The AIC128-D PCIe card is a high-performance, low-latency Dante sound card for the workstation, providing 128 channels in and 128 channels out to the computer. Install the appropriate driver for the operating system of the main workstation (Windows or OS X).

# Install Dante Virtual Soundcard (DVS)

For laptop users who plan to work within the Dante network, you will need to install Dante Virtual Soundcard driver. This allows for 64 inputs and 64 outputs from the laptop's Gigabit Ethernet connection. The Virtual Soundcard acts like another audio interface in the system. It will be available as another ASIO driver for Nuendo. Visit www.audinate.com to get the DVS driver software.

When not connected to the Dante network, you will be able to switch back to the built-in audio of the laptop to work using headphones or other speakers. You can quickly switch to the Dante Virtual Soundcard when connected back to the Dante network in order to hear your workstation in the Nuage system.

| DANTE AND PRO TOOLS |
| --- |
| Dante Virtual Soundcard is compatible with Pro Tools (non-HD). If you are running a workstation with Pro Tools and the PT Bridge in Nuage, you can use the Dante network to route audio signals from Pro Tools into the main Nuendo workstation via the Control Room or to audio tracks within the Nuendo Project. For Pro Tools HD, you must connect the Avid interfaces to the Nuage I/O in order to monitor the Pro Tools system in Nuage. |

Now you are ready to configure the Nuage system. There might be other pieces of software such as third-party plug-ins and additional drivers that you desire but it is recommended that you first configure the whole system and ensure that everything is working properly at this stage before adding more software. This is a perfect time to back up the entire system.

# After Configuration

Once Nuage has been initially configured, you can continue to add plug-ins and other hardware drivers to the system as your needs require. Before doing this you should back up the system. This ensures that if there is a problem with any additional driver, you can always revert back to this stage.

## Install Hardware Drivers

Install all the hardware devices that you will use in your system. This includes MIDI interfaces, video cards, USB keyboards/controllers, DSP accelerators (UAD, Waves SoundGrid, etc.) This step includes installing drivers for video cards, especially HD video cards used for dedicated video playback such as a Blackmagic Design DeckLink.

| INSTALL MOTHERBOARD DRIVERS FIRST |
| --- |
| For Windows users, the latest motherboard drivers should be installed first, as these affect the basic performance of the computer and need to be in place before installing any other drivers. |

## Install Third Party Plug-ins

Now you should install any third-party plug-ins you know to be stable and that you plan to use often. Refrain from installing any demos or unknown plug-ins at this stage so that you can establish a very stable system to start out with. Once you have confirmed that the system is stable and created a backup, then you can experiment with demos of new plug-ins and ones by lesser-known creators.

Back up your system yet again.

| DATA SECURITY |
| --- |
| The creation of these incremental system backups is useful when the computer is being used only for audio work. If you revert to a previously backed up system image, all other data will be lost. If you have email, photos or any other data on your system drive, they will be removed if you revert to a previous backup disk image. |
| It is advisable to keep all other files on a separate drive so that the system drive can be wiped without any critical loss of data. In a professional environment, down time due to technical issues costs money and that is why the DAW computer should really be a dedicated system that does not perform any other duties. |

# Yamaha Nuage Installation Guides
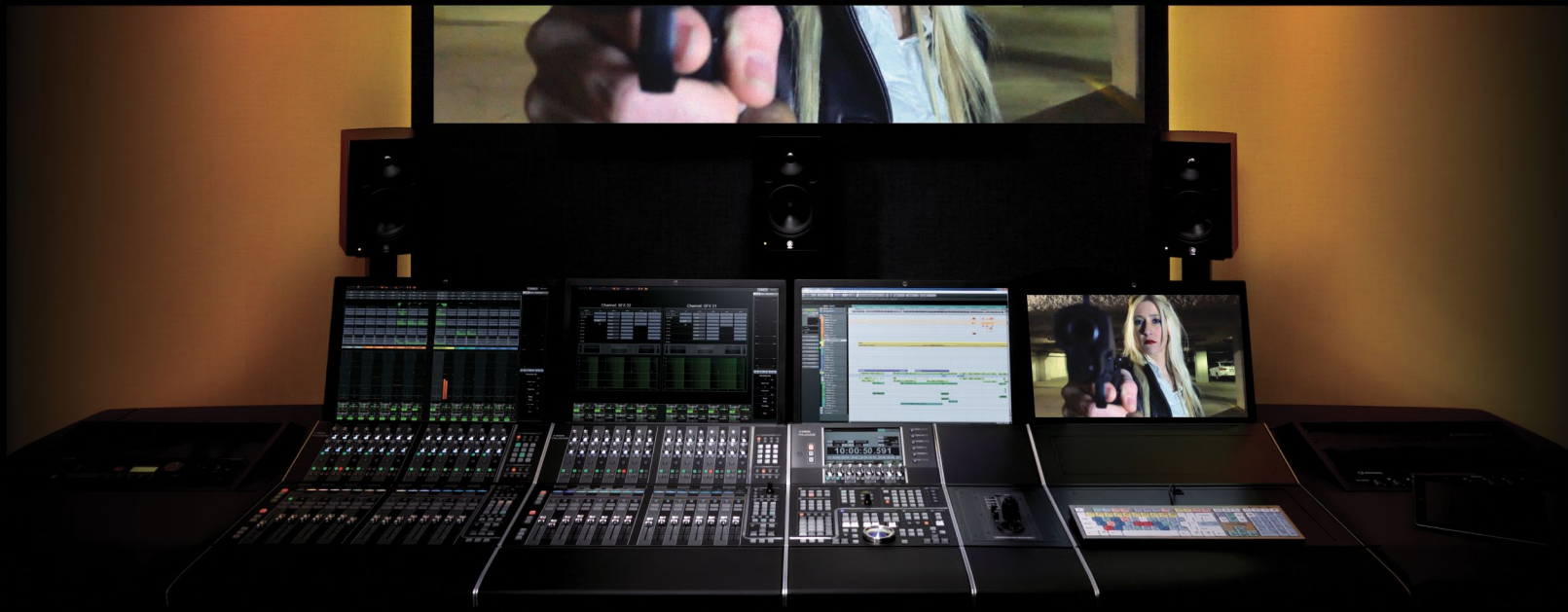
Yamaha provides additional installation guides online at:

http://www.yamahaproaudio.com/global/en/products/daw_systems/nuage/downloads.jsp

Look at the bottom of the page for the installation guides. These guides have up-to-date information on the latest versions of drivers and installation packages. Refer to them for more details.

NUAGE
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# NUAGE

## COURSEWARE

PART I: SETTING UP

by Ashley Shepherd

# Chapter 4
# Software Configuration

**NUENDO** 7
Advanced Audio Post-Production System

🎵 **YAMAHA**

**CUBASE PRO** 8
Advanced Music Production System

# NUAGE

## Software Configuration

- ❖ eLicenser Control Center (eLCC)
- ❖ Nuendo First Launch
- ❖ Nuendo Basic Configuration
- ❖ VST Connections
- ❖ MIDI Connections

Since the Nuage system uses several pieces of software working together, each piece requires basic settings in order to operate. Let's begin configuring the pieces of software to work together properly.

# eLicenser Control Center (eLCC)

The first thing to do is to ensure that we have the proper license for Nuendo. The eLicenser Control Center or eLCC application was installed during the Nuendo installation process. Open it now. Nuendo and Cubase both use a USB dongle to authorize the program. The eLicenser Control Center application manages the licenses that are contained in the dongle.

## Synchronization and Maintenance

The first thing that pops up is the online synchronization and maintenance window. Click to perform maintenance tasks as this will update eLCC with all the latest information about license codes and usage periods for your license. If you haven't done so already, insert the license dongle into an available USB port on the workstation computer. It will be detected by eLCC and the available licenses will be displayed.

## Add License Code

From the Actions menu, choose Enter Activation Code and enter your 16-character activation code that came with the installation package. Once you enter this code, eLCC will activate the license on your dongle. Now you will be able to open Nuendo.

## Validate Usage Periods

If you are using a time-limited license, you will need to validate the usage period before the license will work. Choose this option from the Actions menu. Once the usage period has been verified, you can then start the usage period to begin using your license.

If you have any other licenses that operate with the eLicenser dongle, you may enter them now to have them ready.

# Nuendo First Launch

When you launch Nuendo for the first time you will see the splash screen go through the list of plug-ins and other components including the Nuage extension.

You might be asked what audio driver to use. Choose the Dante Accelerator card. On a laptop, there might not be any choice at all and this pop-up will be skipped. That's all you need to do for now.



**Figure 4.1**
Nuendo 7
Launch screen

## Nuage Workgroup Manager Configuration

Now that you've launched Nuendo, it's possible to configure your Nuage Workgroup.

From the system tray or menu bar, open the Nuage Workgroup Manager Console. The interface consists of an upper window (Workgroup) and a lower window (Device/DAW List), a few menu items and two arrow buttons in the middle. The upper window should be empty at this point. This is where you will build your workgroup.

The lower window should be populated with all the devices in the network that are available as elements of a Nuage workgroup. In our example, there should be the following:

❖ Nuage Fader

❖ Nuage Master

❖ Nuendo DAW

❖ Nuage I/O 16A

NUAGE
Yamaha & Steinberg
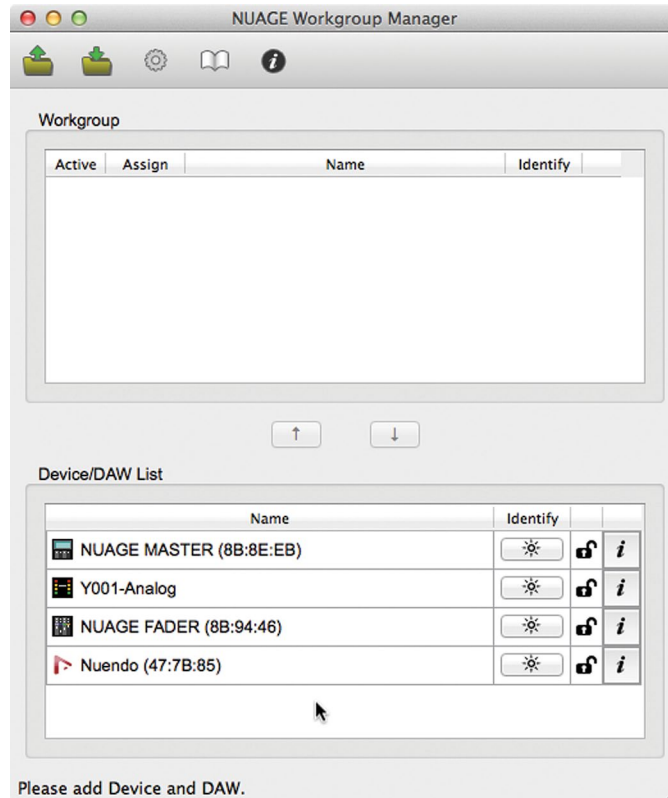
**Figure 4.2**
The Nuage Workgroup Manager

There can be many Nuage-compatible hardware devices and DAWs on the same physical Ethernet network. It's possible to have multiple Nuage workgroups also contained on that same physical Ethernet network. The Workgroup Manager console allows you to choose just the devices you need for your Nuage system and add them to your workgroup.

Other users in the network can create additional workgroups that will not interfere with yours. Any multi-room studio facility will find this capability valuable, allowing studios to share equipment, such as audio interfaces and even DAW workstations, between multiple rooms without physically moving the equipment itself.

## Identifying Components

The Workgroup Manager Console can identify components in the system by flashing lights on the hardware units. Simply press the Identify button for the corresponding component to initiate flashing lights.

When there is more than one audio interface or fader unit, unique identification is necessary. Fader units, DAWs and audio interfaces are listed in a specific order within Nuage. This is necessary for their channel order to be presented to you in the proper sequence in Nuendo.

## Add Components to the Workgroup

In order to add a component to the workgroup, select it in the Device/DAW List and then press the up arrow. Now the component will appear in the workgroup window. Continue adding components until your workgroup is complete.

<div style="border:1px solid red">

### ADD FADER UNITS IN ORDER

Fader units need to be added in the order that they are placed physically in the studio from left to right. This ensures that the channel layout from Nuendo will be displayed properly from left to right across all the fader units in your workgroup. The first fader unit added to the workgroup should be the leftmost unit physically.

</div>

Once your workgroup is complete, you may save the configuration using the Save folder icon in the upper left. You can also load a preset configuration in the same manner.

## Firmware Updates

From time to time it may be necessary to update the firmware of devices in your workgroup. The Fader units, Master unit, and audio interfaces all have updatable firmware.

Pressing the 'i' button for any device will open the properties window shown in Figure 4.3. The properties window will display the name, version number, and MAC address for the selected device.
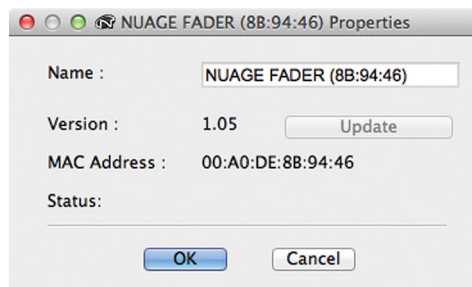


**Figure 4.3**
Nuage Fader
unit Properties

In order to update the firmware, press Update. You will then be prompted to find the firmware file for this device. Once it is located, you can execute the firmware update process. During the update, ensure that power is not interrupted for either the workstation or the device itself! This can cause permanent damage to the device.

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## Naming Devices

While you have the properties window open, you may create a custom name for that device so it is more easily identifiable within your network. Simply alter the name in the name field and press OK to rename the device.

## Audio Interface Calibration

When you open the properties window for an audio interface, you will be presented with more options. These include analog level calibrations for all inputs and outputs. This will allow you to precisely calibrate the analog levels of your interface to the electrical requirements of your other studio equipment.

## External Word Clock Sources

The audio interfaces are capable of utilizing external word clock source from the BNC connector on the rear. By default, the work clock source is set to Dante. You may choose BNC in from the pull-down menu to switch to an external work clock.

## Workgroups Sharing a Single Dante Network

Understand that the workgroup and Dante networks are separate but related systems. Several devices may be together on the Dante audio network, but in separate Nuage workgroups as seen in Figure 4.4. This could be the case in a multi-room facility with shared Nuage devices.

Any audio interface on the Dante network must use the same master clock setting. For example, if two studios are sharing audio interfaces on the same Dante network, they must also run at the same sampling frequency, 44.1, 48, etc. If they need to be independent, then the Ethernet networks must be separated physically or logically by VLAN.
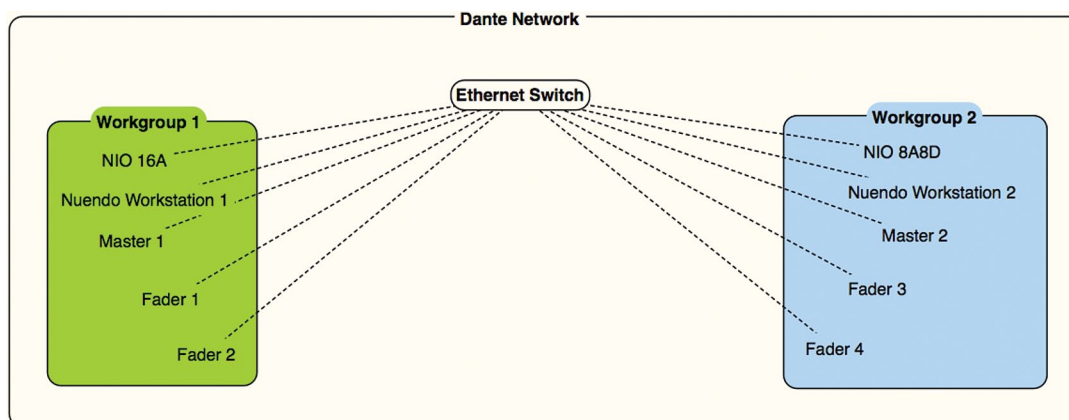


**Figure 4.4**
Two workgroups sharing a single Dante network

If they can use the same master clock setting, then it is easy to share devices between work-groups. The A studio could be using the first audio interface and the B studio could be using the second. They could even split channels of the same audio interface between them as Dante allows for single channel routings.

A good example of this would be in a live event scenario where Dante devices are being shared between the FOH and monitor consoles while Nuage is recording the event and creating broadcast feeds as shown in Figure 4.5. The stage audio interfaces must be shared by the consoles and Nuage. This is possible even if the audio interfaces are not part of the Nuage workgroup.

One thing to note here is that equipment that is on the same Dante audio network as the Nuage system will not necessarily be able to be part of a Nuage workgroup. In this example, the Rio3224-D will be used as an audio source for Nuage but will not be part of the Nuage workgroup.
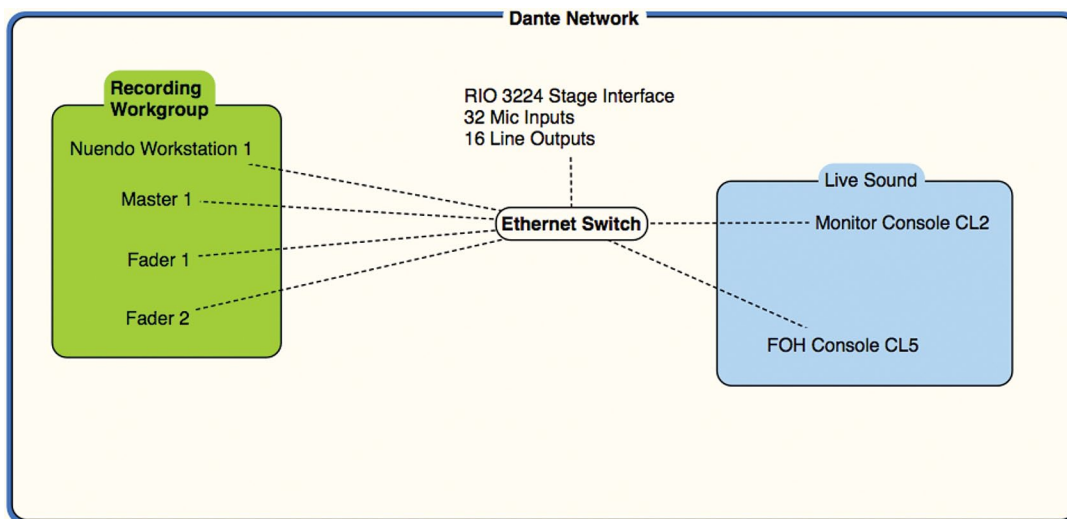


**Figure 4.5**
Live Event network diagram

# Dante Network Configuration

This leads us to the Dante network configuration. The Dante Controller is the piece of software that allows you to change all the routings and clock settings for all the devices in your Dante network. When you first launch the Dante Controller, all of the Dante enabled devices in the Ethernet network (or VLAN) will be discovered and listed in the network view.
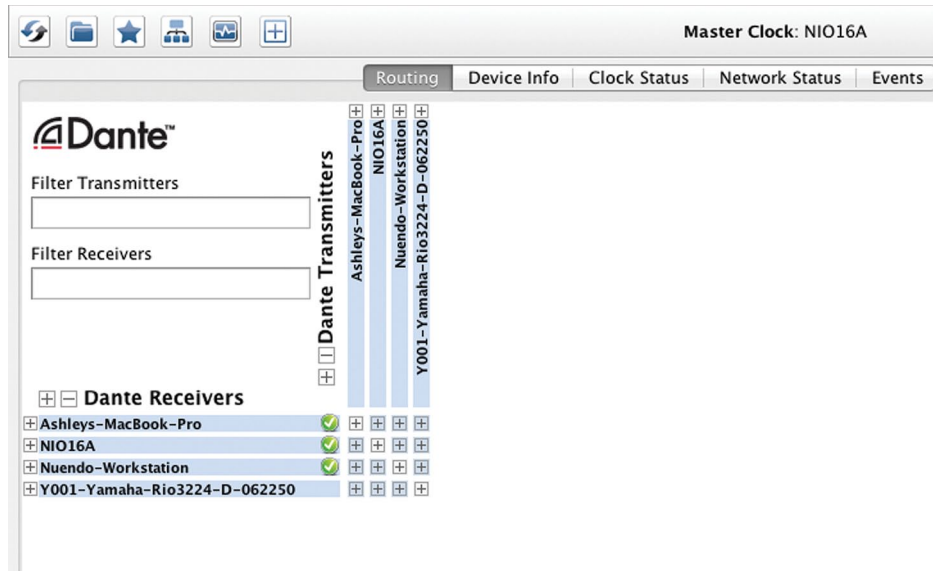
**Figure 4.6**
Dante
Controller
Routing View

By default, you are shown the routing tab shown in Figure 4.6. Here you will be able to see all of the audio connections between various devices and alter, delete, or add them as necessary. In this example, I have a Nuendo workstation, Nuage I/O 16A interface, Rio3224-D, and my laptop with the Dante Virtual Soundcard driver.

Along the top row you see the Dante transmitters. These can be considered audio outputs from each device. Along the left column, you see Dante receivers, which can be considered audio inputs to the various devices. In order to view the individual connections, open one of the tabs by clicking a plus (+) sign. Doing so will reveal the individual connections for that device.

In Figure 4.7 you can see the transmitter tab for the Nuendo workstation has been opened up along with the receiver tab for the Nuage I/O 16A. The Nuendo workstation transmitters will eventually be connected to the first eight receivers of the I/O. These connections will be used to feed audio to the speaker systems in the studio. But first, before we connect any audio channels, we need to ensure that the audio clock settings are correct.

## Dante Clocking

It's imperative in any digital audio system to have one clock source that determines the speed at which samples of audio are played and recorded. This is commonly referred to as the word clock. In Dante, the word clock is transmitted over the same Ethernet connections as audio signals.
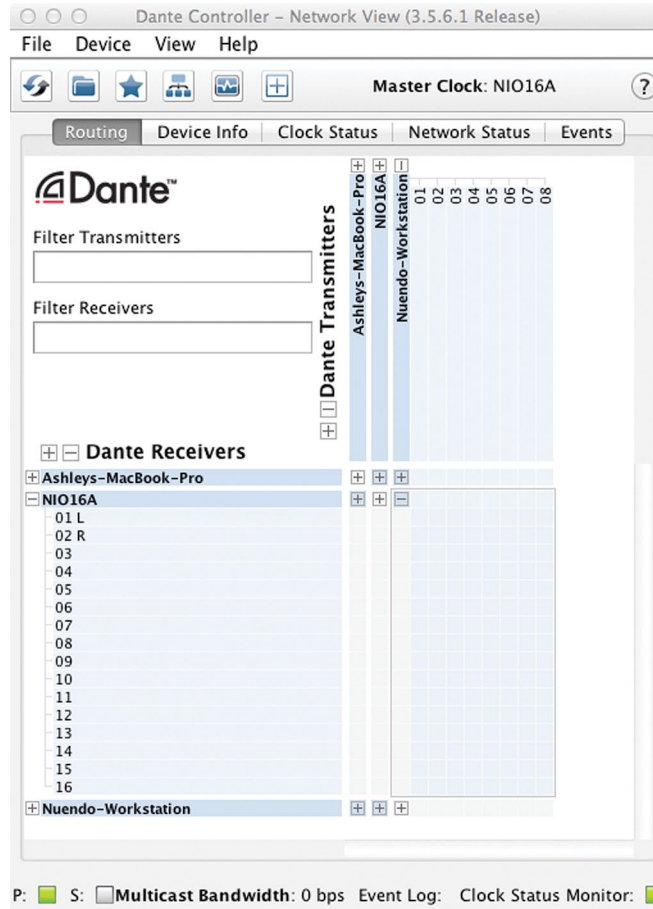
**Figure 4.7**
Dante with the Nuendo Workstation and NIO opened up

This makes it very convenient when connecting multiple devices together. There's no need for additional cabling in order to ensure proper clock. You must, however, choose a device to be the master clock source for the entire Dante system. This is done in the Dante Controller software under the clock status tab.

The clock status tab shown in Figure 4.8 displays information relating to clock sources, primary and secondary networks, preferred devices, and external clocks. To begin with, there are several status indicators that should be green if the system is working correctly.

In the lower left corner, there are two indicators for the primary and secondary networks. Dante can have two independent physical networks for redundancy. If the primary network should fail, the secondary will take over at the next sample to prevent any interruption of the audio. This fail-safe is a must for live events where audio interruptions are unacceptable. In our example, there is only one network.

For each device in the system, there is a sync indicator to show that it is receiving proper clock. Then the clock source is shown, which in most cases should be Dante. Sometimes
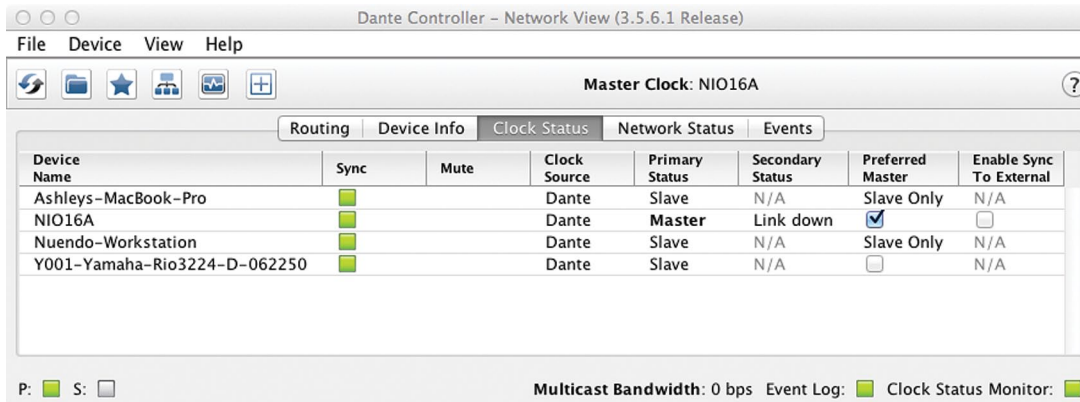
**Figure 4.8**
Clock Status
Tab

devices may need to use an external word clock source to integrate with other systems. If this is the case, the device using external work clock should be the Master in the Dante network. That way, all clocks in the system are following the external clock.

The Primary Status shows which unit is the Master and which units are the Slaves. If you are using the Secondary network, similar status indications will be shown.

The Preferred Master checkbox should be the device most central to your system's functioning. In other words, the Master clock device should be a unit that is never disconnected from the system and has a primary function, such as the main AD/DA converter you are using. In this example, the Nuage I/O 16A is the Preferred Master.

In a live event situation, a Rio stage interface or FOH console might make the ideal master unit. For studio applications, the primary AD/DA should be the preferred master. Once a master has been set, ensure that all devices are running at the same sample rate in order to make audio connections between them.

## Changing Sample Rates

In order to change sample rates for the Dante network, all devices must be set to the new sample rate. This can be done using the Device Info tab in Dante Controller shown in Figure 4.9.

Double-click on the line of the primary clock device to open the Device View. Here you will find more specific information for that particular device, including configuration settings in the Device Config tab shown in Figure 4.10. Click the Device Config tab.

In the second block, you can alter the sample rate for this device. Choose the new sample rate from the drop down menu to change the setting for that device. You will get the warning dialog that the connection will be interrupted. This must be repeated for each device in the

Dante network. If a device is set to run at a different sample rate than the others, connections to that device will not work.

For more in-depth information on clocking in Dante, refer to Audinate's support documents. There is a great deal of information available on this subject.
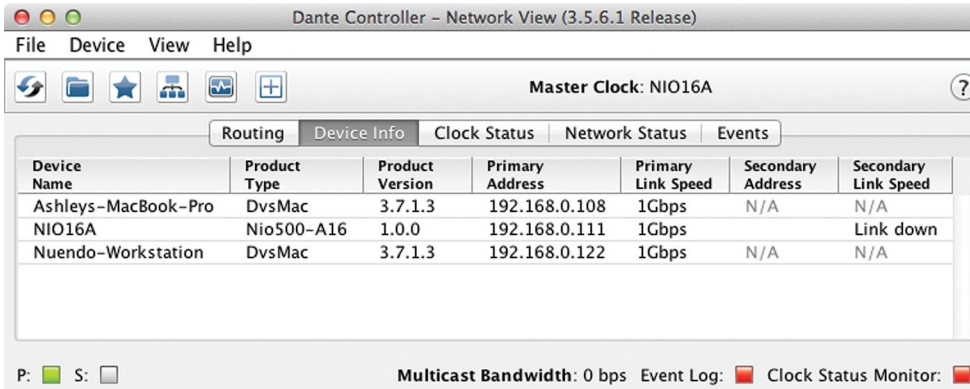


**Figure 4.9**
Device Info Tab
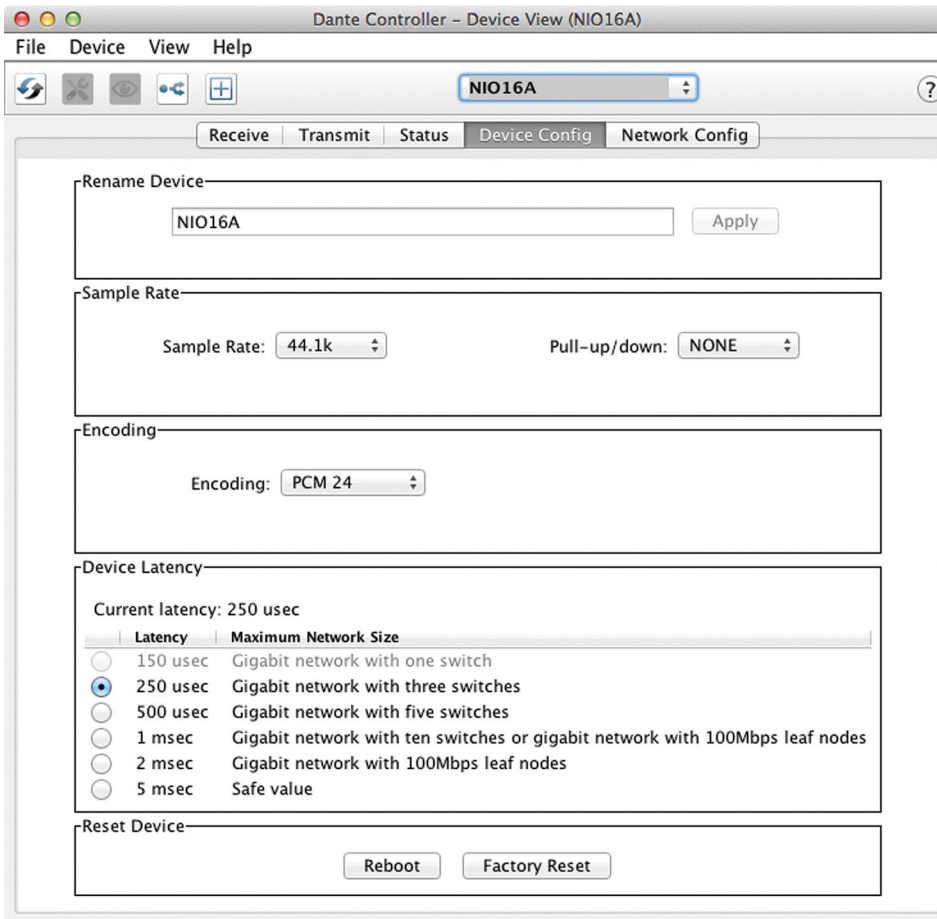


**Figure 4.10**
Device Config
Tab for Nuage
I/O 16A

# Channel Routing (Subscriptions)

Dante uses the term *subscription* to indicate channel routing. Basically, when a receiver is sub-scribed to a transmitter, it will receive all the audio that comes from that transmitter. In the routing tab, you can make these connections, or subscriptions, simply by clicking in the box where the transmitter column meets the receive row. Icons will appear indicating the progress of connection until the green check is present, telling you the audio connection is working.

You can make these connections one-by-one in any fashion you choose. It is also possible to connect more than one receiver to the same transmitter (multiple subscribers). For example,
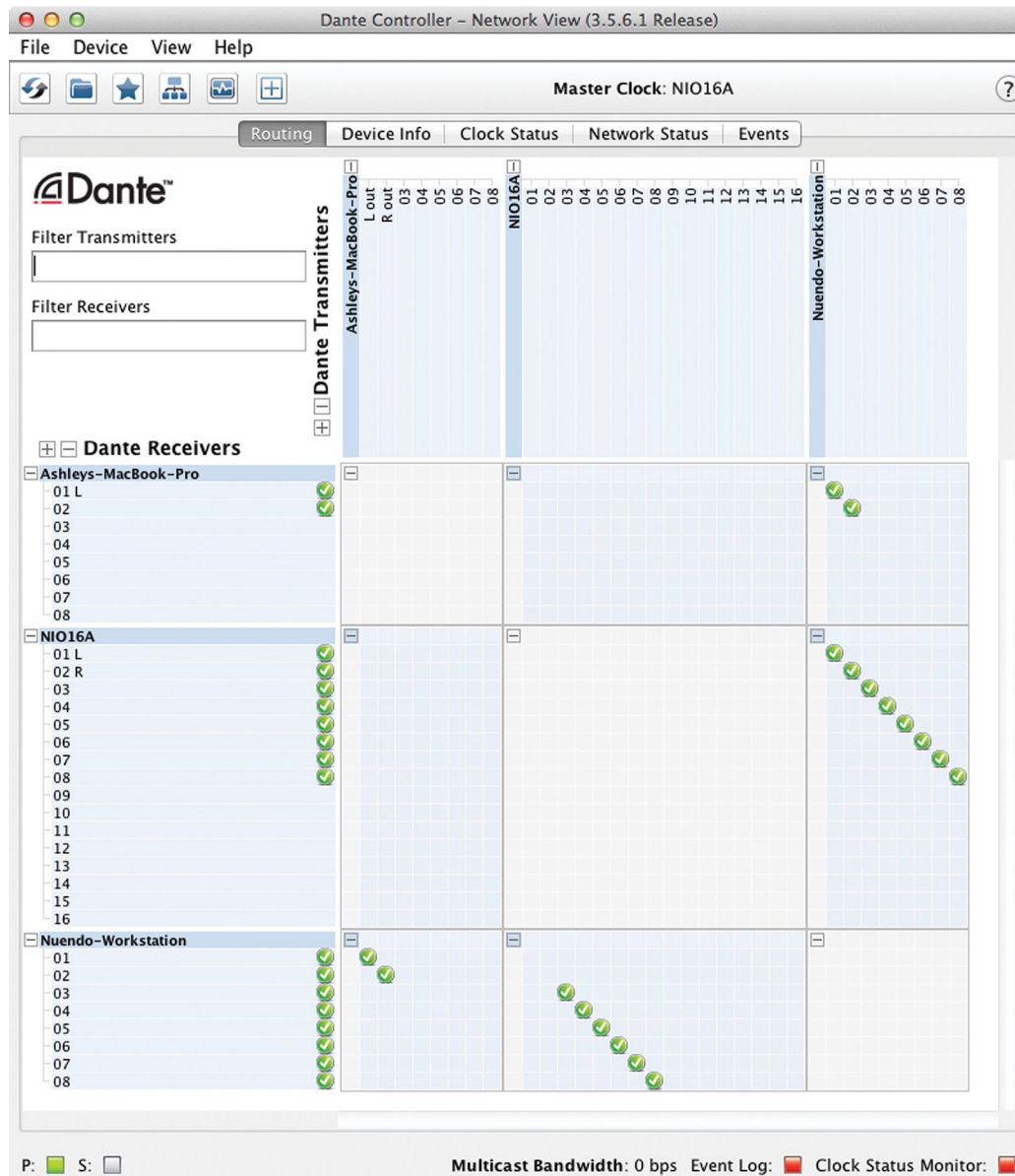


**Figure 4.11**
Audio routing in Dante

the first channel on the Rio stage box could be routed to multiple destinations such as the FOH console, monitor console, and a Nuendo workstation for recording.

This system offers a great deal of flexibility. You can create a complex network of audio connections that would be very expensive and difficult to do with analog systems; think "patchbay on steroids."

## Multiple Routings at Once

With large channel counts and multiple interfaces, assigning channels one-by-one can get tedious. There is one shortcut to routing many channels at once. When you hover the mouse over the [-] indicator at the intersection of two devices, the diagonal row of possible connections will highlight. By holding down the Control key and clicking on the [-], all possible channels will be routed at once as shown in Figure 4.12.
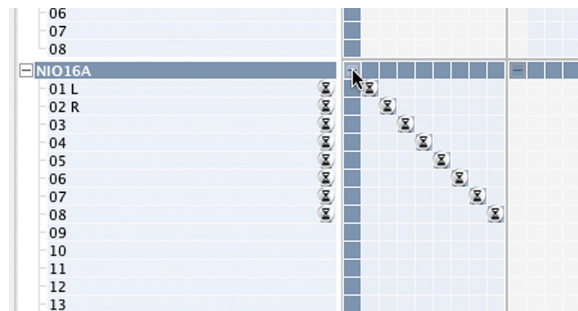


**Figure 4.12**
Diagonal routing of multiple channels at once

## Studio Planning

Now is a good time to consider the configuration of your studio. How many input channels will you use? How many speakers, headphones and other outputs will you need? What about a talkback microphone? Is there a second audio workstation in the studio? We will get into the details when configuring Nuendo, but channel routing in Dante is all part of that same process.

For our example, the following is a list of inputs and outputs to the system:

**Inputs**

❖ Talkback microphone

❖ 4-channel microphone preamp

❖ iPod input

❖ Laptop workstation input, stereo (over Dante)

**Outputs**

❖ 5.1 Surround speaker system

❖ Stereo nearfield speakers

❖ 1 headphone cue (for talent in the studio)

❖ Control room headphone output

For now, we are going to connect the first sixteen outputs (transmitters) from the Nuendo workstation to the sixteen inputs (receivers) of the Nuage I/O 16A as shown in Figure 4.13 in order to connect the two speaker systems to Nuendo's Control Room. Then we will connect the sixteen transmitters from the Nuage I/O 16A to the first sixteen receivers of the Nuendo workstation.
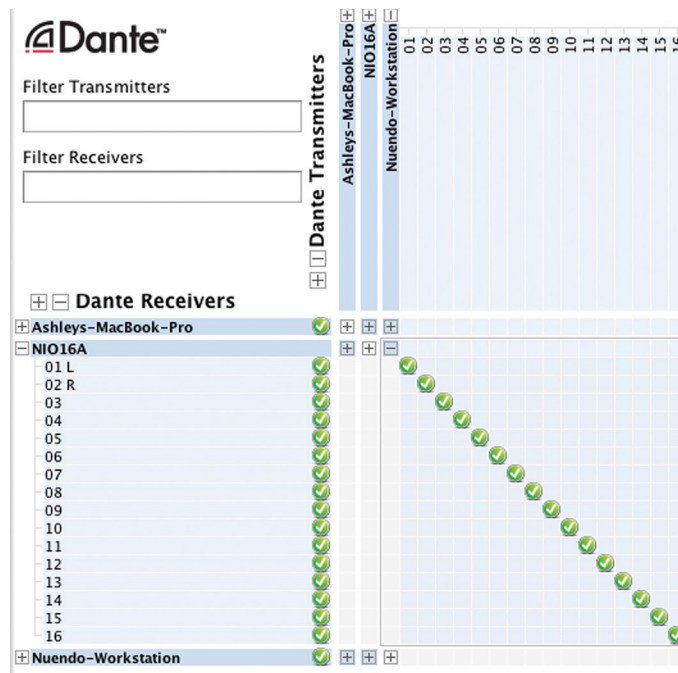


**Figure 4.13**
Routing 16 workstation outputs to the NI/O 16A

# Nuendo Basic Configuration

When you launch Nuendo for the first time, you will see the progress as Nuendo goes through any third-party plug-ins, registering them to the system. When that process is completed, you will see the Steinberg Hub shown in Figure 4.14. You may choose to open any recently opened projects, create a new project, or open another saved project. This dialog is optional and can be disabled in Preferences>General, found under the Nuendo menu in OS X or under the File menu in Windows.
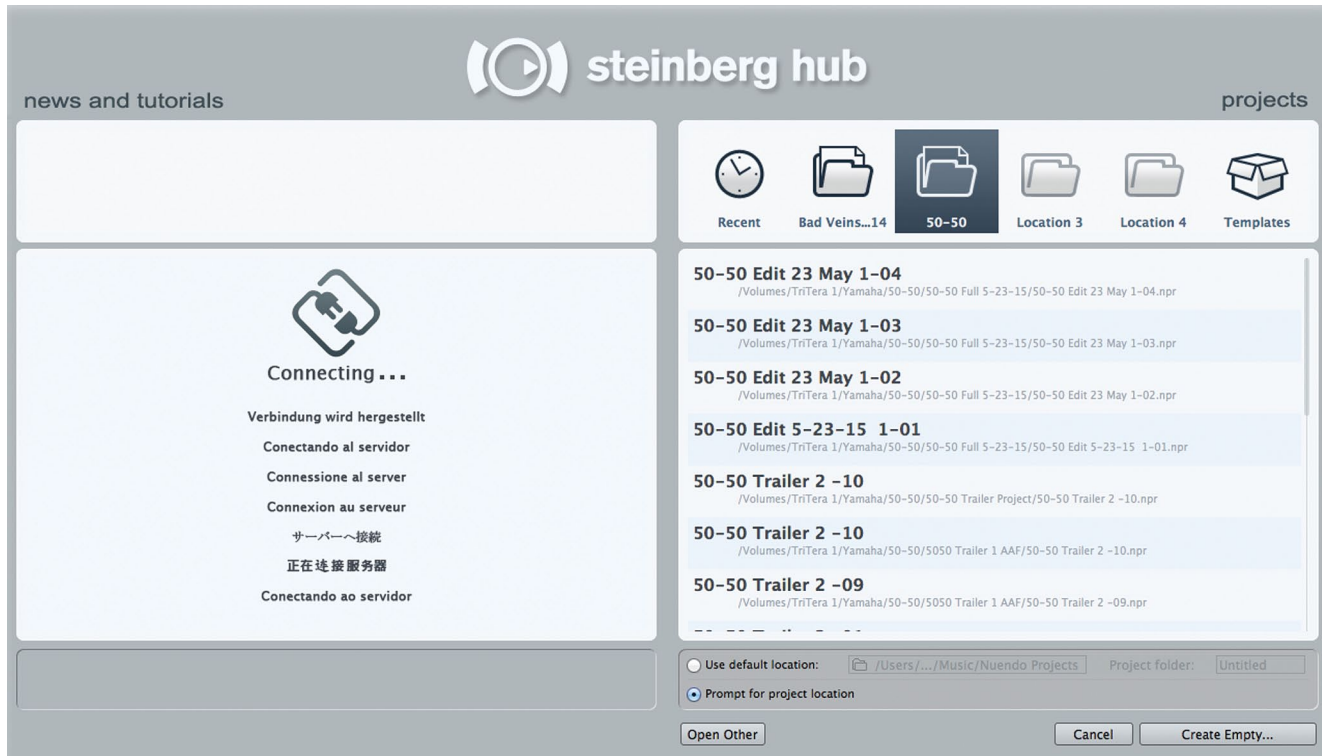
**Figure 4.14**  Steinberg Hub

For now, cancel this dialog. It is not necessary for a project to be open in Nuendo for the application to be running. You can still configure the software in this state. When Nuendo is running without a project loaded, there will not be much to see on the screen except the transport controls and the menus above.

# VST Audio System

The first and most important setting is the ASIO driver for the VST Audio System. This determines which audio interface connected to your system Nuendo will use. To access the VST Audio System settings choose Devices>Device Setup>VST Audio System.

The top menu allows you to choose the ASIO driver for the audio interface you wish to use with Nuendo. Nuendo can use just about any audio hardware driver, even the built-in audio devices for laptops if needed for offline editing or mobile use. However, for best performance in Nuage, we will use the Dante Accelerator PCIe card as shown in Figure 4.15.
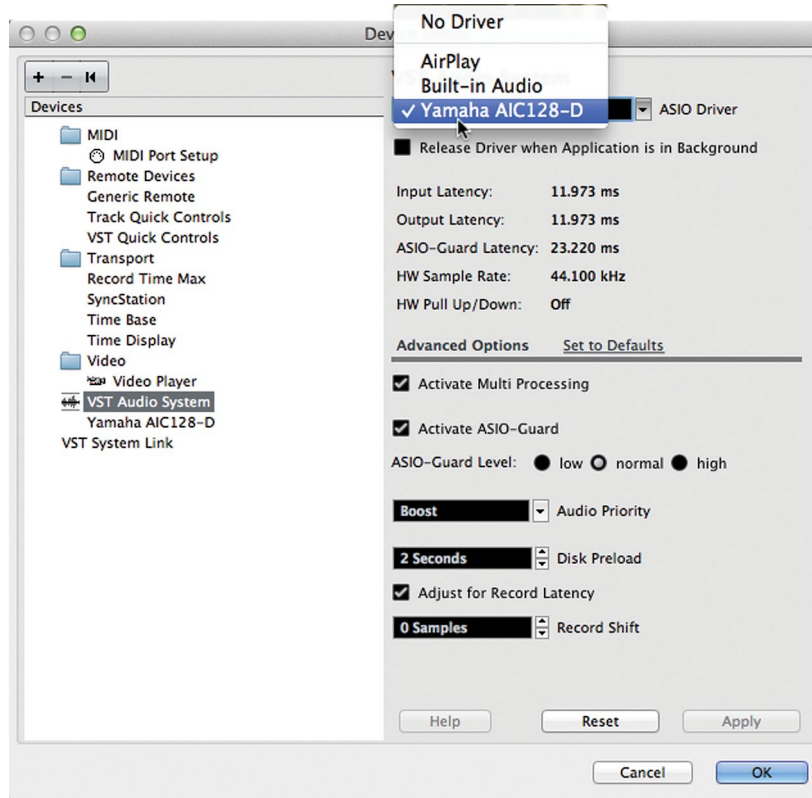
**Figure 4.15**
VST Audio System Settings selecting the Yamaha AIC128-D ASIO Driver

## Release Driver in Background

This option makes Nuendo release control over the ASIO driver when the application is not active (hidden or minimized). If you tend to switch between several applications that use the audio driver (Final Cut Pro and Nuendo for example) as a part of your workflow, you can check this box. Understand that this could potentially make the system unstable if the other applications do not handle the ASIO driver well. Constant switching between various applications using the same ASIO driver may cause the audio card to switch sample rates and other settings resulting in clicks and pops in the audio outputs. Use this setting only if you absolutely need this in your workflow.

## Advanced Options

These options affect how the system interacts with the ASIO driver. The default settings should work in most cases. If you experience problems with audio playback, changes may be made here to help. Refer to the manual for specific information.

*ASIO-Guard*

ASIO-Guard is a function to provide better performance when using lower buffer settings for the audio driver. When the buffer is set to 512 or less samples, ASIO-Guard will improve the performance of the system, allowing more plug-ins and instruments to be used without drop-outs, click, or pops. The default setting (normal) should be sufficient for most purposes.

# ASIO Driver Settings

In Device Setup>VST Audio Settings, there will be an option right below this that contains all the specific ASIO driver settings for your particular audio device (in this case the Dante Accelerator seen in Figure 4.16). These vary by manufacturer and device but for the most part, contain controls for clocking and direct monitoring options. To access more specific controls for each device such as buffer settings, press the Control Panel button found at the top.

Remember, for Dante all clock settings must be made from Dante Controller. Changing the sample rate from within Nuendo will not work. It must be changed for every device in the Dante network.
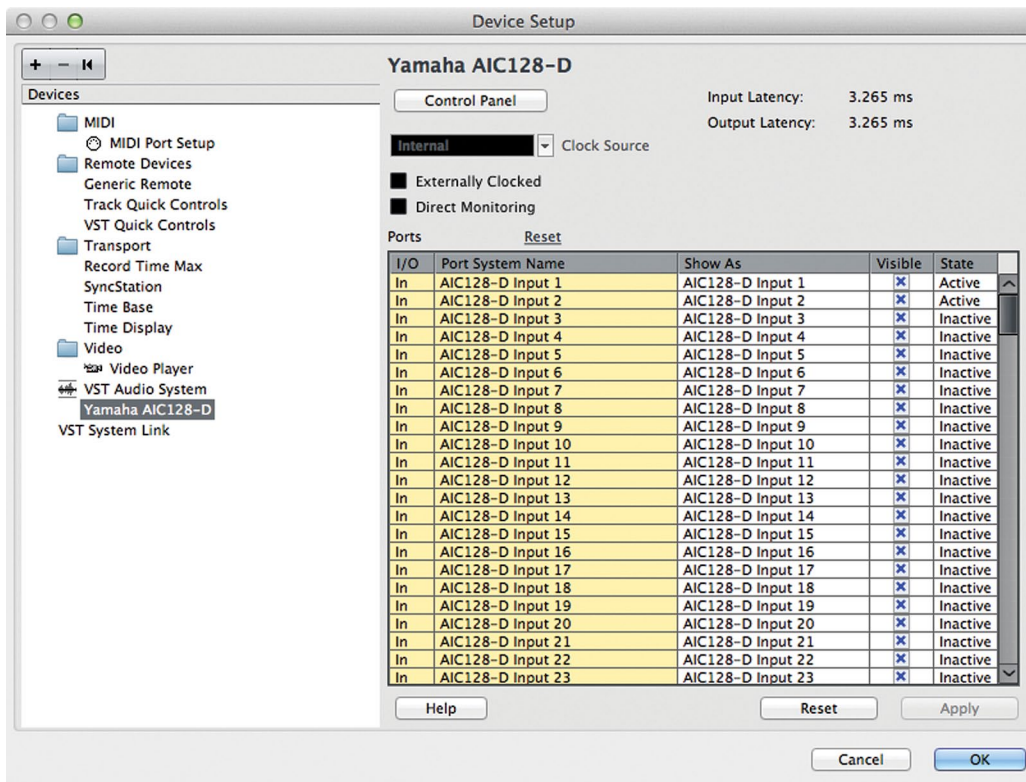


**Figure 4.16**
ASIO Device Settings for the Dante Accelerator

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## ASIO Port Naming

In the lower portion of this dialog, each input and output of your audio device will be listed in the table. Here you can rename each port to more effective names and also make inputs and output active or not. The Port System Name is the name the device gives to the operating system. This cannot be changed. However, Nuendo allows you to create a new name that will be shown inside the application. This name can be more appropriate for your studio setup than the system name, making it easier to set up input and output connections later.

By clicking in the "Shown As" field, you can enter a name for that input or output that will be seen whenever that port is being used by a VST channel in Nuendo. Take the time now to name each input and output of your device to something that will make sense later when configuring VST channels.

### CHANNEL NAMING LAYERS

There are several layers of names for various audio channels as they make their way into Nuendo. These layers can be confusing if not handled properly from the very start. Depending on the type of interface you are using, there can be as many as four naming layers involved from the hardware unit all the way to VST channels in the mixer.

For Nuage, there is also the Dante system, adding a fifth layer. Here's how the naming layers break down:

1. Physical Inputs: Nuage I/O 16A
2. Dante PCIe card channels
3. Port System names: Dante 01
4. "Shown As" names: Analog Input 1-16
5. VST Input names: Preamp 1, Preamp 2, etc.

Just getting from one physical input all the way into the program is a bit confusing at first. These abstraction layers do make things easier in the long run by being very versatile and allowing you to name things logically in the program. It takes few minutes to set up, but it is worth the time.

# Buffer Settings

Every audio interface uses a data buffer as part of its operation. This buffer gathers sound data (samples) and when it is full, this data is passed on to its destination. This happens in both directions, sound coming in and sound going out of the interface. The size of this buffer is usually measured in samples. The larger the number, the more samples are collected before the buffer passes this data on. The buffering process causes a delay in the audio signal, commonly referred to as "latency."

The buffer setting is critical to the performance of the audio interface and for the DAW as a whole. Larger buffer settings ease the load on the host processor in part because data is being handed over less often. With lower buffer settings, data is being handed off quickly, requiring more work by the processor. Therein lies the trade-off:

❖ **High buffer settings =** More processing power available, but more overall delay in the system.

❖ **Low buffer settings** = Less overall delay or latency but much higher processing loads.

The result is that you might need to change your buffer setting depending on what activity you are performing. If you are recording musicians live but not using very many plug-ins, the lowest buffer setting possible will yield the least delay, allowing the performers to hear themselves correctly.

If you are editing or mixing only, the buffer can be set very high, giving you more processing power for plug-ins, without adversely affecting your workflow. There might be some slight delay between the time you press "play" and when you hear the first sound, but unless this is extreme, it should not affect normal editing or mixing.

Listed below are the standard buffer settings available to most professional interfaces. The delay value is the buffer setting times two, one buffer for each direction through the interface. There could be additional delay depending on the device but these numbers give you the general idea of how buffer settings generate latency. The values listed below apply to the standard 44.1kHz and 48kHz sample rates. Higher sample rates will have smaller latency delays.

❖ **32 samples** = 1.4ms. This is not very discernible and the ideal for recording.

❖ **64 samples** = 3ms. This is still very good for recording and only moderately noticeable.

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- ❖ **128 samples** = 6ms. This is still suitable for recording but the delay is noticeable.

- ❖ **256 samples** = 12ms. The delay is noticeable but can still be used for recording of non-rhythmic sounds.

- ❖ **512 samples** = 23ms. This delay is very noticeable and unusable for recording. Processing power is increased dramatically.

- ❖ **1024 samples** = 56ms. Editing a mixing.

- ❖ **2048 samples** = 93ms. Editing and mixing with many plug-ins.

Buffer settings are accessed via the control panel for the audio interface. By pressing the control panel button in the VST Audio System dialog, you will open the corresponding control panel for the selected interface shown in Figure 4.17.
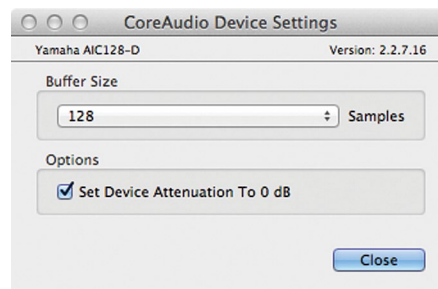


**Figure 4.17**
Dante
Accelerator
Control Panel
Buffer setting

# VST Connections

Open the VST Connections window from the Devices menu (F4). This is where all of the audio connections will be made into and out of Nuendo shown in Figure 4.18. This window maps your audio interface's physical inputs and outputs to Nuendo's virtual inputs and outputs. There are many possibilities here including simple inputs and outputs of Nuendo's mixer but also more complex routings such as external FX inserts, external MIDI instruments, control room monitoring, and headphone channels.

Using a large multi-channel audio interface, many intricate connections can be made. Presets can be made that can be called up in any project. Flexibility in routing, and the quickness with which routing changes can be implemented, are powerful aspects of Nuendo. You can switch from a 5.1 film mixing workstation directly to a multi-track band recording setup in a matter of moments.
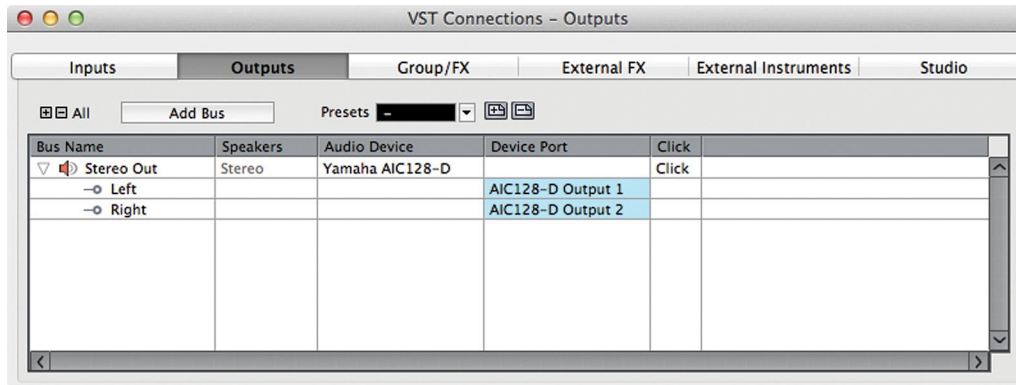
**Figure 4.18**
VST Connections window

# VST Inputs

The VST Inputs tab contains the current list of inputs available to Nuendo. By default, a stereo input is created. Understand that this is a virtual layer between your audio interface and the Nuendo application. There can be many inputs created here, more than your interface has or less than the available inputs. The idea is that you only create the number and type of inputs you need for a specific project. There's no need for 56 inputs if you are only recording a voice-over.

Inputs have several attributes:

❖ **Channel width** – Each input can have its own channel width starting with mono and continuing with stereo, 5.1, and on up to 13.1 Auro surround.

❖ **Sharing of physical inputs** – Inputs can share physical interface inputs as much as you desire. For example, a mono input can use the first channel on your interface while a 5.1 input can use that same interface channel (1) plus 5 more (2-6) to make up a single 5.1 source.

❖ **Child buses** - Multi-channel inputs automatically generate mono "child" buses. Each channel of a multi-channel input is available as a mono input within Nuendo. You may also create multi-channel child buses of surround buses. For example, you can create a stereo child bus for a 5.1 surround bus out of the front left and right channels.

❖ **"Not Connected"** - Input buses can be set as "Not Connected." This can happen when a project from a larger system is opened on a system that does not have the physical inputs available to match all the VST Inputs. These input buses can remain in the project and when it is reopened in the larger system, they will connect back to their physical inputs on that system.

Go through your studio and figure out what will be connected to the inputs of your audio interface. This is a highly customizable part of Nuendo and will be different for each studio and setup. In my studio, I name the inputs by the microphone preamp that is normally connected to that input as shown in Figure 4.19. This helps me keep track of what preamp was used on a particular track. If you are using a patch bay, this layout can change every session. You can change the labels of each input used in a project so it will be saved with the project file, preserving your routing information.
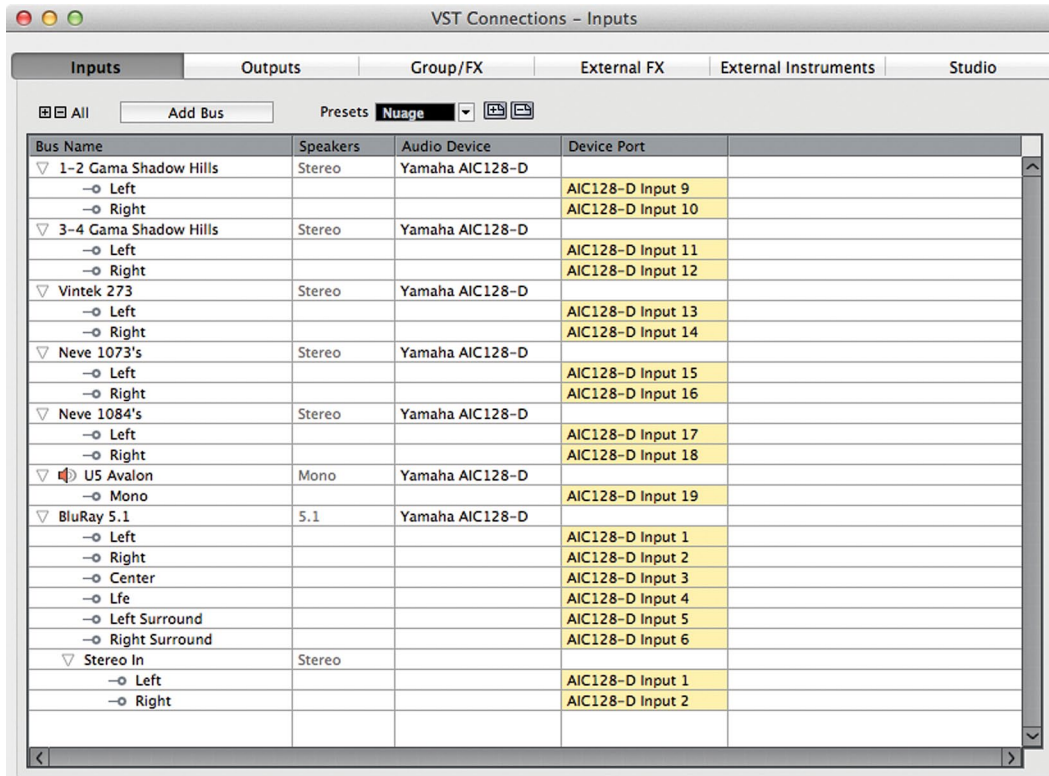


**Figure 4.19**
Various input buses

In order to create a VST Input, follow these steps:

1. Press the Add Bus button at the top of the window. The Add Input Bus dialog opens shown in Figure 4.20.

2. From the configuration pull-down menu, choose the channel width and format.
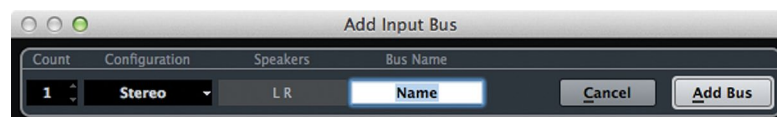


**Figure 4.20**
The Add Input Bus dialog

3. If you wish to create more than one of the same type of bus, increment the count.

4. Device ports will automatically be assigned to each channel of the bus, usually incrementing up from the last used port. You may change these assignments by clicking on the device port name and choosing another port from the pull-down menu seen in Figure 4.21.

5. Name the input bus, entering it in the Bus Name field. If you are creating more than one bus, a number will be added to create unique names.

6. Continue adding buses until all the inputs you will use have been setup.

## ASSIGNING DEVICE PORTS TO MULTIPLE VST CONNECTIONS

You can assign device ports to multiple VST connections at once. To do this, hold shift while selecting multiple connections. Then click and hold Shift while selecting the first device port. Device ports will be assigned incrementally for all selected connections.
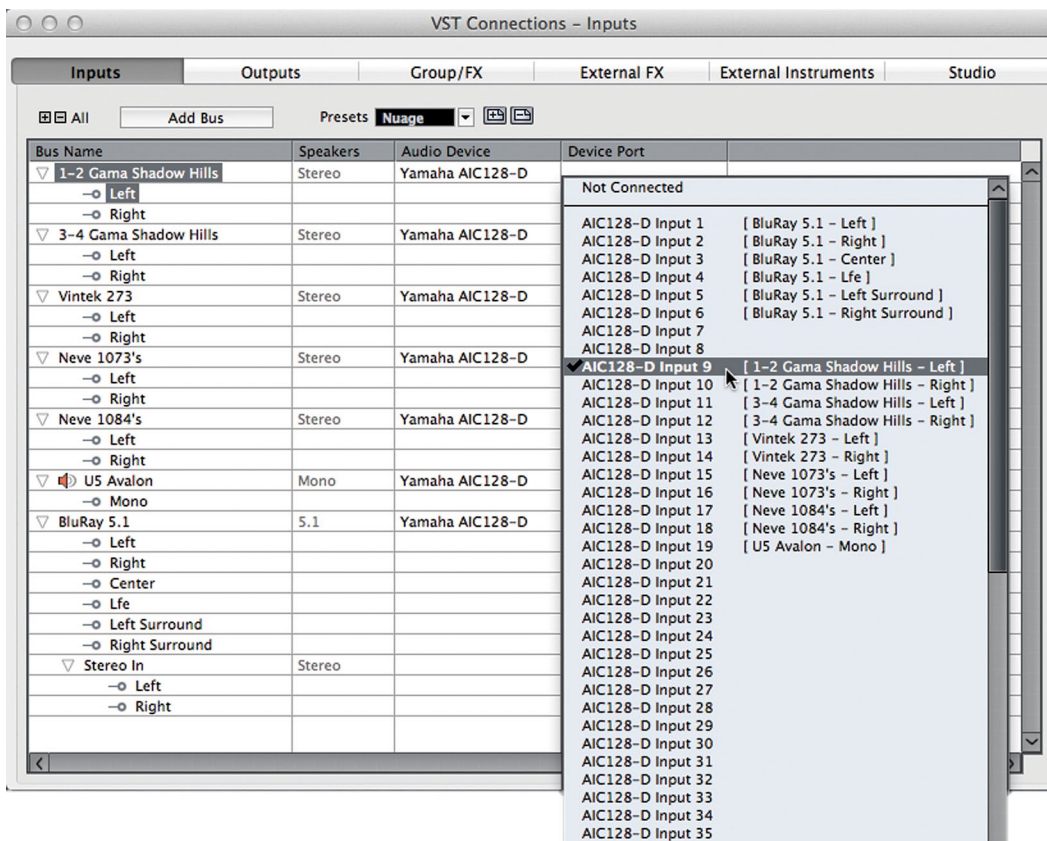


**Figure 4.21**
Device port assignment pull-down menu

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Once a set of inputs has been created and labeled, you can save this as a preset using the preset tools at the top of the window. Creating a preset named "default" will force Nuendo to use that preset when creating a new project as seen in Figure 4.22.

## UPDATING PRESETS

By adding a preset and typing in the exact name of an existing preset, you can modify or update that preset with the current settings. This is true for all presets in VST Connections. Having a good set of presets that covers the basic ways you work everyday can save valuable time setting up projects in Nuendo.
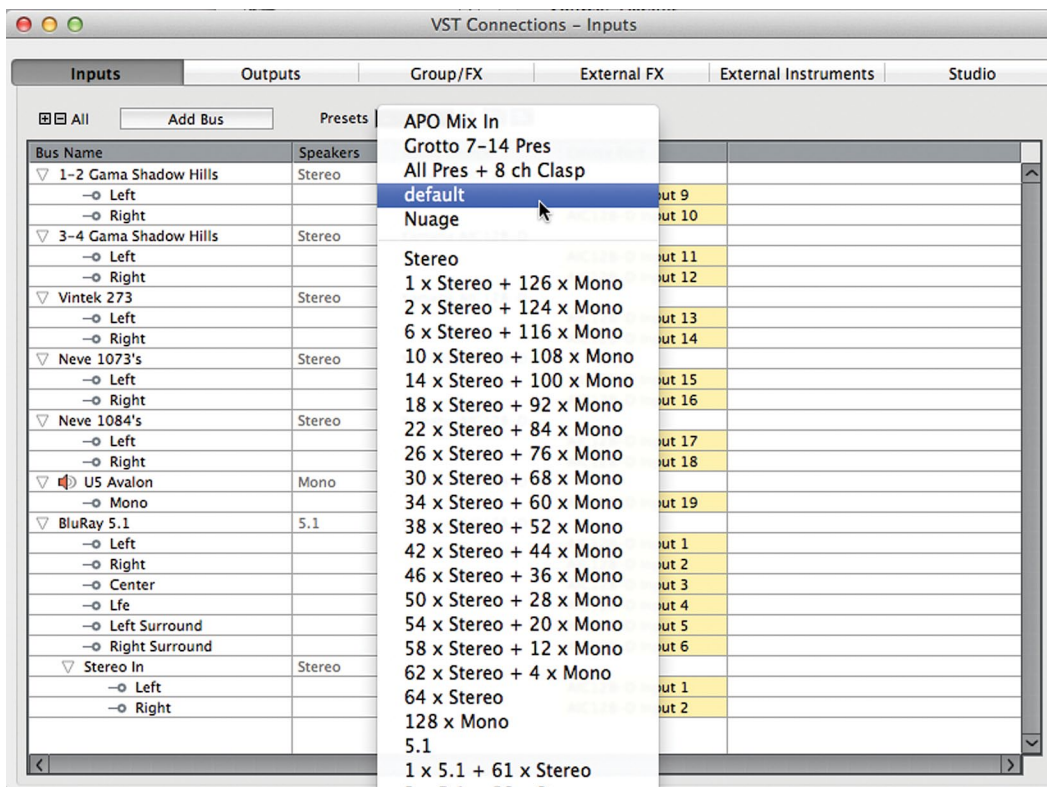


**Figure 4.22**
VST Input Presets

## VST Outputs

The VST Outputs tab functions in many of the same ways as the inputs tab. You can create output buses in the same fashion, assigning various device ports to the channels in each buss. You can name each bus and save the entire list of output buses as a preset.

For simple stereo projects, only one stereo output bus might be needed. If you use an external analog mixing desk, individual mono output buses can be used to feed each channel of a mixer. For a film dubbing project, multiple surround output buses may be needed to act as stem outputs.
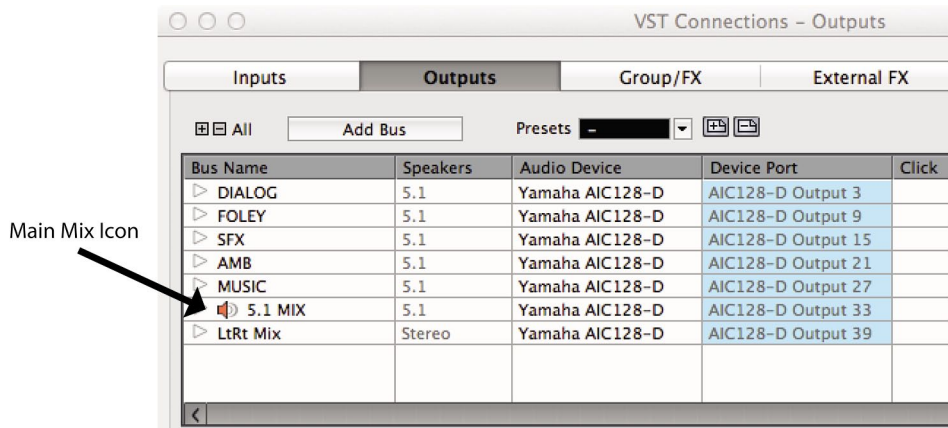


**Figure 4.23**
Film Dub Preset with Main Mix set to '5.1 MIX'

Each one of these possible scenarios can be saved as a preset and called up whenever it is needed. The presets menu comes populated with various configurations to start. You can modify these to meet your needs and save them as new presets.

## Output Child Buses

In complex surround sound mixing, there is a need to have specific types of child buses available for each surround bus. To create specific child buses for an output bus right click (Win) or control+click (Mac) on an output bus's name and choose an option from the Add Child Bus menu shown in Figure 4.24. All possible formats for that size output bus will be displayed for you to choose from.
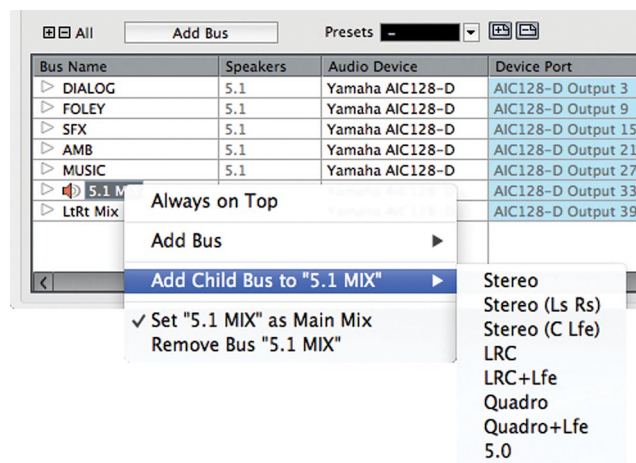


**Figure 4.24**
Add Child Bus menu

## "Main Mix" Designation

If you will notice in Figure 4.23, there is a speaker icon next to the 5.1 MIX output bus. This icon indicates that this bus is the Main Mix. The Main Mix designation has to do with monitoring through Nuendo's Control Room features, covered later in this chapter. Since Nuendo can have multiple output buses, one of these must be designated the Main Mix for monitoring purposes through the Control Room mixer.

In order to set any output bus as the Main Mix, right click (Win) or control+click (Mac) on the name of the bus to access the contextual menu shown in Figure 4.25. Check the "Set as Main Mix" option and notice the speaker icon next to the bus name.
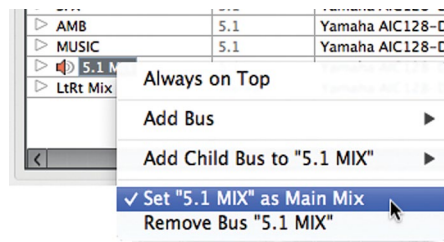


**Figure 4.25**
Set as Main Mix option

## Output Bus Not Connected

It is possible and common to have output buses not connected to any device port directly. Instead of monitoring the output buses directly, Nuendo can route these signals through the Control Room mixer, which is connected to the device ports for monitoring. Using the Control Room features, you can monitor various points in the mixer's signal chain through dedicated monitor outputs. Final mixdown files can still be created from any output bus whether it is connected to a device port or not.

It might feel counter-intuitive, but output busses that are "not connected" still generate audio. The audio can be written to a disk file, routed to the Control Room mixer, or even routed to another VST output using an aux send.

| WHEN TO CONNECT VST OUTPUT BUSES |
|---|
| VST Output buses should only be connected to device ports when the signals need to be fed into an external console, recorded by an external device, routed to a broadcast feed or if the Control Room is not active for monitoring. |

## Click Option

The last column in the output bus tab is the click option. The internal click generator in Nuendo can be routed in multiple ways, one of which is by checking the click option for any output. This routing is separate from the Control Room where you can also route the click to various outputs. The Control Room does not have to be active for the click option in Output buses to function.

You may only activate click on the entire output bus, not child buses or single channels within the bus.

# Group/FX

The Group/FX tab does not pertain to actual inputs or outputs from Nuendo. Rather it deals with internal mixer routing options within the Nuendo project. This will be discussed in great detail in Part IV: Mixing. Group and FX channels that are a part of the active project will be displayed here. It is also possible to create new group and FX channels in this tab and save presets of multiple group and FX channels.

# External FX

The External FX tab allows the creation of outputs and inputs that can be routed to external processing devices such as compressors, equalizers, and reverb units that you wish to use inside Nuendo's mixer. Once created, these external FX can be inserted just like plug-ins on any audio channel in the mixer.

Audio will pass out of the assigned outputs to your external device and then return through the assigned inputs back into Nuendo's mixer. You can mix plug-ins with external FX on the same channel if you wish. In this way, all of your favorite analog equipment can be used inside the digital mixer just like any other plug-in processing.

If the external device is MIDI controllable, a MIDI device can be associated with the External FX so that when it is inserted, its MIDI device panel will open just like a plug-in GUI. This allows you to remote control the device and save the parameters within the Nuendo project for later recall.

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To create an External FX, follow these steps:

1. Press the Add External FX button. The Add External FX dialog will open shown in Figure 4.26.

2. Click in the name field and enter the name of the device.

3. Choose the send channel configuration. How many inputs does the device have?

4. Choose the return configuration. This may be different than the send. For example, many reverb units have a mono input but a stereo output. There is no need to waste device ports on unused channels.

5. If the device is MIDI controllable, and you have created a MIDI device for it in Nuendo, you can attach that to the External FX by pressing the Associate MIDI Device button and choosing the appropriate MIDI device.

6. Click OK and the device will appear in the list.

7. Assign device ports to the inputs and outputs that will be connected to the external device.
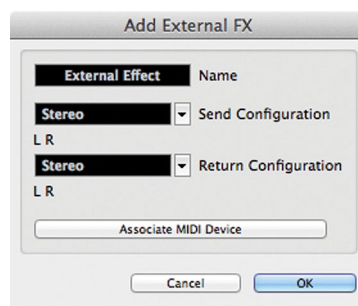


**Figure 4.26**
Add External
Effect dialog

If this is an external FX that you plan on using often, add it as a Favorite so that it may be recalled in other projects easily. This is similar to the presets in the Inputs and Outputs tabs. To add an External FX as a favorite, right click (Win) or control+click (Mac) on its name and choose Add to Favorites from the menu. Now this device will be available from the Favorites button in any active project.

# External Instruments

External Instruments allow you to use MIDI keyboards and other external MIDI devices such as an Akai MPC workstation in Nuendo as if they were a part of the program, similar to a VSTi virtual instrument. Much like External FX, External Instruments have a MIDI device associated with them but only have audio inputs as a part of their configuration. Each external instrument can have multiple mono and stereo inputs associated with it. In order to create an external instrument, follow these steps:

1. In the External Instruments tab, press the Add External Instrument button. The Add External Instrument dialog will open as shown in Figure 4.27.

2. Click in the name field and enter the name of the new instrument.

3. Choose the amount of mono and stereo inputs the instrument will have in Nuendo.

4. If you have created a MIDI device for this instrument, press the Associate MIDI Device button and add it to the instrument.
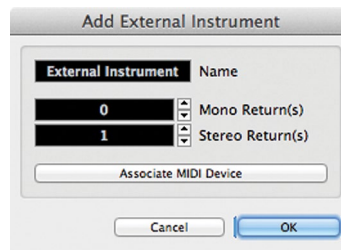


**Figure 4.27**
Add External Instrument dialog

The newly created instrument can be added to a project just like any other VSTi. You will be able to create MIDI tracks for this instrument and automatically have that routed to the device and have the resulting sounds come into the project mixer.

# Device Port Sharing

Some VST connections can share device ports with others. For example, you could create a stereo Input bus that uses device ports 1 and 2. You could then create another mono Input bus that also uses device port 1, and so on. This can be useful for naming various inputs or having alternate input bus names for the same device ports. The same is true of Output buses. Just be sure to be aware of any VST connections that share device ports as this can be a source of confusion.

External FX and External Instruments, however, cannot share either input or output device ports with any other VST connection. If you have device ports used by an External FX or Instrument and you wish to use it for something else, you must either remove the external device from the VST Connections or set their device ports to "Not Connected" in order to make that port available.

Device ports that have been assigned to exclusive VST connections are denoted in the device port list in red and cannot be shared. If you select this port for another VST connection, it will break the current connection. A dialog box will open shown in Figure 4.28, indicating that the selected port is already in use. You can continue and break the previous connection or cancel the operation.
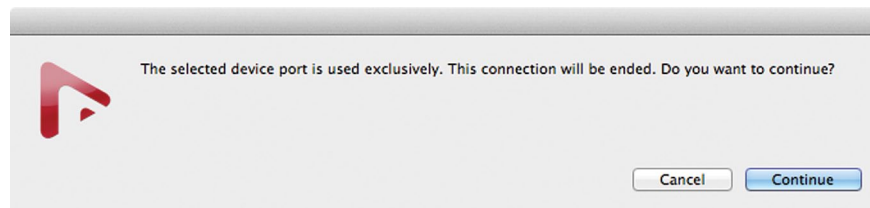
**Figure 4.28**
Device Port
sharing
warning

The selected device port is used exclusively. This connection will be ended. Do you want to continue?

Cancel    Continue

## Control Room and the Studio Tab

The features of Nuendo's Control Room Mixer are valuable for day-to-day use in a real studio environment. The ability to listen to external sources, route headphones and talkback signals to various cue outputs, and manipulate speaker configurations and calibrations adds a great deal of functionality all within the software.

Think of Control Room as a secondary mixer, with its own set of inputs and outputs, that controls monitor sources, external inputs, the talkback along with speakers and headphones in the studio. Signals, such as Nuendo's project mixer outputs, external sources (DVD, iPod etc.), talkback microphones and cue sends, are processed by the Control Room mixer and routed to the speaker and headphone systems.

The Control Room is scalable in its configuration. You can use as many or as few of its features as you need. Just like the other tabs in VST Connections, you add only the channels you need and nothing more. To enable the Control Room, go to the Studio tab in VST Connections and enable the power button for Control Room, as seen in Figure 4.29.
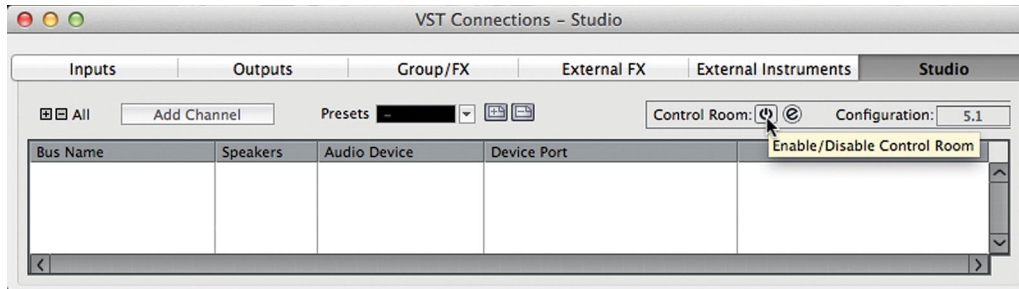
**Figure 4.29**
Studio Tab in VST Connections, enable Control Room

## Control Room Overview

Initially, the Control Room Mixer will contain one Monitor output channel. A Monitor output channel is designed to be connected directly to a speaker system. You must have at least one Monitor channel for Control Room to operate.

Open the Control Room Overview from the Devices menu as shown in Figure 4.30. This window visually represents all of the Control Room channels and their current configuration. Highlighted items are active while grayed out items are not active but are available to add.
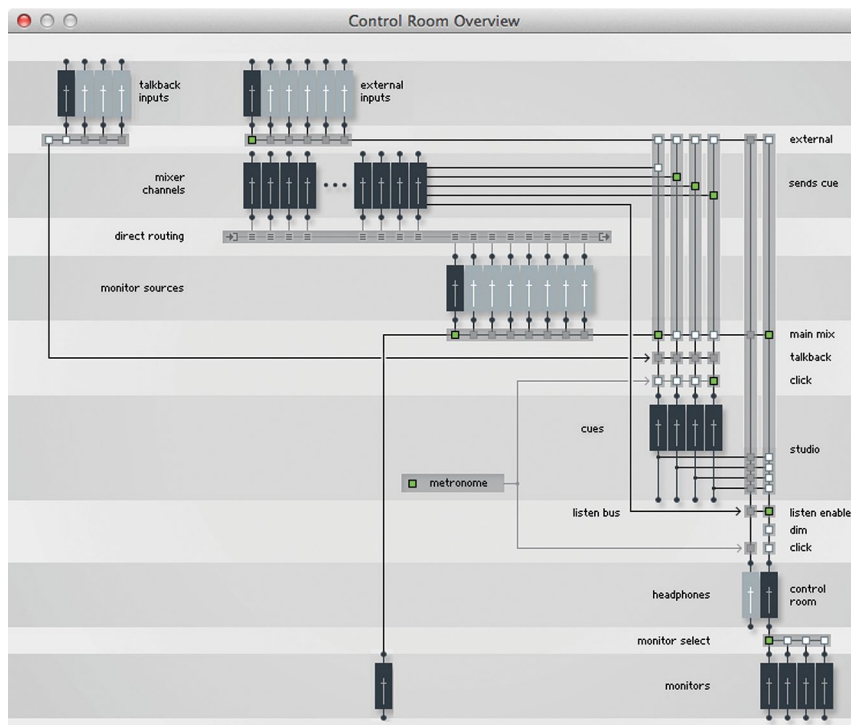


**Figure 4.30**
Control Room Overview

## Control Room Channels

The following is a list of all the possible Control Room channels you can create.

| | |
|---|---|
| Monitor | A monitor channel is connected to a set of speakers. Consider them speaker channels. All formats from mono to 8.1 channel surround and more are supported. Up to four (4) monitor channels may be created. They can share outputs if necessary and do not need to be the same channel configuration. |
| Headphones | One (1) dedicated stereo headphone channel is available. This should not be confused with the Studio channels that are designed to feed headphones or monitors for musicians and performers in the studio while recording. This headphone channel is primarily designed for the engineer to monitor sounds in the control room, including the Listen bus. |
| Cues | The Cue channels are for performers to hear themselves and the rest of the mix during recording. There are four (4) stereo Cue channels available. They can be connected directly to headphone amplifiers, multi-channel headphone systems such as the Aviom or even a set of speakers in the recording studio. |
| Meter Channel | This output should be connected to an external metering device such as a Dorrough meter. It cannot be removed from the setup and has its own channel configuration. |
| External Inputs | External Input channels allow you to listen to other sources outside Nuendo. This is handy for listening to CD and DVD players or perhaps a smartphone. There are eight (8) External Inputs available in formats up to nine channels wide (8.1 Cine). |
| Talkback | Four (4) talkback channels can be created, which allows the engineer and producers to communicate with performers in the studio and provides useful functionality such as dimming the main speakers when the talkback is on and auto-off during recording. |

Monitor Sources    Monitor Sources are signals created by the Nuendo Project. The VST Output designated the Main Mix is the default monitor source. You can create additional sources from any VST Input, Group channel or other VST Output in the currently active project mixer. You can define up to eight (8) monitor sources in a project. These choices are saved with the Project file and change with each active project.

You can add various channels to the Control Room by using the Add Channel button found in the Studio tab. Choose the type of channel you wish to add and a dialog will open up that allows you to name the channel and choose a channel configuration.

Once you have added all your desired channels, you can assign device ports to each one just like other VST connections. This is where things can get a bit confusing as many VST connections can share device ports.

For example, if you have a VST Output from the project connected to device ports 1 and 2 and a Control Room Monitor also connected to device ports 1 and 2, then those signals can both go to the device ports at the same time. This can cause overloads in the output converter and improper signal levels. If possible, have all VST Outputs "Not Connected" when using Control Room to prevent accidental level increases.

## Main Mix Control Room Configuration
The Control Room has an overall channel width configuration (stereo, 5.1, etc.). This is determined by the channel configuration of the Main Mix of the active project. The current configuration is displayed at the top right of the Studio tab in VST Connections. The example below shows a well-populated Control Room preset for film dubbing. Notice the configuration of the Control Room matches that of the Monitor Source "5.1 Main Mix" as shown in Figure 4.31.

## Device Port Sharing in Control Room
All channels in the Control Room, with the exception of Monitors, use exclusive device ports. This means that once you assign a particular device port to a Control Room channel, it will not be available to any other VST connection.

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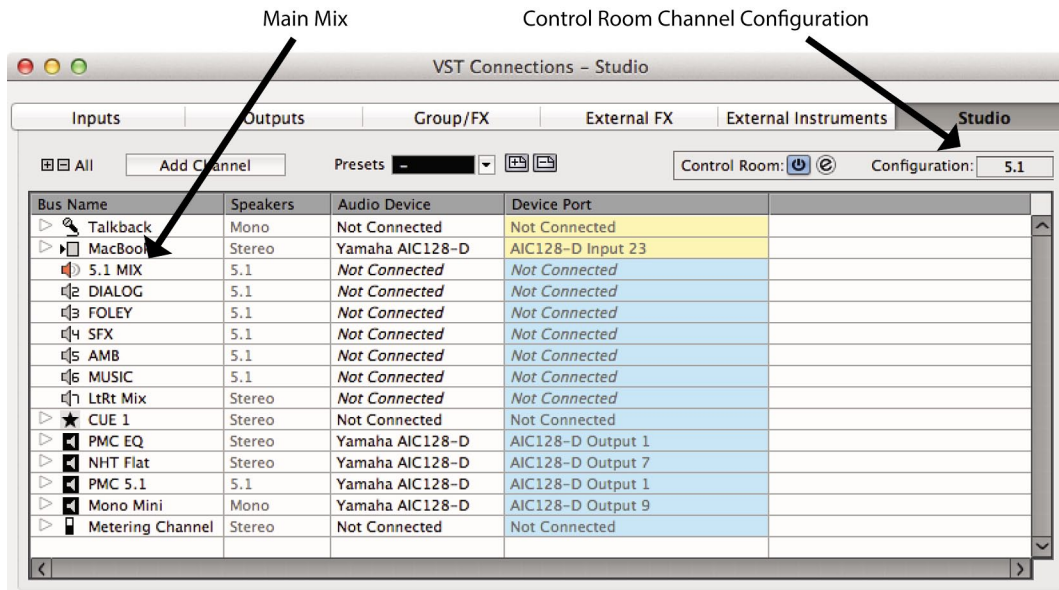
**Figure 4.31**
Control Room configured for film mixing

For Monitor channels, there is a preference to choose whether or not they use exclusive device ports. This helps avoid the issue of the Main Mix and Monitor outputs sharing device ports and causing signal overloads and improper monitoring. Preferences>VST>Control Room>Exclusive Device Port for Monitor Channels.

On the other hand, it can be helpful for surround speaker systems to share device ports between Monitor Channels so that you can create a stereo monitor pair from the main left and right speakers in a surround setup. This makes it possible to change from a surround system to a stereo playback system using the same speakers. This is similar to the child bus concept for VST Outputs.

To create a stereo Monitor using shared device ports from a surround speaker system, follow these steps:

❖ Create a 5.1 Monitor channel and assign it to device ports that are connected to the corresponding speakers.

❖ Create a stereo Monitor channel and assign it to the same device ports as the main left and right speakers of the surround Monitor channel.

You can now switch easily from surround to stereo monitoring using the same speaker system. Operation of the Control Room Mixer is covered in the next section.

## BE CAREFUL WITH VST OUTPUT ROUTING

Trouble can arise if you inadvertently assign a VST Output bus (especially the Main Mix) to the same device ports as a Monitor channel. This results in both signals being combined on the shared device port. If the Main Mix bus is assigned to the same device ports at the current Monitor channel, a doubling in volume of the sound will be heard at the output of the audio interface potentially causing harm to speaker systems and your hearing. Also, none of this clipping will be visible in Nuendo's meters since it is taking place at the audio interface and not inside Nuendo.

To avoid this possibility, go to Preferences>VST>Control Room and check the option for "Exclusive Device Ports for Monitor Channels."

## CREATING CONTROL ROOM SETUP PRESETS

Create a preset for your Control Room Setup in the Studio tab. This makes all of the complex settings in Control Room recallable. You might create two presets, a simple setup for stereo music recording with more studio channels and then a more complex surround setup for film mixing. Control Room channels take up system resources so only use the channels that you need. Flexibility is the idea here.

# Control Room Mixer

The Control Room Mixer allows you to adjust every channel you have created in the Studio tab of VST Connections. It expands or contracts depending on the type and number of Studio channels you have made. Just like the project mixer, portions of the GUI can be hidden from view to save space if not being used.

The Control Room Mixer can be viewed in several locations: in its own window, at the right side of the Project Mixer and at the right side of the Nuage screen above each fader unit. Its appearance is the same in all three locations. There are two main views of the Control Room accessed from two tabs at the top.

❖ Control Room: This view has controls for all Control Room channels.

❖ Meter: This view displays the Control Room Main Meter.

Each view has two panes accessed from tabs at the bottom. The Meter modes will be discussed later. The Control Room panes are:

❖ Mixer: This pane offers controls for normal use.

❖ Setup: This pane offers access to more parameters, including inserts.

Each section in the Control Room mixer has separate controls that are only visible when that section has been expanded. Clicking on the section name will expand the available controls. These sections appear in both the Mixer and Setup panes.

## Mixer Pane

Clicking on the Mixer tab at bottom puts the interface in its standard operating mode for everyday use: the Mixer pane.

### External Inputs Section

Starting at the top, if you have more than one External Input defined, then the External pane will be shown. The only control in this pane is a pop-up menu that lets you choose which external input signal to use as shown in Figure 4.32.

### Cues Section

Next, the Cue 1 pane has been expanded.

The source for each Cue can be either the Mix source, External or the Cue buss (1-4) from Nuendo's project mixer.

### Channels Section (Speaker channels)

The next section is called Channels shown in Figure 4.34 and has to do with the various speaker channels in a surround system. Here, you can solo individual speaker channels and route the rear speakers to the front, among other things.

| MIXCONVERT ACCESS |
|---|
| If you double-click in the black area between the speaker channels, you will open up the MixConvert settings for the current down mix. Here you can make adjustments to the downmix to suit your needs. |
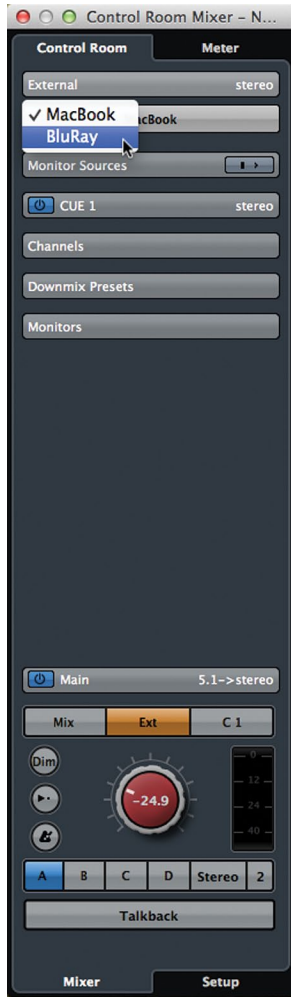
**Figure 4.32**
External input pane with popup input select



**Figure 4.33**
Cue 1 Control Room detail

Cue output level

Talkback controls

Click controls

Output meter
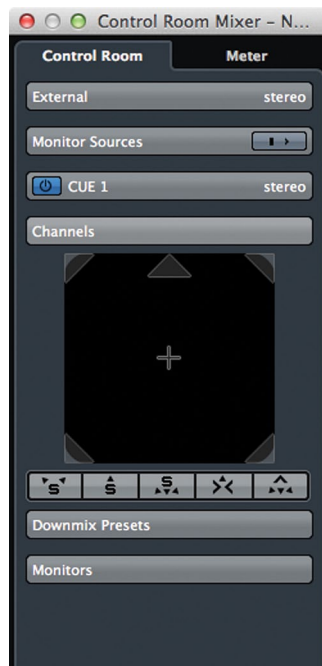


**Figure 4.34**
Channels section of the Control Room Mixer

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## Downmix Presets Section

When working in surround sound, it is helpful to be able to preview your mix in stereo. This requires a "downmix" of signals from 5.1 channels to two. Nuendo provides a downmixing process called MixConvert that does this automatically as needed. This pane allows you to switch between various downmixing presets. This is the same as checking your mix in mono for music mixing, just with more channels. There are four downmix presets available as shown in Figure 4.35.



**Figure 4.35**
Downmix Preset Pane and corresponding MixConvert settings

## Monitors Section

The Monitors section allows you to switch between various speaker systems in your Control Room setup. There are four possible Monitors designated A, B, C and D. Beneath the selector is a meter that shows the actual output level for the current volume setting.

## Phones Section

If you have a Phones channel defined, it will be beneath the Monitors section. By default, the source select, level (green knob) and click enable control are always visible. If you expand the section, level and pan controls for the click and Listen bus are displayed in Figure 4.37. The Listen bus is for soloing in AFL/PFL mode, discussed later.

## Main Section

At the bottom is the Main control room section, with the large, red level control used for the overall level of your monitors.
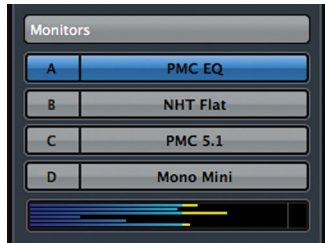
**Figure 4.36** Monitors Section with output level metering



**Figure 4.37** Control Room Phones section



**Figure 4.38** Control Room Main section

Here is a condensed collection of controls you would use most often.

❖ Input Selector: Main monitor source, external input and cue sends from the project mixer.

❖ Control Room Level: The actual output level sent to your monitor speakers (red knob).

❖ Dim: reduces the CR level by a preset amount so you can quickly lower the volume.

❖ Reference Level: A user-defined volume setting for calibrated mixing environments, mostly film and broadcast mixing.

❖ Click Enable: This routes the built-in click sound to the selected speakers.

❖ Monitor Select: Quickly choose from up to four speaker systems.

❖ Downmix Preset: Toggle between four downmix presets.

❖ Talkback: Activate the primary talkback input.

❖ Talkback 2: Up to four talkback inputs can be added, each of which will have a separate enable button.

❖ Talk Off: Deactivates all talkback inputs at once.

❖ Click Mix: Pan and volume for the click

❖ Listen Bus: Switch between AFL and PFL solos, enable Listen bus output, Listen bus level.

❖ Talk Dim: Reduces the CR output level by this amount when the Talkback is turned on.

❖ Listen Dim: Reduces the CR output level by this amount when one or more channels are routed to the Listen bus.

## Setup Pane

There are some additional controls and options for each Control Room section visible when you enter the Setup pane by clicking the Setup tab at the bottom. Once again, you must click on each section to expose all of the options.

### Talkback Setup

When you enter the setup view, the Talkback setup section becomes visible. There are eight insert slots available for plug-ins. For example, you could insert a compressor on the Talkback channel to ensure that everyone can be heard over the talkback microphone as shown in Figure 4.39.

Beneath the inserts are a level meter and input gain adjustments for fine tuning the talkback signal.

### External Setup

Each External input has six available inserts, a phase/polarity switch, and an input gain setting as shown in Figure 4.40. Selecting a different External input will access its individual settings.

### Cue Setup

Each Cue channel has eight available inserts.

### Monitors Setup

Each Monitor channel has eight inserts, phase, and input gain as seen in Figure 4.41. The setup controls correspond to the currently selected Monitor. Switching Monitors in the Main section will change the inserts seen in the Monitor setup.
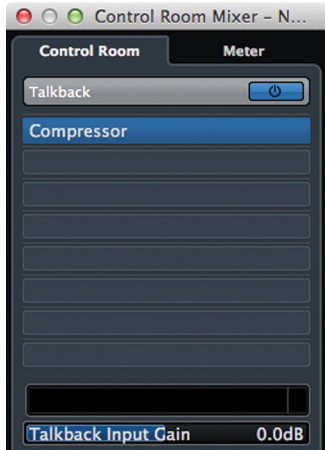
**Figure 4.39** Talkback setup with a compressor inserted

**Figure 4.40** External Input setup switching
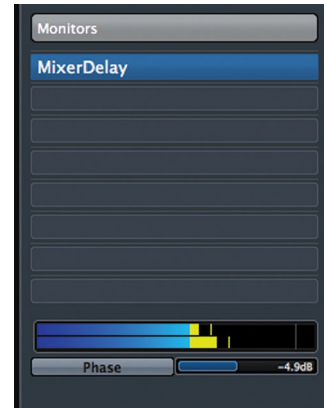
**Figure 4.41** Monitors Setup with IK Room insert

The Monitor inserts could be used for room correction equalization. Certain speaker systems can require corrective EQ to flatten the room response. There are various third party plug-ins designed to do this by measuring the response with a calibrated microphone and applying a corrective EQ curve with a plug-in.

The insert slots of the Monitor in Control Room are the ideal locations for this type of processing. That way, the corrective EQ is only applied to the signal feeding your monitors and not to the mix itself. When you switch to another set of speakers in Control Room, the inserts are unique so this corrective EQ will only be applied to the one set of speakers where it is required.

Another option would be to insert a bass management plug-in for use in a small surround sound system with a shared subwoofer. It should be noted, however, that the Nuage I/O interfaces have built-in bass management functions available that do not use any CPU processing power.

In most other DAWs, this type of processing must be inserted on the mix bus itself and needs to be bypassed in order to output a proper final mix. Since the Control Room Mixer is a totally independent mixer from the Project mixer, there is no need to bypass its processing during export.

## Phones Setup

The Phones channel has eight inserts.

## *Main Setup*

The Main channel also has eight inserts. The first six inserts are positioned before the Control Room Level while seven and eight are after the level control. The pre-fader inserts could be used for metering plug-ins or spectral analyzers as seen in Figure 4.42 while the post-fader inserts could be used for a protective limiter set to prevent overdriving a speaker system.
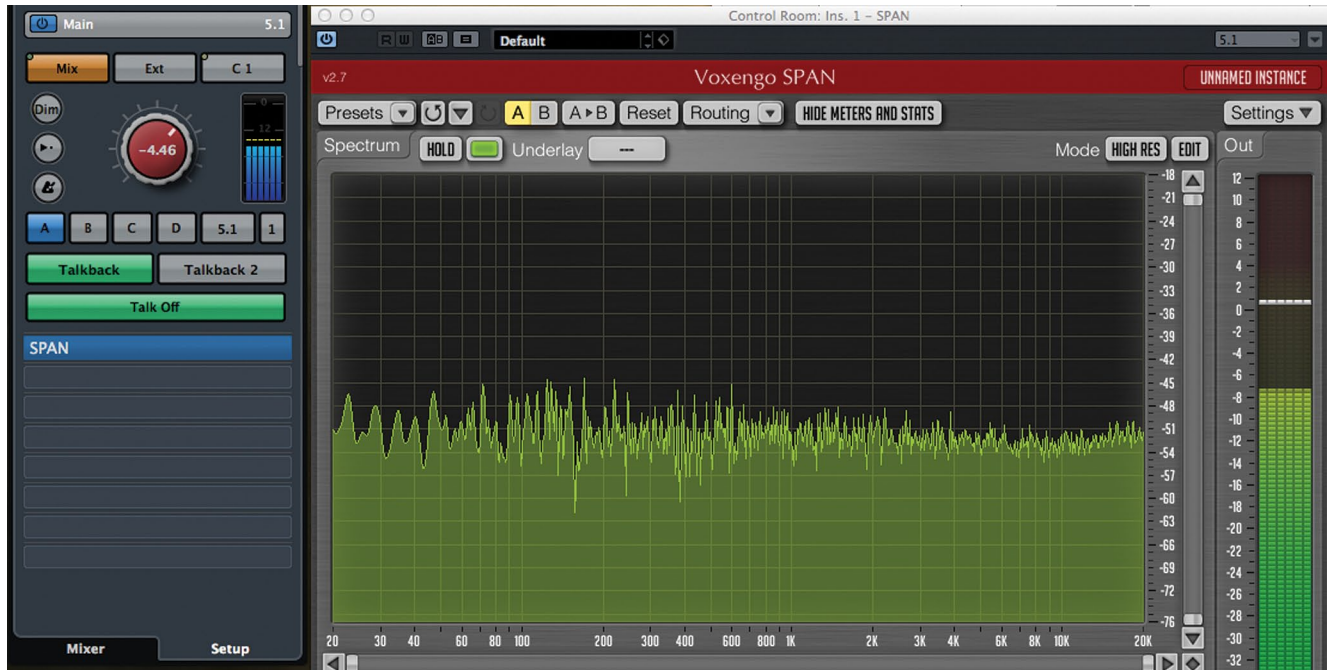


**Figure 4.42** Main setup with Span inserted showing the spectrum analyzer

# The Listen Bus (AFL/PFL solo)

Typically, most DAWs use a form of solo known as Solo-in-Place (SIP). It works simply by muting all other channels in the mixer that are not in solo, leaving that channel by itself. However, this interrupts all of those signals from continuing on to the mix bus, aux sends, and other routing, which may or may not be a good thing. For example, soloing a channel to check a problem during a live broadcast would interrupt the entire mix and that is just not acceptable. This is where the Listen Bus can be helpful.

Traditional analog consoles have another form of solo that uses a dedicated bus to route solo signals to the monitors without affecting the mix of all channels together. A channel placed in solo has its signal routed to this dedicated bus and the monitors are switched to the solo bus as the source. Now you will hear this one signal by itself in the speakers but the complete mix continues uninterrupted. This signal could be taken either before the channel fader (PFL) or after the channel fader (AFL).

This functionality was needed in the DAW environment. The Listen Bus is Nuendo's answer to the need for AFL/PFL solos with some added functionality only a digital system can provide. Listen-enabled channels are routed directly to the Control Room either AFL or PFL. What's different is that the whole mix can be added to this solo bus to keep soloed sound in perspective with the overall mix while still bringing it forward for closer examination. Imagine soloing a channel and just having the whole mix dim down 6 dB under the soloed channel?

The real world application of this is that you can solo any channel in the mixer and have it be prominent in the monitors while still hearing the entire mix at a certain level below that, thus bringing that sound "forward" but not completely out of perspective with the other parts of the mix. This helps when making equalization choices and other adjustments that relate better to the mix as a whole. No more EQing in a vacuum. Plus the Listen Bus is separate from any mix bus, allowing you to solo channels without interrupting the mix in a live or broadcast situation.

## SOLOING REVERB RETURNS

One application of the Listen Bus is soloing reverb and other effects returns. Using Solo-in-Place to solo the reverb return ends up muting all the tracks feeding that reverb bus so you won't hear anything. Using the Listen Bus, you can solo up just the reverb sound by itself, which is very handy for making EQ adjustments that help the reverb fit in the mix better.

# Control Room with Nuage Hardware

One main advantage that the Nuage Master unit provides is access to all the Control Room functions with dedicated hardware controls. Adjusting Control Room level and speaker selection are two of the most common tasks performed by audio engineers. Providing hardware access to these common functions improves workflow and ergonomics.

The Control Room level is placed in the center of the Master Unit shown in Figure 4.43, with a clear numeric readout of the level in dB. To the left, the Monitors can be switched along with the downmix preset. At right are the Monitor Sources and External inputs. The four Cues are to the very right. They can be quickly enabled or muted.

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**Figure 4.43**
Master Unit
Control Room
sections

## Headphones Channel

Pressing the Phones button switches the controls to the Headphones channel. You can choose any Monitor Source or External Input to monitor on the Headphone channel while the main monitors listen to another source.

A headphone icon will appear in the numeric volume display to indicate the Headphone Channel is selected. Changes made to the Control Room or Monitor Source sections now affect the Headphones channel only. For example, the Headphones could be listening to an external input while the Main Monitors could be listening to the mix from the project mixer.

## Control Room Touchscreen

The rest of the Control Room functions are found on the touchscreen when the blue Control Room section button is lit as seen in Figure 4.44. The Main page has controls for the Phones and Control Room channels including click track level and pan, solo mode (SIP, AFL, PFL), and meters.

The Speaker Control page allows you to switch between the four Monitors and control the downmix preset that is applied. For surround Monitors, you can use the graphic representation to solo individual speaker channels such as the center channel as seen in Figure 4.45.
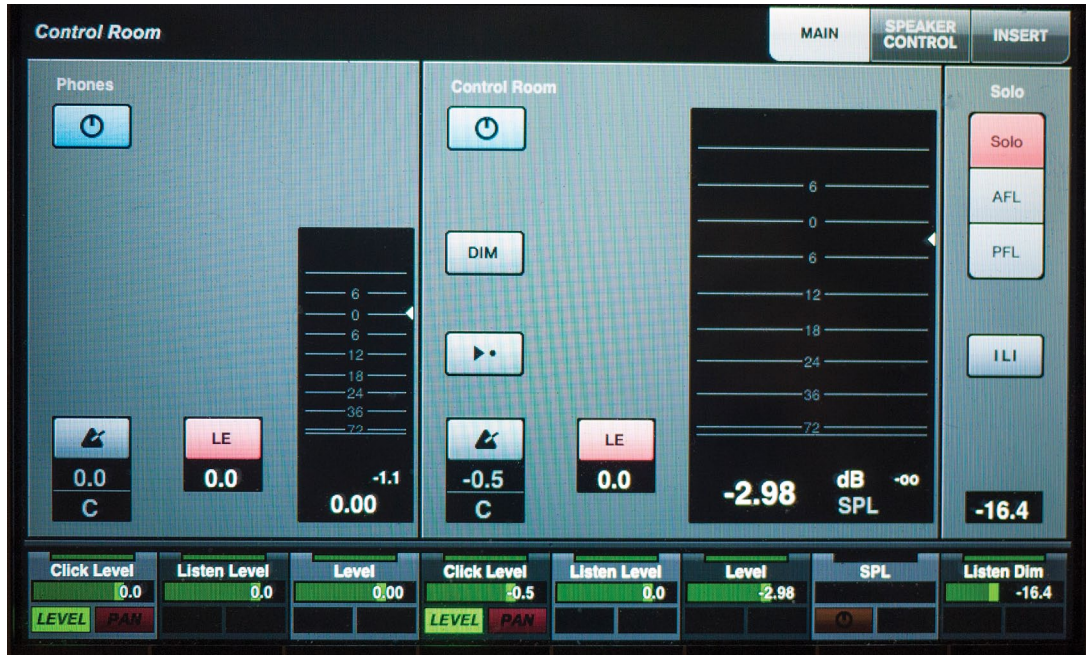
**Figure 4.44**
Main touch-
screen page
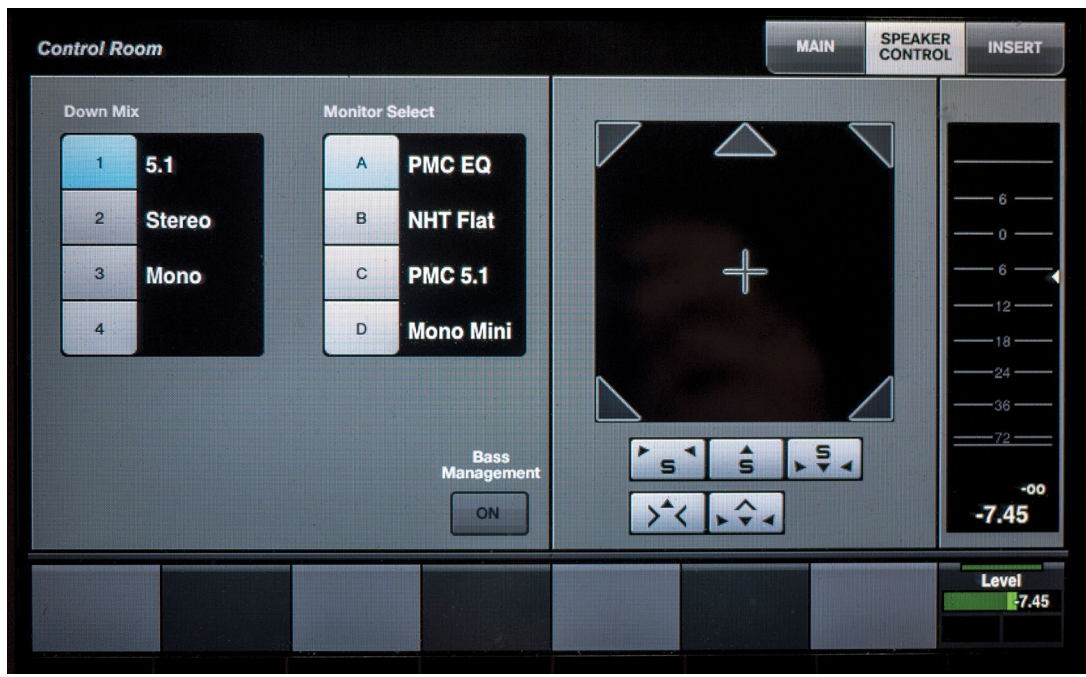


**Figure 4.45**
Speaker Control
page

The Inserts page gives you access to all the insert slots available for all the Control Room channels. Press the channel along the top row and the insert slots for that channel are displayed on the screen as seen in Figure 4.46. You can add and edit plugins right there on the touchscreen.



**Figure 4.46**
Control Room
Inserts page set
to Main
channel

# MIDI Connections

MIDI connections are handled in much the same way as audio connections in Nuendo. You can manage the input and output ports and then configure various MIDI devices that use these ports similar to VST Connections and audio device ports.

## MIDI Port Setup

MIDI connections are accessed from the MIDI Port Setup found under the Devices menu. Similar to the VST Connections window, all the available MIDI ports are listed here. You can rename them by clicking in the "Show As" field and typing in a new name.

Unless you have an extensive vintage MIDI keyboard collection, most MIDI setups are relatively simple. In this system, besides the virtual Nuage MIDI ports, there are only two other devices having a total of three MIDI inputs and two MIDI outputs shown in Figure 4.47.
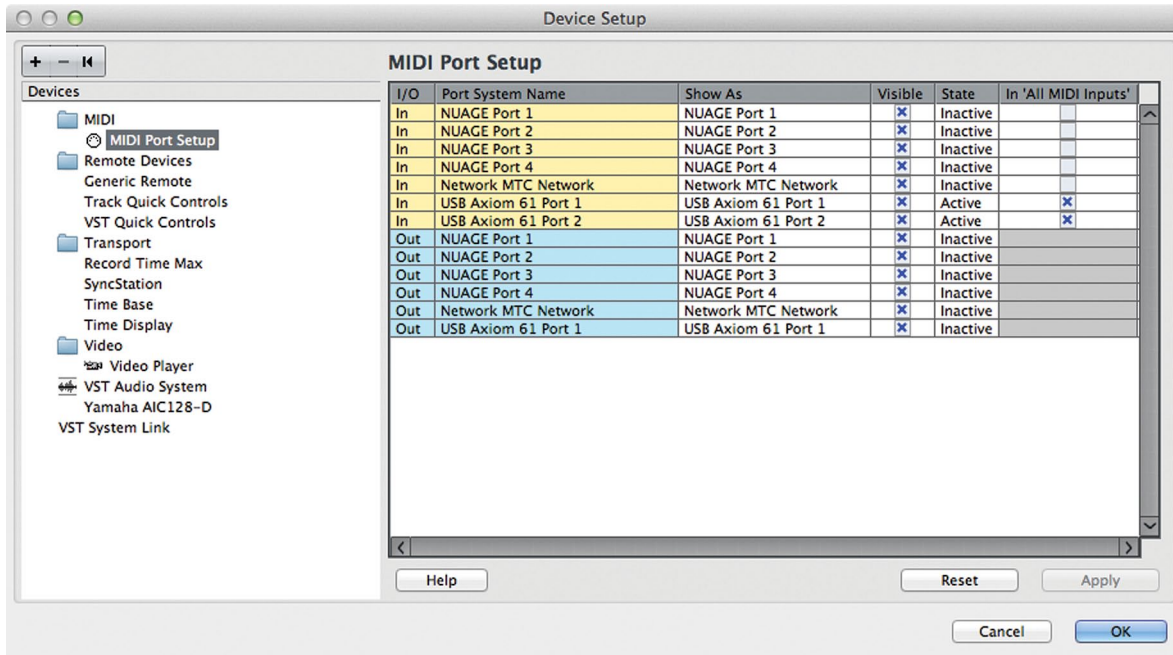
**Figure 4.47** MIDI Port Setup

Here's a description of each MIDI port in the example system shown in Figure 4.47. Every Nuage system will always have the four Nuage MIDI ports:

❖ **Axiom 61:** This M-Audio MIDI controller has 61 keys plus 8 drum pads and a variety of knobs and sliders for use as MIDI controllers. The Axiom uses a USB interface to connect to the computer directly so no MIDI interface is needed. The two MIDI inputs are for the keyboard itself and the second for its own MIDI-In jack that can be used to accept incoming MIDI from another external device. The output port goes directly to the MIDI-Out jack as the controller itself has nothing to control with MIDI. It does not generate any sounds.

❖ **Nuage MIDI 1-4:** These ports are created by the Nuage Workgroup and are used for Pro Tools workstation control.

❖ **Network MIDI:** It is possible in OS X to create a network MIDI port for use between multiple workstations on the same network. Synchronization of two workstations using MTC over this MIDI connection is a common purpose for Network MIDI ports.

| rtpMIDI |
|---|
| For Windows workstations, rtpMIDI is a free driver for creating compatible network MIDI ports for Windows operating systems. These network ports can connect to Apple computers and other devices such as iPads, Android tablets, and more. Visit: http://www.tobias-erichsen.de/software/rtpmidi.html |

If there are MIDI ports that you do not intend to use, you can hide them by unchecking the port in the Visible column. Making a port invisible will also disconnect it from anything in Nuendo.

### 'All MIDI Inputs' Option

The checkbox for *In 'All MIDI Inputs'* determines if that port is included in this special MIDI input option for recording. If a MIDI track uses 'All Inputs' as its input source, MIDI data from these selected inputs will be merged and recorded together onto the MIDI track. In the MIDI Port Setup above, note that the Nuage ports are not selected to be part of 'All MIDI Inputs' as the data from those ports would not be recorded on a MIDI track.

This can be useful, for example, when using more than one MIDI controller to program drums. A normal keyboard could be used for most of the drums while a separate MIDI triggering device could be used for foot-operated triggers for the kick drum and hi-hat performance. The 'All MIDI Inputs' will merge the data from both controllers onto the MIDI drum track.

| BE CAREFUL WITH CONTROL SURFACE CONNECTIONS |
|---|
| It is best not to include ports connected to MIDI control surfaces (such as HUI, Nuage, Euphonix, etc.) that you are using to adjust the mixer or plug-in settings, as that data could get recorded on a MIDI track along with the relevant keyboard controller data you intend to record. Uncheck the 'All MIDI Inputs' boxes for these devices to avoid this problem as shown in Figure 4.47. |

## MIDI Device Manager

Once you have your MIDI ports set up, you can create MIDI devices for each external MIDI module you have connected. These devices can be associated with External FX or External Instruments for MIDI control over these external devices. MIDI devices can be anything from keyboards and external processors to digital consoles and MIDI control surfaces. Once

created, these devices are used in Nuendo to connect MIDI tracks and controls to and from the device.

For example, I often use a vintage Line 6 Echo Pro rack mount delay unit for mixing. It is MIDI capable, and every parameter of the unit can be controlled by MIDI from Nuendo. Also, I am able to store settings from the unit as system exclusive data in a Nuendo project for later recall.

For every external device connected via MIDI to Nuendo, you should create a MIDI device that represents it. Follow these steps to create a new MIDI device in the MIDI device manager.

1. Open the MIDI Device Manager from the Devices menu (Fig 4.48).

2. Press the Install Device button and the Create MIDI Device dialog will open showing you a list of common brand name devices to choose from (Fig 4.49).

3. If your device is listed, select it and click OK as this will load a pre-configured device of that kind.

4. If the device is not listed, select "Define New..." and the Create New MIDI Device dialog will open (Fig 4.50).

5. Click in the name field and enter the name of the device.

6. Click on all available MIDI channels in the Identical Channels box that the device will use.

7. Click OK to create the device. Its Device window will open showing the available MIDI channels (Fig 4.51).

8. Back in the MIDI Device Manager, you will see the new device listed. Click on it and you will see the MIDI output pull-down menu. Choose the MIDI port that is connected to the new device (Fig 4.52).



**Figure 4.48**
Empty MIDI Device Manager
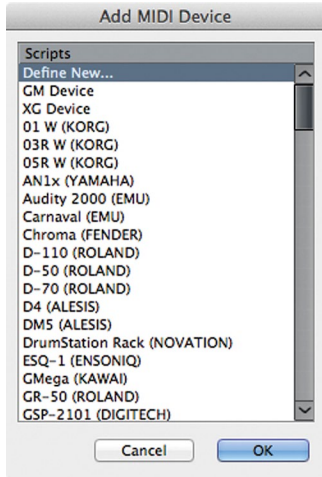
**Figure 4.49**
Create MIDI
Device dialog
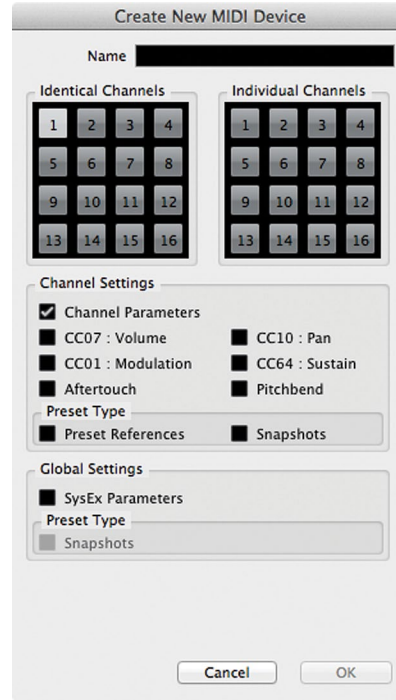


**Figure 4.50**
Create New
MIDI Device
dialog
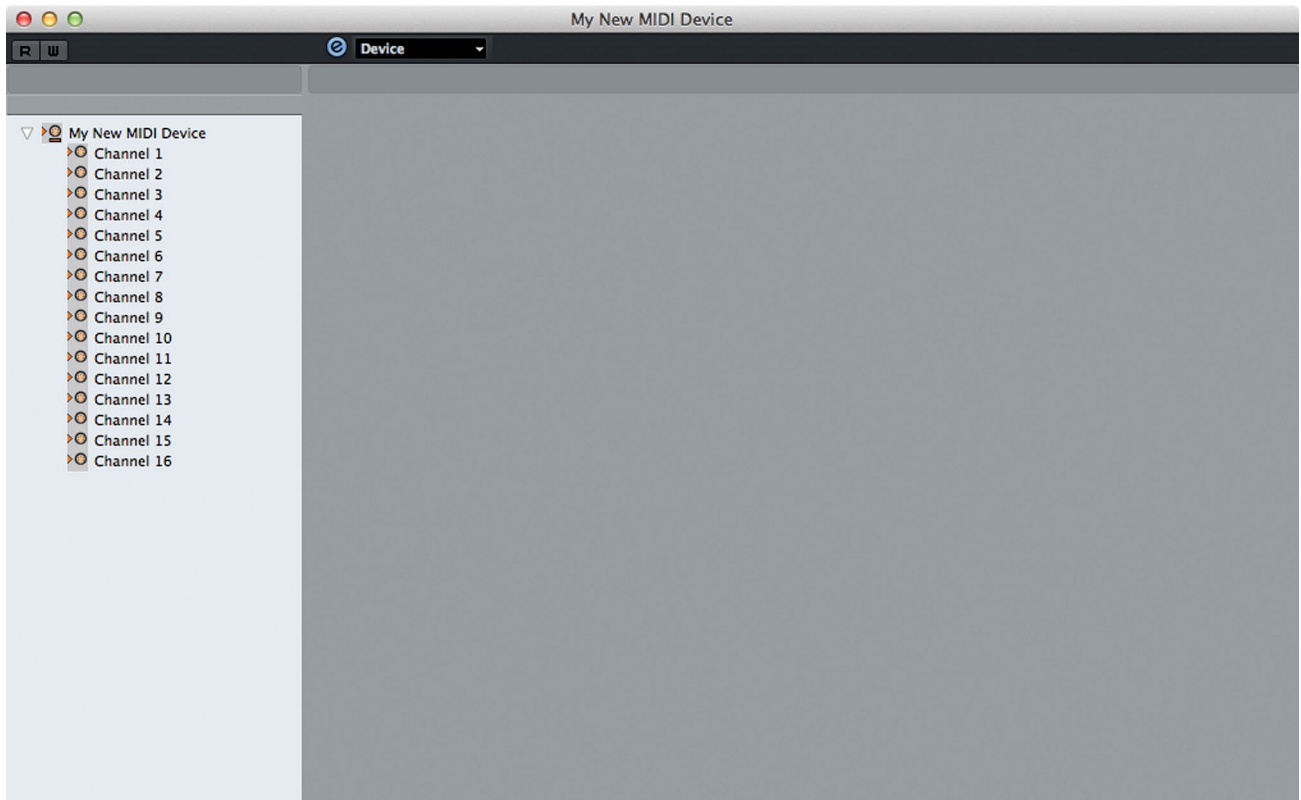


**Figure 4.51**  Basic 16 channel MIDI Device

**Figure 4.52**
MIDI Port
Selection

Your MIDI device is now set up and ready to be used. Take a look at a fully configured MIDI device utilizing various "device panels" that allow complete MIDI control of the device from inside Nuendo (Fig 4.53).

This example gives you an idea of what is possible. Creating this amount of detail in a MIDI device is a complicated process that is outside the scope of this material. Understand that you can create custom "device panels" for MIDI devices that allow direct access to various parameters of your choice. If you wish to explore the creation of MIDI device panels, refer to Steinberg's documentation on MIDI Devices contained in a separate PDF file with your install data. The creation of basic MIDI devices allows you to connect those devices to MIDI tracks easily by name as opposed to MIDI port.



**Figure 4.53**
Fully configured
MIDI device for
the TC Finalizer

# NUAGE

## COURSEWARE

PART I: SETTING UP
by Ashley Shepherd

# Chapter 5
# Project File Structure

NUENDO 7
Advanced Audio Post-Production System

YAMAHA

CUBASE PRO 8
Advanced Music Production System

# NUAGE

## Project File Structure

- ❖ Project Folder
- ❖ Anatomy and File Structure of a Nuendo/Cubase Project
- ❖ Hard Drives for Audio Recording
- ❖ Create a New Project

Let's create a new Project. A Project is the basic file structure in Nuendo. A Project consists of a folder (directory) containing one or more Nuendo Project files (.npr) or Cubase files (.cpr) and any amount of associated audio and video files along with other data Nuendo uses to display the audio waveforms and backup project data. All of these files are usually stored in one folder together. This is called the Project Folder.

## VIDEO FILES

Video files can be excessively large. They can also use a great deal of disk bandwidth during playback. For these reasons, they are often stored outside of the project folder, often on another dedicated hard drive to reduce the workload of the audio drive.

# Project Folder

The project folder is the parent folder of the entire project file structure. All files related to the project should be contained within this folder with some exceptions.

Video files are often stored in another location, perhaps on another hard drive. For long-form projects such as TV drama and feature films, these files can be quite large and also require dedicated disk bandwidth. Having them stored on another hard drive eases the strain on the main audio drive in complex productions.

It is possible to import audio files into Nuendo without copying them into the Project Folder. In this case, the audio file remains in its current location and Nuendo references this in order to locate the file when it needs to be played back. This is often the case with large sound effects libraries stored on shared drives between multiple studios. Instead of copying every sound effect into the project folder, they can remain in the library location to save disk space.

Issues can arise when trying to back up and archive projects that reference files that are not in the Project Folder. At that point, it will be necessary to consolidate every file into one location for a proper backup to be created. Nuendo has tools to perform this task easily.

# Audio

When you record audio into a Nuendo project, it will be stored in the Project Folder, inside another folder called simply "Audio." The Nuendo project file (.npr) contains a reference to that folder location and will look to the Audio folder to find audio files that are part of the project. This is a very important relationship to remember and understand.

# Images

Nuendo needs to create data that allows it to display the audio waveforms onscreen. Nuendo creates a waveform display file for each audio file that is a part of the project. Those files are stored in a folder called "Images" within the Project Folder.

# Edits

When you perform a processing operation on all or part of an audio file, Nuendo copies the changed portion of the file into a folder called "Edits" and leaves the original file untouched. This "Offline" processing can then be "undone" or adjusted in the future, leaving all possibilities available to you. When you use Nuendo's Offline Process to alter the audio, you are not stuck with the result.

# Track Pictures

Track pictures are graphics or actual photos that can be displayed in the mixer window to help identify the track. For example, the snare track of a drum kit could have a graphic image of a snare drum displayed above the fader in the mixer window to make it easier to quickly identify the track among the many other drum channels. These images are stored in the "Track Pictures" folder.

| PRO TOOLS TIP |
| --- |
| When creating a new session in Pro Tools, the session folder is automatically created. In Nuendo and Cubase you must first create the folder yourself and then save the project inside it. Nuendo will then create all the necessary folders (Audio, Images, etc.) within this folder. This method is more flexible as you can create a new project within an existing project folder without any problems. The new project will adopt the existing Audio and other folders that are present. |

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# Anatomy and File Structure of a Nuendo/Cubase Project

**Project Folder**

.npr

.cpr

.bak (project backup files)

Images Folder

Waveform display files (.peak)

Audio Folder

.WAV

.AIFF

.BWF

.MXF

Edits Folder

Offline processes (.wav)

Portions of audio files that have been modified: pitch-shifting, VariAudio tuning, plug-ins, etc.

Track Pictures Folder

.jpg images to identify each mixer strip (drum, guitar, bass, etc.)

Video Files

.mp4

.dv

.MOV

.AVI

Large video files are commonly stored on a separate, dedicated hard drive.

This structure might seem simple and obvious at first, but when things start to get complicated and files outside the Project Folder are used within a Nuendo project, trouble can arise in the form of missing audio files and project backups that do not work correctly if you do not understand this file structure. Nuendo provides some simple tools to help avoid these issues

when backing up projects while still providing the flexibility to use files outside of the Project Folder as needed (e.g., sound effects libraries on a shared network drive). If you have a clear understanding how the project file structure works, any problems can be avoided or corrected.

# Hard Drives for Audio Recording

Modern computer systems and hard drives are capable of recording a great number of audio tracks at once without difficulty. Still, there are few things to consider when choosing the location of your Nuendo project:

## Do Not Record on the System Drive

The system drive of a computer is the hard drive that contains the operating system (Windows, OS X) and is used to boot up the computer. On Windows systems, this is typically the C drive. In OS X, open the system preferences and click on Startup Disk to see the name of the system drive.

System drives are bad for audio recording because they are constantly used by the operating system for system-related activities. It is best to use another dedicated hard drive in your system for audio recording.

For laptops, this means an external drive is necessary for serious recording. The internal drive may be suitable in some situations but everything should be transferred to an external drive eventually. For desktops, other internal drives may be used or external drives so long as they can operate at reasonable speeds for audio recording.

Here are some criteria for audio hard drives:

❖ Use hard drives with 7200 rpm speeds or greater

❖ Internal SATA

❖ USB 3 (USB 2.0 for modest projects)

❖ FireWire

❖ RAID 0 for higher speeds

❖ Fibre Channel for shared storage

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# Create a New Project

To create a new project, select New from the File menu. The new Project dialog opens up, Figure 5.1. Here you will see the list of supplied templates along with the option to create an empty project. Choose "empty" so we can start from scratch.

## Project Location

You will be prompted to set the project folder. Navigate to the directory where you want to store your project. You should create an empty folder for Nuendo to use. It is possible to use an existing folder, and this is where mistakes are often made. If you do not create a new folder for the project, the current directory will be used, no matter what other files might be present. It is best to create a new, empty folder for any new project to keep things organized.

Remember, the Project is the entire file structure, folders and all, not just the .npr/.cpr file.
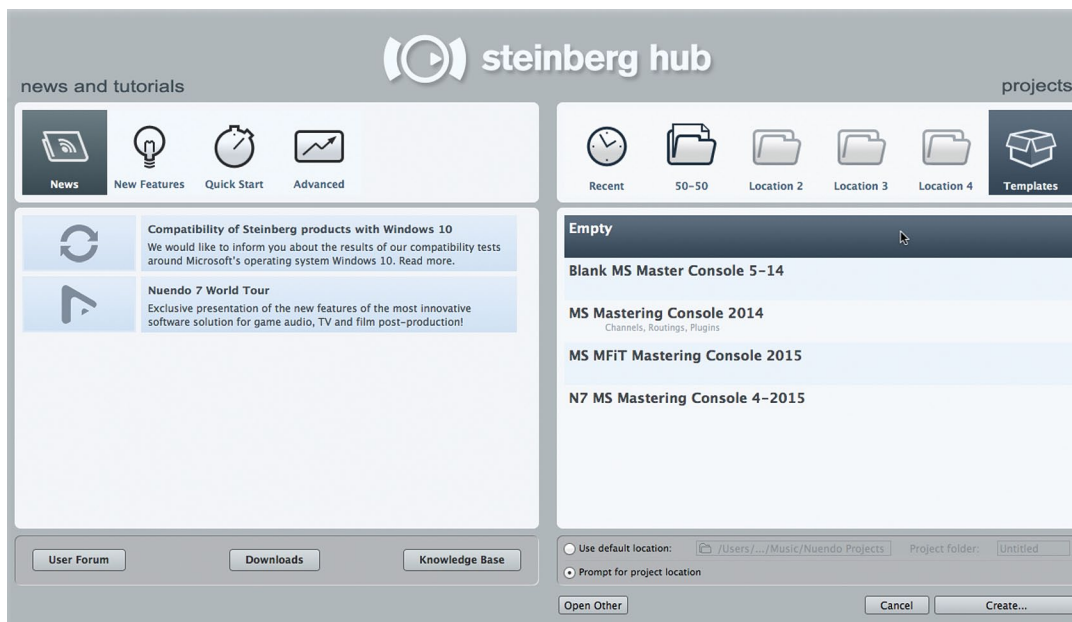


**Figure 5.1**
New Project dialog

---

### PRO TOOLS TIP

When you create a new session in Pro Tools, the name of the session is given to the enclosing folder that Pro Tools creates for you. In Nuendo, you create this folder yourself and can name it whatever you like or use an existing folder. The project file (.npr) is saved inside this folder and can have another name if you choose.

---

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## KEEPING FOLDERS STRAIGHT

I have had many clients who create project folders within other project folders inadvertently. Or they do not create separate project folders for unique projects (like different songs on an album). So what ends up happening is the audio files for all the projects are in the same Audio folder. This can cause a lot of confusion later on when trying to copy various projects to other systems or for backing up. Try to figure out where "Audio_01. wav" goes when you have 500 of them in the same folder and you get the idea. This happens with both Nuendo and Cubase, as they have the same file structure. Always take the time to ensure you have created a file structure that is logical and confirm that audio files are being stored in the correct location.

OK, now you should have an empty Nuendo project open in front of you. It should look something like Figure 5.2.
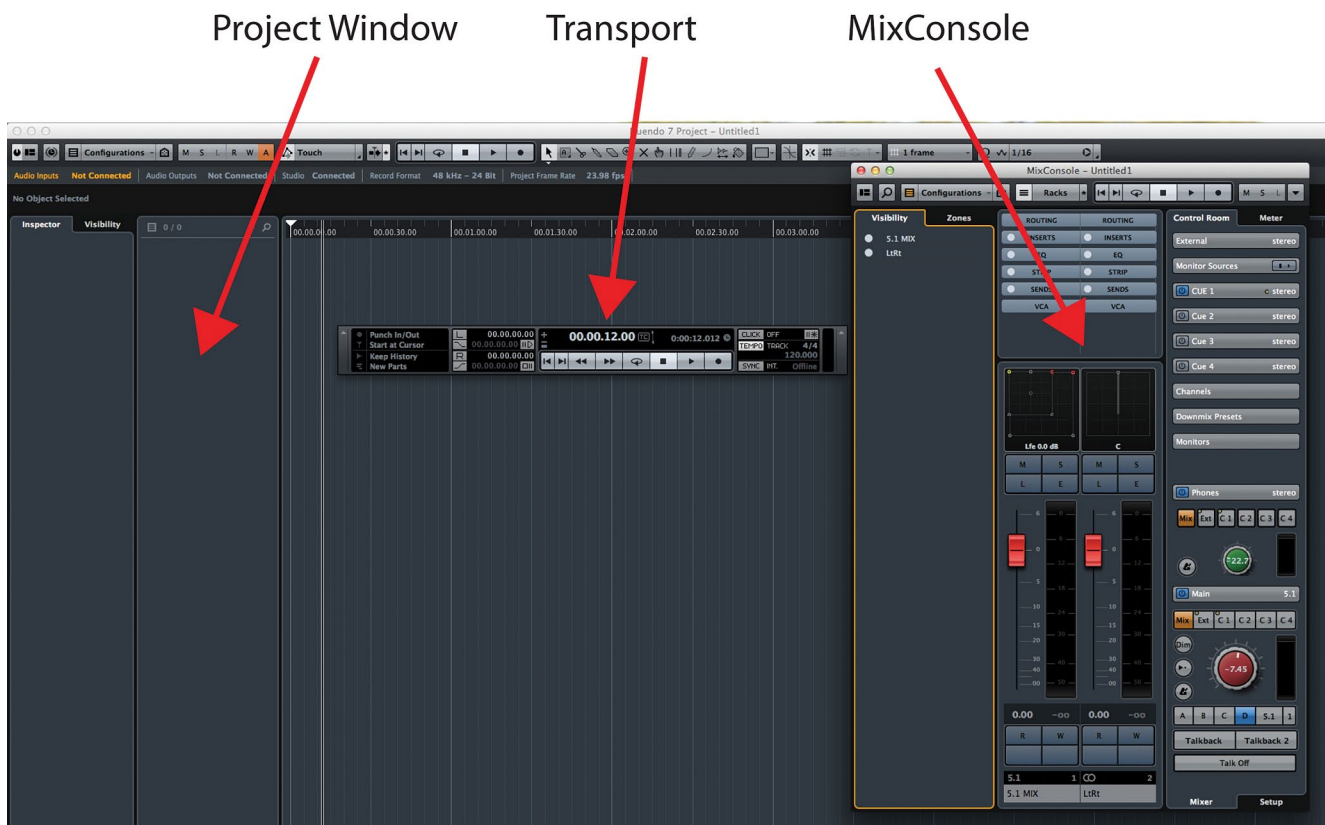


**Figure 5.2** Empty Project

The top window is called the Project window. This is the main edit screen in Nuendo and is the place where you spend a lot of time. The middle window is called the transport for obvious reasons. It has a number of controls that pertain to locating, playing, recording, and counter displays. At the bottom is the mixer.

Notice that the mixer has two channels representing the VST Inputs and VST Outputs. If you have already configured VST Connections for your studio setup, the mixer might show different channels. A new project that does not use a template will adopt the default VST Connections that you must create. Otherwise, the previous connections will be used again.

## Default VST Connections

In order to create your default VST connections, open VST Connections window from Devices menu, and configure the Inputs and Outputs tabs to your preferences. Then create a new preset called "default" for both inputs and outputs. Now, all newly create projects will adopt these input and output settings.

## Project Setup

When you first create a project, there are some basic settings that you should determine before beginning any work. To access these basic settings we want to open the Project Setup window by selecting it from the Project menu or pressing Shift+S. For now, we just need to set the very basic settings for audio formats. At the bottom of this window, shown in Figure 5.3, are the audio settings.

These settings affect what type of audio file is created when recording. Setting the sample rate, bit depth, and file type determines how audio files are written to the hard disk.

You must ensure that these settings match the settings for your audio interface so there is no mismatch later. For example, if your audio converters use an external word clock to set the sample rate, it must match the sample rate set in the Project Setup. Many audio interfaces can be controlled by Nuendo and will adjust their settings to match the Project Setup but this is not always the case. Double-check everything before recording!
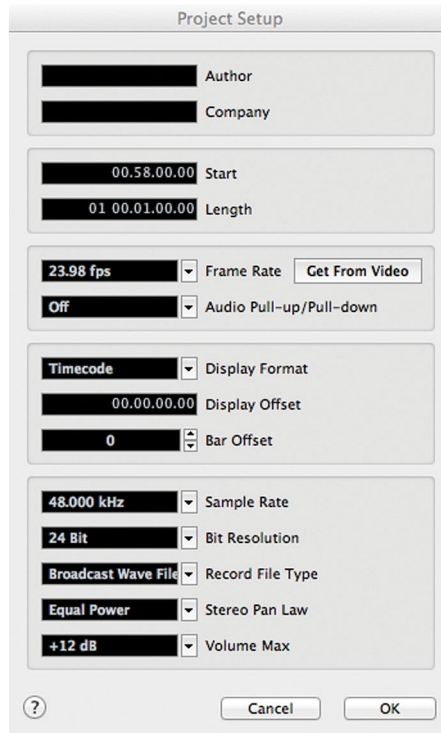
**Figure 5.3**
Project Setup
window

For some Dante devices, the only way to alter the sample rate is by changing it in Dante Controller.

❖ **Sample Rate** – Nuendo can record at all sample rates including some not-so-common ones. This is only limited by the capabilities of your audio hardware.

❖ **Bit Resolution** – For 99% of the time this should be 24 bit. 16 bit is only useful when using much older audio hardware that is only capable of 16 bit audio. 32 bit floating-point resolution is only useful if you are processing signals with plug-ins on the VST Input channels.

❖ **Record File Type** – Nuendo is capable of recording in various file formats depending on your needs. The current most widely used format is Broadcast Wave File. Even the MXF format is supported for film and post work.

❖ **Stereo Pan Law** – This setting determines how Nuendo performs stereo panning in the mixer. Common practice is to use -3 or -4.5 dB for the pan law, however the Equal Power method is more psycho-acoustically appropriate.

❖ **Volume Max** – (+6 or +12 dB) This setting affects the mixer's range above 0 dB on the faders. If set to +12, the faders can reach a value of +12 over 0 (unity).

The rest of the settings in the Project Setup have to do with timecode and will be discussed later in context with those topics. Now that you have the basic settings ready to go, we can take a look at the layout of a Nuendo project in the next chapter.

# Project Signal Flow: Input to Output

In the diagram below is a graphic representation of the signal flow from input to output of a Nuendo Project. This should help give an idea of where in the signal chain various portions of the DAW are located.

The graphic shows the signal path starting with the audio source and progressing through the physical stages until it enters the software at the VST Input. Next, signal can either be recorded to disk or routed through Control Room as an external input to be monitored.

Once an audio file has been recorded, it can be edited and processed before being played back through the Mix Console and then sent on to the VST Outputs. VST Outputs can either go directly out of the software to the audio interface or through the Control Room mixer as a monitor source (see Figure 5.4).

Sounds created by virtual instruments within the project using MIDI begin their signal flow at the Mix Console.

# Audio File Structure

Once an audio file has been recorded onto the hard disk, Nuendo creates a structure that it will use to play that file back, edit and process parts or all of the file, and maintain a history of these actions as part of the project. It does this using three levels of the audio file structure:

> Audio File (parent)
> > Audio Clip (child)
> > > Audio Event (grandchild)
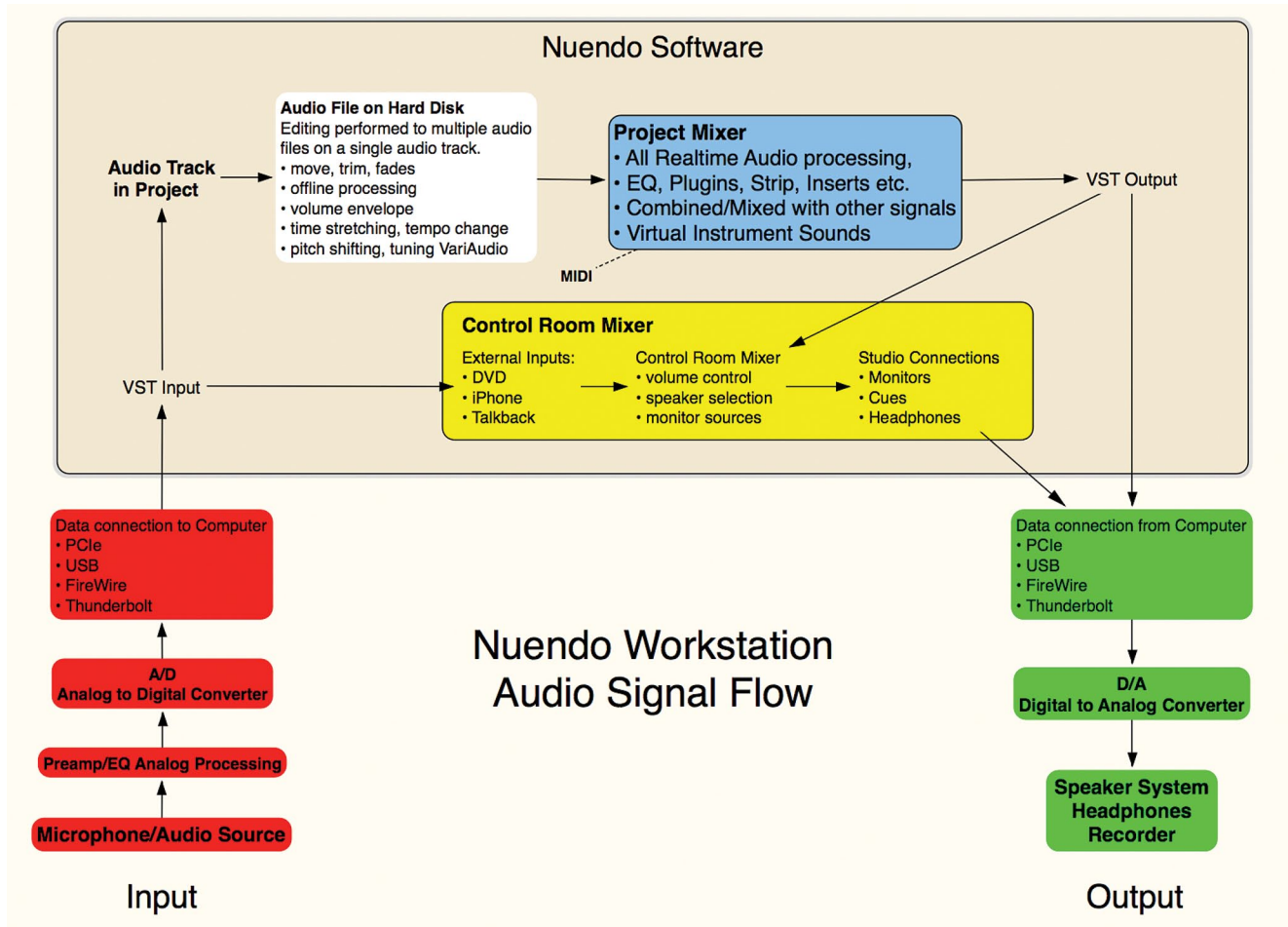
**Figure 5.4** Nuendo Workstation Audio Signal Flow

## Audio File

The audio file is the complete file written to the hard disk, the original recording itself. This file will remain untouched and in its original form regardless of the processing applied to it or how many edits have been made to it in the project. Originally recorded files are not altered by Nuendo.

## Audio Clip

The Audio Clip is a reference to the audio file and any processed portions of that file that are in the Edits folder. For example, if you take a portion of an audio file and time stretch to twice the original length, that portion will be stored in the Edits folder and the Audio Clip will reference that in order to play the audio back with the section of time-stretched sound in the correct position relative to the rest of the audio file.

With this method, you can always return to the original audio recording, undoing the time-stretch easily. This is an important distinction in the file structure. Audio Clips reference the original file and processed portions of the file together so they can be played back as one.

## Audio Event

An Audio Event is the portion of an Audio Clip that is in the Project on a track so it can actually be played. Audio Events are how Nuendo associates audio with the timeline of the Project, playing back the bits of audio exactly when they are supposed to be played.

Editing audio in Nuendo means changing parameters of Audio Events in the Project until they are playing back as desired. Those parameters include the following:

- ❖ Start time
- ❖ End time
- ❖ Length
- ❖ Volume (equivalent to Pro Tools' Clip Gain)
- ❖ Fade-in time
- ❖ Fade-out time
- ❖ Transpose (for musical audio)
- ❖ Lock status

It's important to understand the distinction between the audio file, clip, and event as you work in Nuendo so you can use this file structure in creative and efficient ways.

# NUAGE

## COURSEWARE

PART I: SETTING UP
by Ashley Shepherd

# Chapter 6
# Nuendo's Basic Layout

NUENDO 7
Advanced Audio Post-Production System

YAMAHA

CUBASE PRO 8
Advanced Music Production System

# NUAGE

## Nuendo's Basic Layout

- ❖ Create New Tracks
- ❖ The Project Window
- ❖ Transport Panel
- ❖ The MixConsole

In this chapter, we will get familiar with the various elements and interface of Nuendo's main windows. We'll start with one audio and one MIDI track and take a look at how the GUI works.

# Create New Tracks

To create an audio and a MIDI track, follow these steps:

1.  Select Add New Track from the Project menu. A submenu with all the various track types will open (see Figure 6.1).

2.  Select Audio Track. The Add Audio Track dialog will appear (see Figure 6.2), allowing you to choose the quantity and configuration of audio tracks to be added. The choices for track configuration are diverse to say the least. For now, choose one mono track.

3.  From the Add Track menu, choose MIDI Track. The Add MIDI Track dialog will open. Select one and press Add Track. One MIDI track will be created.

4.  You should now have two tracks in the Project window. It will look something like Figure 6.3.
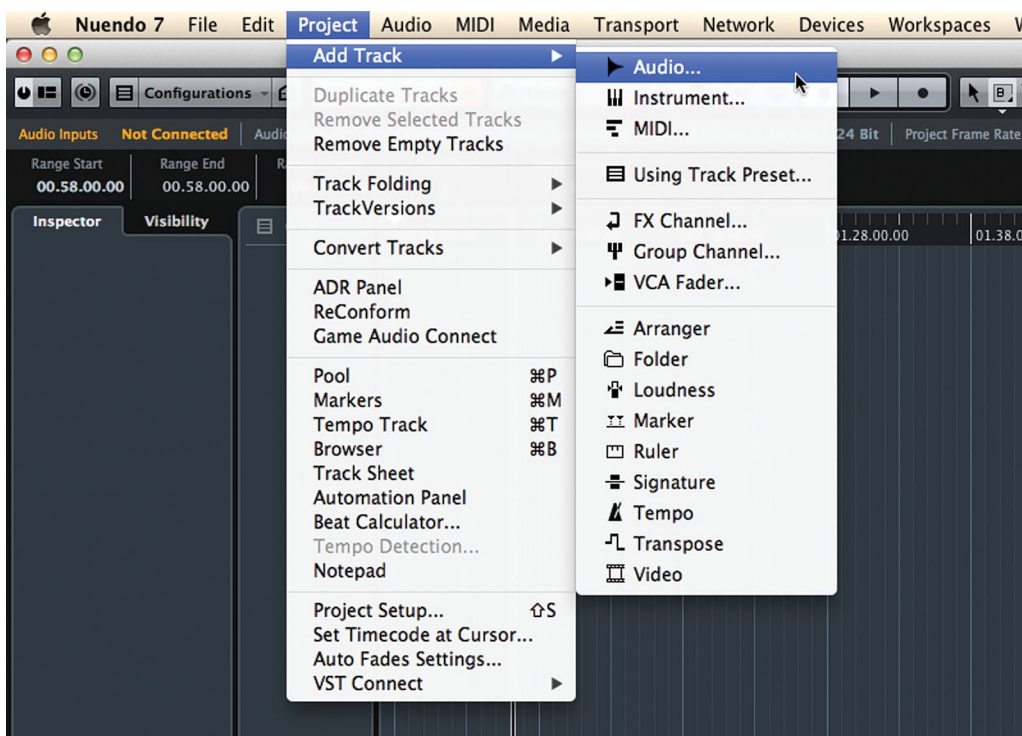


**Figure 6.1**
Add Track submenu

**Figure 6.2**
Add Audio
Track configura-
tion menu
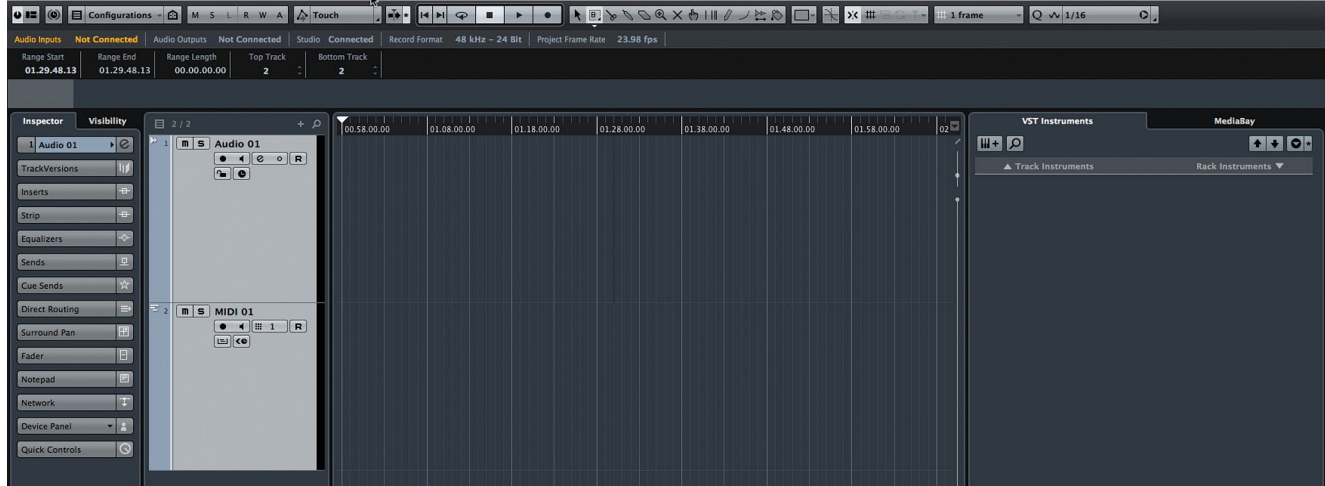


**Figure 6.3**  Project window with one audio and one MIDI track

# The Project Window

The Project window is the main edit window in Nuendo where most of the action takes place. In fact, you could do just about any type of editing or mixing just in this window alone. It is configurable to meet your needs, only displaying the information you want and nothing more.

There are nine areas in the Project window (see Figure 6.4), seven of which are shown by default.

1. Toolbar
2. Status Line
3. Info Line
4. Inspector/Visibility Pane
5. Track List
6. Event Display
7. Ruler
8. Racks Pane (VST Instruments and Mediabay)
9. The Project Overview
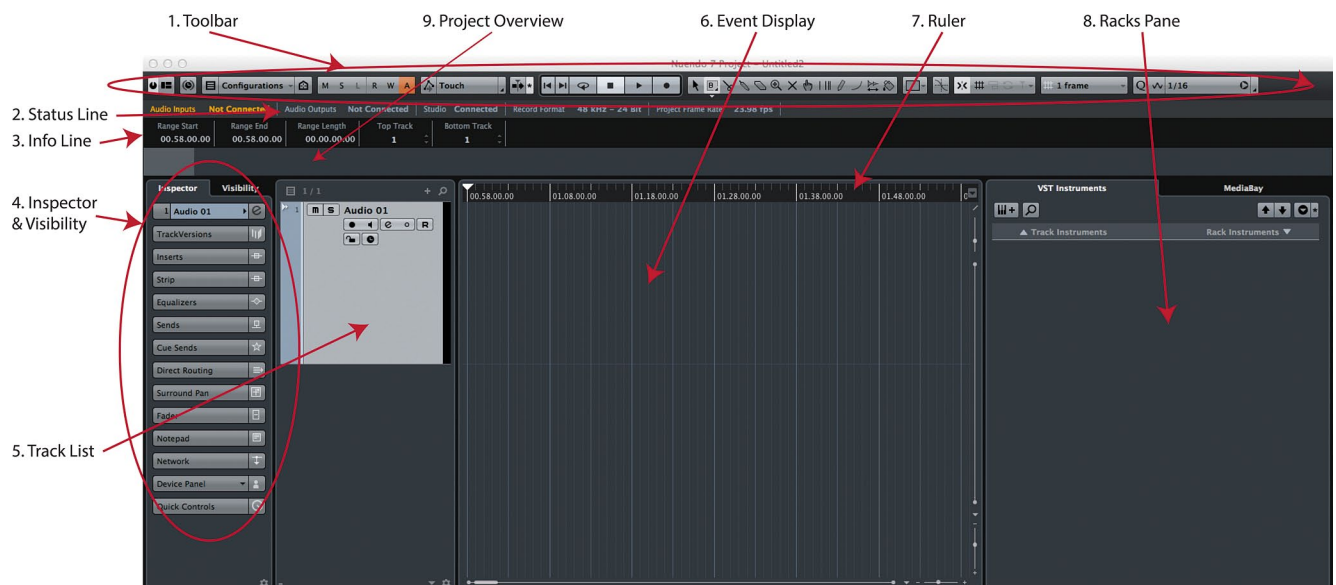


**Figure 6.4** The Project window

# Window Layout

There are five areas of the Project window that are optional. You may turn them on to see more information or turn them off to make more room. To turn them on or off, press the Setup Window Layout button in the toolbar at top. The Project window will gray out, revealing the display options (see Figure 6.5).

Many windows in Nuendo have this setup option. Just look for the same Setup Windows Layout button in any window to see optional areas.

Check the Overview Line and then click anywhere in the Project window to return. A new line appears below the Status Line showing a black and grey area in our example. This is how you can turn on or off the five optional areas of the Project Window.
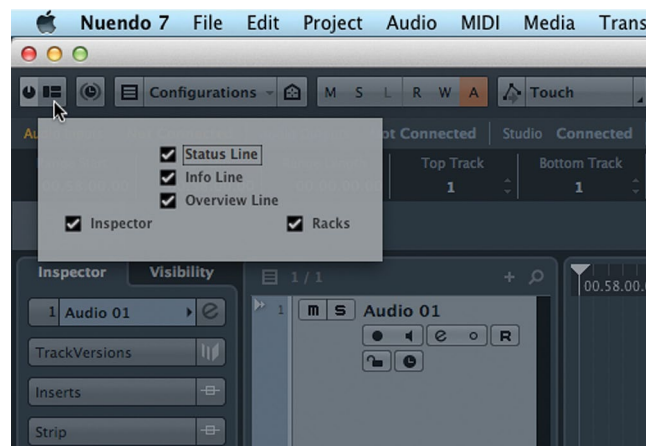


**Figure 6.5**
Setup Windows
Layout options

# Project Overview Line

If there is material in the Project, this Overview Line would show an overview of the entire project. This is useful for navigating very large projects such as feature film or long form television episodes.

Figure 6.6 shows an example of the Overview Line in music project. The gray area indicates the portion of the project that is visible in the Event Display at the current zoom level.
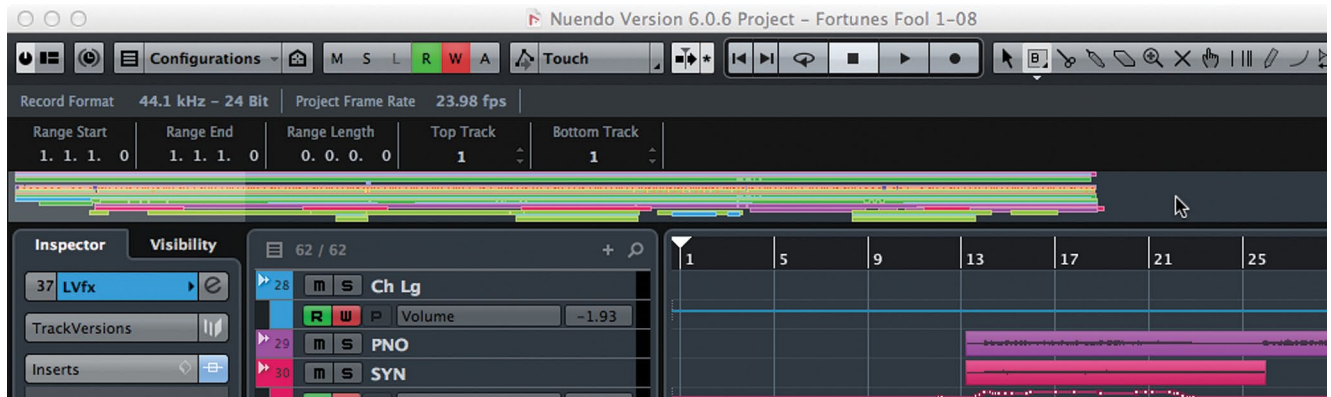
**Figure 6.6**  Project Overview Line showing several tracks

# Project Toolbar

In its basic configuration, the toolbar (see Figure 6.7) contains a slew of editing tools and other controls. The toolbar is configurable to show just the items you wish to use. As each section deals with differing functions within Nuendo, they will be covered in detail in relevant sections of the book. Here, I will give brief descriptions of each to provide the general idea of what each tool can do.

## Default Toolbar Controls

1.  **Activate Project** – Think of this as a power button for the project. Since Nuendo can have more than one project open at a time, only one can be active. Pressing this button activates the project. The button becomes highlighted when the project is active.

2.  **Setup Window Layout** – As discussed above, this allows you to show or hide the optional areas of the Project window.
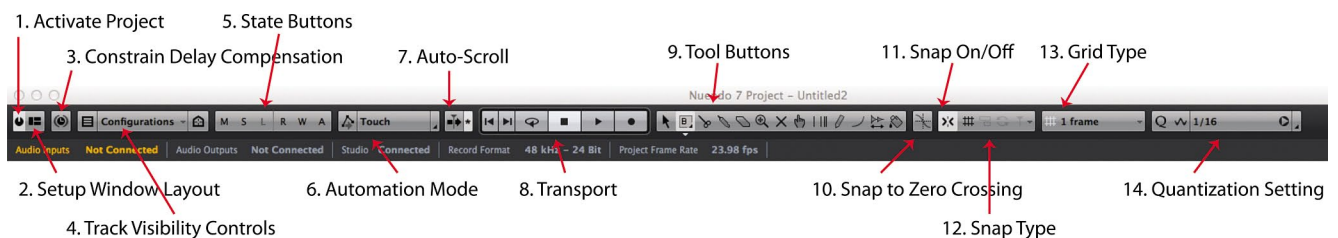


**Figure 6.7**  The Toolbar with default controls

3. **Constrain Delay Compensation** – This control defeats plug-ins that cause significant delay in the mixing engine so that you may record new material into a project without any monitoring latency.

4. **Track Visibility Controls** – Macros for viewing or hiding tracks.

5. **State Buttons** – These are global controls for tracks affecting solo/mute/ Listen and automation status.

6. **Automation Mode** – This allows you to change the basic automation mode for Nuendo: Touch, Auto-Latch or Cross-Over. These are just the very basic write modes of the automation system. Nuendo's automation system is very sophisticated and will be covered in depth in Part IV: Mixing.

7. **Auto-Scroll** – This turns Auto-Scroll on or off, allowing the event display to follow the playback cursor as it moves through the project.

8. **Transport** – These are the basic transport controls. Complete transport controls are available from the Transport panel.

9. **Tool Buttons** – These buttons activate editing tools for use in the Event Display. These buttons are used to select the various tools and also to indicate which tool is currently active. Complete discussion of all the tools can be found in Part III: Editing.

10. **Snap to Zero Crossing** – When editing audio, this setting will force the edit to snap to points where the waveform crosses the zero point, avoiding pops and clicks in playback.

11. **Snap On/Off** – This activates the Snap function for editing in the Event Display. There are a tremendous number of uses for Snap, and they will be covered in Part III: Editing.

12. **Snap Type** – This determines the type of Snap that is being used. There are eight choices for greater flexibility in editing.

13. **Grid Type** – When the grid is used for Snap editing, this defines the grid values. A complete discussion on the grid and its uses will be in Part III: Editing.

14. **Quantization Setting** – This gives you quick access to common quantization settings. Complete quantization tools are available from the MIDI Menu>Quantize Setup.

NUAGE
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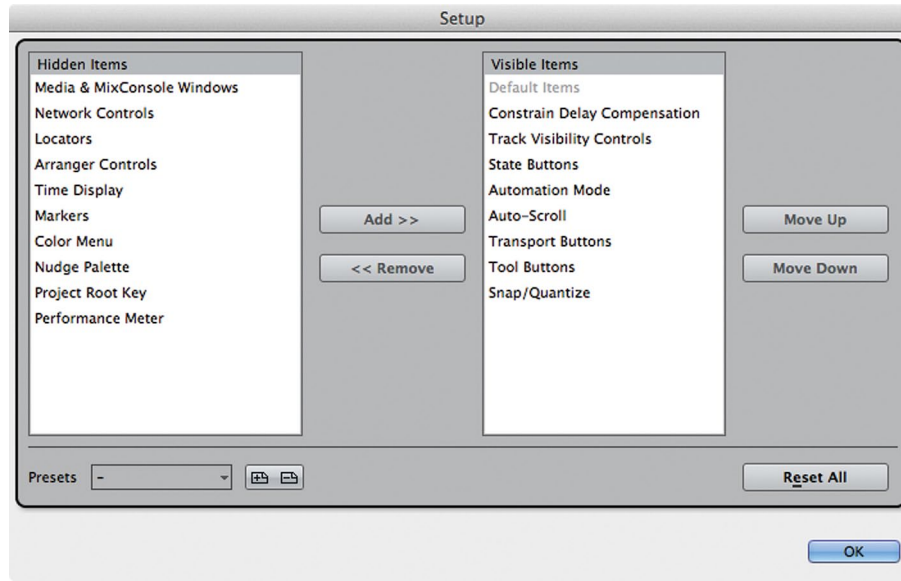
**Figure 6.8**
Toolbar Setup
dialog

Those are just the default controls. By right-clicking (Windows) or control+clicking (OS X) anywhere in the toolbar, you will open a popup menu with all the available controls for the toolbar plus a Setup option to configure how they are displayed (see Figure 6.8). Select the Setup... option to open the Toolbar Setup.

Certain controls are grouped together for display, such as Snap/Quantize. In the Setup dialog, you may select which controls are visible and in what order they appear on the Toolbar. To make controls visible, select them in the right window and press the left arrow button to move them to the "Visible" side. Once there, you can select controls and either press the Move up or Move down buttons to change the order in which they appear in the Toolbar.

Since these tools are things that are used literally hundreds of times per session, their configuration and position in the Project window can be critically important to workflow efficiency. The Toolbar Setup allows you to customize the toolbar to meet your needs and workflow.

Once you have configured the toolbar to your preference, that setup can be saved as a preset using the preset tools at the bottom right of the dialog. You could create several presets designed for different types of work where tools that are most important can be put in convenient places on the Toolbar.

## CUSTOMIZE GRADUALLY

This high degree of customization is available throughout Nuendo, accommodating a variety of workflow styles to match the needs of users. It takes some time to explore these possibilities and come to the right solution for your needs. The best advice is to work using the default settings and identify tasks and tools you use most often. Then search for the most efficient shortcut or preference that will help speed up those operations, one at a time. That way, the customization can be worked in gradually. This should yield the best working setup without overwhelming you with all the possibilities of customization.

I will attempt to provide examples of customization that have helped my workflow as starting points for you to create your own customized workspace and tools.

## CUSTOMIZATION TIPS

I tend to use the default settings for the Toolbar minus hiding the automation mode, as I use the Automation Panel exclusively. The other tools I use as a visual reference since the display also indicates which tools are active and what their status is. For example, I can easily see which editing tool I am currently set to use. The transport tools quickly allow me to see if I am in play or record modes. I use key commands to switch tools and modes more often than clicking the buttons on the Toolbar. With Nuage, many of these functions and more are accessed from the hardware units.

## Alternate Toolbar Controls

There are nine hidden controls in the default Toolbar setup (see Figure 6.9). The following is a brief description of each of those tools.

1. **Media and MixConsole Windows** – These buttons open mixer windows (Main mixer and Control Room mixer) and media management windows (the Pool and MediaBay).

2. **Network Controls** – Nuendo can have multiple users editing one project over a network. These are the basic controls for activating and updating the network.

3. **Left and Right Locators** – The left and right locators are fundamental to many tasks in Nuendo. These tools are just one of many ways to utilize these important items.

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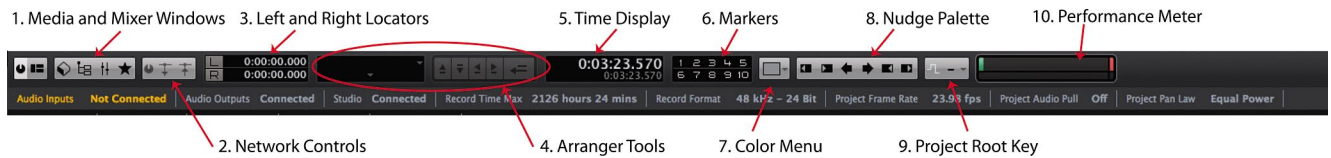
Figure 6.9 Alternate Toolbar controls

4. **Arranger Tools** – The Arranger tool is a compositional tool used to quickly rearrange portions of a project to try out various arrangements of a song.

5. **Time Display** – Shows the position of the playback cursor in various formats: Bars:Beats, timecode, etc.

6. **Markers –** An unlimited amount of markers may be placed on multiple marker tracks in a Project. These controls allow access to the first 10 markers on the active marker track.

7. **Color Menu –** Each track and even each event can have different colors.

8. **Nudge Palette** – The nudge palette allows for controlled editing of events in the project. Nudging will be covered in Part III: Editing.

9. **Project Root Key** – The Project Root Key works with the Arrangement tools to aid composition by allowing a global key change of the entire project.

10. **Performance Meter** – These two indicators show the status of the CPU and hard disk usage.

# The Status Line

The Status Line (see Figure 6.10) displays the basic settings from the Project Setup window. Clicking on the Info line will open the Project Setup in order to make changes.

It is possible to change what is displayed in the same fashion as the Toolbar. Right-click (Windows) or Control-click (OS X) anywhere in the Status line to access the Setup popup window and uncheck items you do not want to see. You may also use the Setup dialog to create presets for the Status line.



Figure 6.10 The Status Line

## Available Record Time

The one added display is the available recording time as calculated by the audio format choices and the amount of audio tracks in record. For example, if you have one mono audio track in record, the available record time could be many hours depending on the hard disk space available. If you were to add a 5.1 audio track and place it in record, the available record time would diminish greatly as you have added six additional channels.

This display will count down while you are recording to give you a real-time idea of how much space you have left on the hard disk. This can be an indispensable tool for live recording.

| LARGER TIME DISPLAY |
|---|
| If you click on the available record time, a larger floating display window will open that can be seen from across the room! |

## The Info Line

The Info line is a powerful part of the Project window interface. For every item or event in the Event display, there are a series of details associated with that event. The details depend on what type of event it is, whether an audio event, MIDI note, etc. The Info line lists these details and allows you to edit them directly. Figure 6.11 shows the complete Info line for an audio event.

The Info line for an Audio event is one of the most complex as there are so many details for this type of event.

1. **File Name** – This is the actual name of the audio file recorded on disk referenced by this audio event. Changing this field will actually change the name of the file on the disk.

2. **Description** – This field allows for a unique description of this specific event. This information is only for within Nuendo and does not affect the audio file on disk. It will change the event's name in the Event display.

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| File | Description | Start | End | Length | Offset | Snap | Fade-In | Fade-Out | Volume | Lock | Transpose | Fine-Tune | Global Transpose | Root Key | Mute |
| Audio 01_01 | Audio 01_01 | 00.58.00.00 | 00.58.05.17 | 00.00.05.17 | 00.00.00.23 | 00.58.00.00 | 00.00.00.00 | 00.00.00.00 | 0.00  dB | – | 0 | 0 | Follow | – | – |

**Figure 6.11**  Audio Event Info Line

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3. **Start** – This field shows the start time for the event. It will be displayed in the same format as the Ruler line. This can be changed at any time to represent the start time in another format such as SMPTE timecode or minutes and seconds. All the time-based fields in the Status line reflect the format of the Project Ruler.

4. **End** – This field indicates where the event ends in time.

5. **Length** – This field indicates the amount of time between the start and end of the event. Editing this value will result in the End value changing/moving.

6. **Offset** – This field indicates how far the visible audio is from the beginning of the actual audio file. It is related to Sizing Moves Contents editing mode and will be discussed in detail in Part III: Editing.

7. **Snap** – This field indicates where the Snap Point is located within the event. That will be the position that the Snap function will use to line up this event.

8. **Fade-in** – This field indicates the length of the fade-in for this event. Fades in Nuendo are calculated in real time and are not rendered files as in Pro Tools, so this value can be changed on the fly without any need to render a fade file.

9. **Fade-out** – This field indicates the length of the fade-out for this event.

10. **Volume** – This field indicates the gain adjustment applied to this event. With a range of +20 dB to -infinity, the gain adjustment is a simple and powerful way to adjust the volume of various audio events before they enter Nuendo's mixer, perfect for vocal comping.

11. **Lock** – Various elements of an audio event can be locked from further editing. This field indicates what they are, and the lock status can be edited directly here.

12. **Transpose** – This field allows an audio event to be pitch shifted to follow musical key changes, in half-step increments.

13. **Fine-Tune** – This field allows you to apply pitch shifting in amounts as little as 1 cent (100 cents = 1 semi-tone).

14. **Global Transpose** – This field determines if this audio event will follow any global transpositions or if it is independently transposed.

15. **Root Key** – This field determines what the root key of this audio event is, which will affect how it reacts to global key changes.

16. **Mute** – This field indicates whether this audio event is muted or not.

| Name | Start | End | Length | Offset | Mute | Lock | Transpose | Global Transpose | Velocity | Root Key |
|------|-------|-----|--------|--------|------|------|-----------|------------------|----------|----------|
| MIDI 01 | 00.58.00.18 | 00.58.03.13 | 00.00.02.19 | 00.00.00.00 | – | – | 0 | Follow | 0 | – |

**Figure 6.12** MIDI Event Info line

As a comparison, Figure 6.12 shows the Info line for a single MIDI note. Info lines are different for all objects in the event display. As each event is discussed, the Info line will be used to change various aspects and behaviors of the event.

# The Ruler Line

The Ruler line displays time in several formats. The format of the Ruler line also defines the time display in many other fields within Nuendo. Changing this format will change how data is displayed in other places such as the Info line. Changing the Ruler line to display Timecode will cause all of the time-based fields in the Info line to show timecode values. This also affects things like the grid values for the Snap function and much more.

To change the Ruler line format, right-click (Windows) or control-click (OS X) to access the time format popup menu (see Figure 6.13). Choose from one of the 7 possible time formats.

## Ruler Timebase

The other option available in this menu is how time is scaled in the Ruler. This relates to tempo changes and how they are displayed. For example, if the tempo changes from 120 bpm to 80 bpm, how will that be shown in the ruler? Will the beats be farther apart? Will timecode frames be closer together after the tempo change? It depends on how time is scaled in the ruler or the timebase.
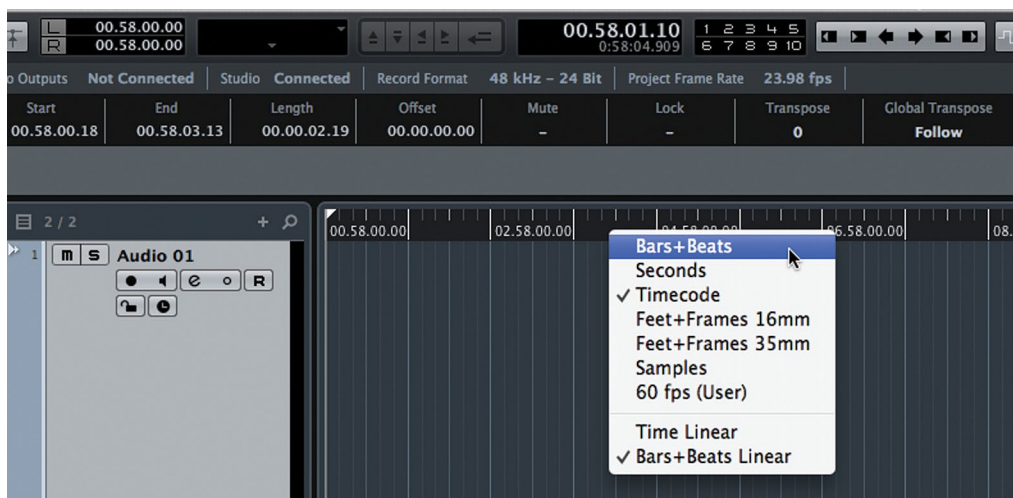


**Figure 6.13**
Time format
popup menu

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## CLARIFIED TERMINOLOGY

Steinberg uses certain terms that could lead to some confusion, especially when you're first becoming familiar with their software. Most of their terminology is based on industry-standard words but some have overlapping meanings and should be clarified:

❖ **Event** – An Event is anything that can be played back in Nuendo, be it audio, MIDI, video, automation, or a tempo change for example. You could think of it like this: "Anything that happens in a project is considered an Event." The chunks of audio in the project window are called Audio Events, the point at which the tempo map changes is called a Tempo Change Event, each MIDI note is a MIDI Event, and so on. This is fundamental to the way Nuendo and Cubase are described in their documentation and in this material.

❖ **Track** – A track traditionally referred to a tape machine track on which audio could be recorded. In Nuendo, a track refers to any display of information on the Track List and in the Event Display that can change over time or be recorded in real time. For example, automation data will occupy a *track* in Nuendo since it can be changed over time. Tempo can be changed so it too will occupy a track. Even markers can change over time. Hence, it's called a Marker track.

❖ **Channel** – A channel refers to anything that will be displayed in Nuendo's MixConsole. Every channel has a fader that adjusts the volume of some signal, whether it be audio or MIDI. Since all channels can be automated, they will represented in a track. For example, a Group Channel Track is the representation of a Group Channel from the MixConsole in the track list and the event display will show automation data for that Group Channel. A Folder Track does not have a corresponding Folder Channel since there is no signal to control for a Folder.

❖ **Bus** – A bus is defined as a signal path where more than one signal can be combined together, hence the terms 'Mix Bus' or 'Group Bus.' This is a standard audio term that is often misused. Buses are often referred to as paths that take a signal to some destination, such as a recording track or effects unit. While that is true, any audio path can route a signal to some destination but what makes a bus unique is the ability to combine or mix multiple signals together.

## BUSES AND INPUTS

Steinberg's VST Inputs are not technically buses since they cannot combine multiple inputs together in any way. Multiple signals cannot be combined on a VST Input except through the use of an external *bus* before the signal enters Nuendo. Otherwise, the term "bus" is used properly in Nuendo. I will still refer to the VST Inputs as buses to remain with Steinberg's conventions.

If set to the default Time Linear mode, musical bar indicators will be spread out further when the tempo is 80 bpm to match the greater time between beats. If the timebase is set to Bars+Beats Linear, bar indicators will remain at the same distance from each other while time-code values would be placed closer to each other when the tempo is slower and further from each other when the tempo is fast.

This can be most helpful in scoring to picture as drastic tempo changes can make it hard to edit musical events if they are placed too close together or far apart. Bars+Beats Linear keeps them the same distance from each other regardless of tempo.

# The Track List

The track list is to the left side of the Project window where every track in the Project is displayed. A variety of controls can be accessed here along with the ability to resize and re-order the tracks. There are many types of tracks that can be added to a project and each one has its own default settings for what is visible in the track list. Figure 6.14 shows the track list with one of each type of track displayed with their default controls. (Note that some track types are available only in Nuendo.)

1. **Audio Track** – Record, edit, and playback audio events.

2. **MIDI Track –** Record, edit, and playback MIDI events.

3. **Instrument Track** - An Instrument Track combines a MIDI track with a virtual instrument (VSTi) making it quick and easy to start sequencing music with virtual sounds.

4. **Folder Track –** Folder tracks are merely containers for other tracks. They are very helpful in organizing a large number of tracks. Related tracks of any sort may be placed in a folder track. The folder track can be closed to hide these tracks from the track list. Folders can also be used to enable group editing of tracks inside the folder.

5. **Group Channel Track–** Group Channel tracks are audio buses used to process and mix combinations of audio signals from other tracks in the project. For example, you would use a group channel to bus a bunch of background vocals together in order to process them as a whole (EQ, compress, etc.) and mix them back in with the rest of the music. When a Group Channel is created, it is placed in a folder called "Group Tracks."

**Figure 6.14**
Track List with all types

6. **FX Channel Track** – This track type is almost exactly like a Group Channel track except that the Add Track dialog allows you to choose a plug-in for the first insert slot. Typically, auxiliary sends (aux sends) would be routed to FX Channels for the purposes of generating reverb, etc. In the routing pulldown menus, FX Channels have their own submenu area for easier routing at the top of the destination list. Also, newly created channels can have their aux sends pre-configured to FX channels as a preference. Their controls are identical to Group Channels. When an FX Channel is created, it is placed in a folder called "FX Channels."

7. **VCA Channel Track** – VCA Channels are used to control the levels of multiple channels at once without actually routing those signals together on a Group Channel. The VCA Channel track is used to see and edit automation written by the VCA fader.

8. **Marker Track** - As the name implies, Marker tracks are used to place identification points along the timeline of the project. Markers can be single points or a range of time called a Cycle Marker. You may have multiple marker tracks in one project (Nuendo only), very handy for film work and cue sheets.

9. **Ruler Track** – A Ruler Track is used to represent time in various formats along the event display. In addition to the Ruler at the top of the event display, you may place multiple ruler tracks within the track list at any point.

10. **Loudness Track** - The Loudness Tracks can record the measurement of loudness units a project is generating to make a visual representation of the loudness measurement over time.

11. **Video Track** – Video Tracks are for placing video files as video events in the timeline of a project. Video events can be edited just like other events.

12. **Tempo Track** – Every project contains a tempo track. Creating this track in the track list just allows you to view the information right in the event display. Tempo change events can be edited directly in the event display. By default, there is always one tempo event at the very start of the project.

13. **Time Signature Track** – Changing the time signature alters how many beats there are per bar and what value each beat has. This track displays any time signature events. By default, there is always one time signature event at the very start of the project.

14. **Transpose Track** – This track type displays any transpose events that occur in the project.

15. **Arranger Track** - The Arranger Track is a composition tool for quickly auditioning various musical arrangements using cycle markers.

16. **Chord Track** – The Chord Track is a compositional tool to create harmonic structures that other MIDI and Audio tracks will follow, allowing you to audition changes in harmony in real time.

17. **VST Input Channel Track** – It is possible to create a VST Input Channel track by recording automation using the mixer on a VST Input Channel. Only then will a track be created in the track list to display those automation events.

18. **VST Output Channel Track** – The same is true for automation written for a VST Output Channel. Writing automation with that output channel in the mixer causes a VST Output Channel track to be created in the track list. Otherwise, they will not be visible.

19. **VSTi Channel Track** – Virtual Instruments may be loaded as Rack Instruments (unlike Instrument Tracks) so that multiple MIDI tracks can then be routed to the one VSTi. Multi-output VSTi's create multiple VSTi Channels, one for each output. When a VSTi is loaded as a rack instrument, its channels are placed in a folder called "VST Instruments."

20. **Rewire Tracks** – When Rewire is enabled, Rewire tracks are created for each Rewire channel in the mixer.

## Signal Meters

Every track that passes either an audio or MIDI signal has a meter associated with it. For MIDI, the signal meter displays the velocity level of notes and a fixed level for continuous controller data.

In the Track List, the meters are just to the right of the list.

## Track Control Settings

In the track list, various controls for each track type are displayed. By default, not all available controls are shown. In order to configure which controls are visible in the track list, right-click (Windows) or control-click (OS X) on a track in the track list and choose Track Control Settings from the popup menu or click the settings icon at the bottom of the list. This will open the Track Control Settings dialog (Figure 6.15) that should be familiar after seeing the Inspector and Toolbar Setup dialogs.

Select the type of track by tab at top and you can then choose which controls are visible and change the order to your preference. These settings may be stored as a preset for later recall. You may enter the number of characters in the length field to determine how many characters of the track name will be shown before being cut off in the display.
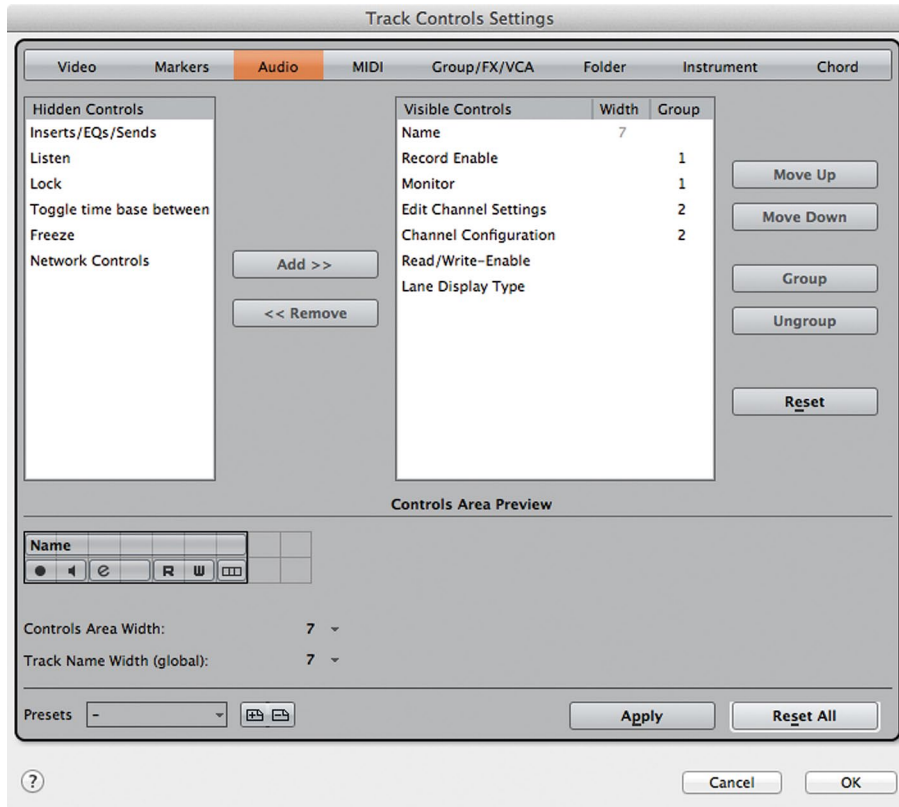
**Figure 6.15**
Track Control Settings

## Track Control Position and Grouping

In the lower area of the Control Settings window there is a preview of how the controls will be displayed in the track list. The outlined box represents the width of the control area and can be changed to fit best with certain workflow methods, as seen in Figure 6.16.

Since these settings can be saved as presets, you can quickly reconfigure the controls based on the type of work you are performing at the time; for example, you could have one setup for editing and another for mixing.
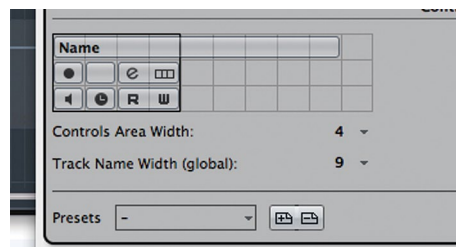


**Figure 6.16**
Control Area Preview

> ## DEEP CUSTOMIZATION
>
> The depth of Nuendo's customization capabilities can be daunting for first-time users. Just about every function in Nuendo has some form of customization available, including preferences. Every command in Nuendo has the ability to be assigned to a key command. Macros can be made to perform a series of commands all at once. The list goes on and on.
>
> I could not imagine any one user actually using all of this customization. But that's really the point. The customization is there because everyone works differently and needs to perform different tasks that require specific tools and workflows. Nuendo gives you the flexibility to create custom workspaces and toolsets to meet just about any need.
>
> However, if you are a first-time DAW user or are new to Nuendo, just start with all the default settings, which should get you through most tasks quite easily and are well thought out. After using the software for a while, you will inevitably find some tasks that you perform that are repetitive or not convenient in the default configuration. At that point, explore the possibility of creating a key command or reconfiguring how the controls appear to improve your efficiency.
>
> Many of these controls are things you could easily use thousands of time a day. The ability to precisely position and configure them can save hours of valuable time in the long run. Customization at this deep level should be taken one step at a time to be effective. The possibilities are endless.

## The Inspector

The Inspector displays all relevant controls and settings for the selected track in the track list. Once you select a track from the track list, the inspector displays information about that track. If no track is selected, the inspector is empty.

Each track type has a unique set of controls. Selecting a track of a different type will change the information displayed in the Inspector. Controls are grouped into expandable tabs. Depending on your screen size, there is room to open more than one tab, letting you see the equalizer and inserts or an audio track, for example. There are many controls and a great deal of information contained in the Inspector, so the ability to view only certain tabs keeps the GUI focused on just the relevant information.

Figure 6.17 shows the Inspector for both an audio and a MIDI track. By default, the Inspector starts with only the top tab open. This tab is called "Basics" since it contains fundamental controls and information about this track, including its name.

Audio           MIDI
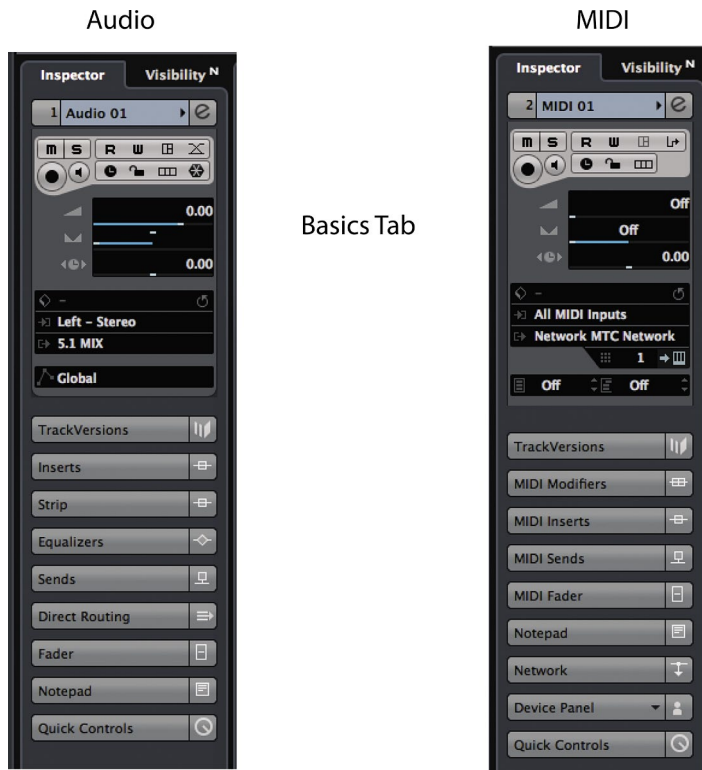
**Figure 6.17**

The Inspector for an Audio and MIDI track with Basics tab open

Basics Tab

The Basic tab contains a condensed set of controls that cover many functions. At the top is the name of the track and what number it is in the track list. You can double-click here and change the name of the track. The little triangle icon accesses the color palette for that track. The "e" button opens up the Edit Channel Settings window, which is discussed later in this chapter. And that's about all that is shared between the two different track types, Audio and MIDI.

## Audio Track Inspector

There are a total of 14 possible tabs for an audio track. By default, only six are displayed but all 14 are available and may be placed in preset configurations for various types of working methods. Just like the Toolbar, the Inspector has the same customization dialog (see Figure 6.18. You can access this setup dialog by right-clicking (Windows) or control-clicking (OS X) anywhere in the Inspector or by clicking the settings icon at the bottom of the Inspector pane.

The following is a breakdown of all the Inspector tabs for an Audio track.

**Figure 6.18**
Inspector Setup dialog

## The Basics Tab

The Basics tab (see Figure 6.19) contains a blend of controls that affect editing and mixing. It is the most complex of all the tabs. The controls are duplicated in several other places in the GUI, as are most things in Nuendo, giving you more versatile access to the things you use most.

1. **Track Name** – Name of the track.

2. **Track Number** – Number of the track in the track list. Moving tracks up or down in the track list will change this number.

3. **Mute** – Mutes this track just like on any mixer. There is a duplicate of the same button on the MixConsole.

4. **Solo** – This soloes the track using the solo-in-place method, which mutes all other tracks.

5. **Automation Read** – Enables automation reading.

6. **Automation Write** – Enables automation writing.

7. **Record Enable** – This places the audio track in record-ready.

8. **Monitor** – Enabling Monitor allows audio from the input to pass through the channel for monitoring purposes. This can automatically be enabled when Record is enabled via a preference setting. Complete details can be found in Part II: Recording.
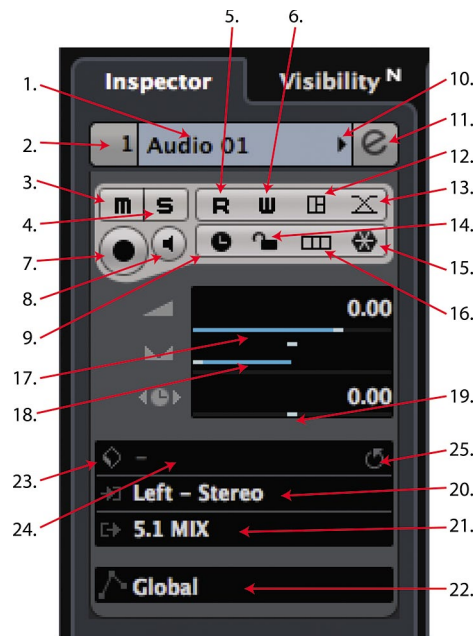
**Figure 6.19**
The "Basics" Inspector tab for an audio track

9.  **Timebase Toggle** – Audio tracks can reference a linear timebase (default) or musical (bars+beats) timebase that will follow tempo changes, time-stretching the audio accordingly. In Linear mode, audio will always play back at the same speed regardless of tempo changes.

    Note: I have encountered clients who, recording at home, have inadvertently set audio tracks to musical timebase. Sometimes this happens by default in Cubase. Any tempo changes applied to the project cause re-positioning of all audio files on these tracks. Always double-check the timebase on audio tracks when changing tempos and avoid this problem.

10. **Device Panel** – Opens the Device Panel editor for this track. Device Panels are the same as MIDI device panels where you can create a custom set of controls for this track.

11. **Auto-Fade Setting** – This button opens the auto-fade dialog to turn auto-fades on or off and make adjustments to them. This is covered in Part III: Editing.

12. **Lock** – Enabling lock on an audio tracks prevents any further editing of audio events in the event display.

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13. **Freeze** – This button invokes the Freeze function, which effectively records the processed audio through the channel to disk and disables all plug-ins to conserve DSP resources. Information on freezing tracks is in Part IV: Mixing.

14. **Lane Display Type** – This popup enables the use of recording "lanes," which allow multiple takes of audio to be "stacked" on one track. The lanes can then be compiled (comped) into a finished performance by editing. Lanes are covered in Part II: Recording and Part III: Editing.

15. **Channel Fader** – This horizontally oriented slider is the main channel volume fader. It operates just like its larger counterpart in the mixer.

16. **Channel Pan** – This panner operates just like the pan in the mixer. There are three stereo modes that are covered in Part IV: Mixing.

17. **Track Delay** – Don't let the name fool you. Not only can this control delay the signal through the channel but negative settings will cause the signal to arrive earlier, very handy for adjusting the phase between multiple microphones on a single source (think "drum rooms mics" or "lavalier and shotgun"). Use shift when adjusting to get fine resolution of less than 1 ms.

18. **Input Selection** – This pulldown menu lists all available inputs, including group channels, the Talkback and Control Room External Inputs, as recording sources. The channel width of the input must match that of the audio track in order for it to be available. Child buses can be an answer to this and mono channels of any input are available to mono audio tracks. For example, a stereo audio track cannot record from a mono or 5.1 input.

19. **Output Selection** – This pulldown menu allows you to select the main output channel for this track. All FX channels, Group channels, and VST Output buses are available as destinations regardless of the channel width. Nuendo handles down-mixing automatically (5.1 > Stereo) and uses a panner when the output width is larger than the track width (Mono > 5.1).

20. **Automation Mode** – You can set the audio track to follow the global automation mode or set it independently using this pulldown menu. For example, the dialog group could be in Trim mode while the SFX group is in Latch.

21. **Preset Management** – You can save all the current settings for this channel as a preset. It is possible to attach attributes to help categorize presets; vocal, drums, dialog etc. You can create huge libraries of presets that can be easily searched and recalled (see Figure 6.20).

**Figure 6.20**  Load Track Preset browser with attribute search

22. **Track Preset Menu** – This small icon opens up a powerful media browser to help you search for Track Presets, audition them, and then load them into the track.

23. **Reload Preset** – If you load a preset and then adjust some controls, you may reload that preset to revert to its original settings.

## THE PRESET MANAGEMENT ICON

Wherever you see the Preset Management icon (see Figure 6.21), you will have access to the preset browser. This icon appears in many areas of Nuendo and is a global tool you can recognize.



**Figure 6.21**
Preset Management
Global Icon

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## Track Versions

This tab allows you to view, create, or delete Track Versions. Track Versions are variations on the editing for this particular track. For example, if you have multiple takes of the lead vocal of a song, you can create an edited composite and then create a new Track Version to try a variation on the edit. It is possible to switch between each Track Version to hear the two composite vocal edits.

---

### PRO TOOLS TIP

Pro Tools users will recognize this feature as similar to "playlists." A Track Version is a new playlist for this track. You can duplicate the current version to try variations or create a blank version to start with a clean slate. However, you do not need to create a new Track Version to simply record another take of a performance. Nuendo has a system of Lane Recording to record and then edit between multiple takes. This will be discussed in detail later.

---

## Inserts Tab

Here's where so much of the fun lies: inserts, plug-ins, all the toys we use to manipulate and process audio. Each channel in Nuendo has eight inserts, six pre-fader and two post-fader. The Inserts tab (see Figure 6.22) allows you to choose inserts for each slot, open plug-in GUIs for editing, disable or bypass inserts, and save or recall groups of inserts and their settings as presets.

1. **Insert tab expansion toggle** – Clicking on the name of the tab causes that tab to open and all other tabs to collapse, leaving you with just the information you are working with. To open more than one tab, hold Ctrl (Windows) or Command (OS X) while clicking the second tab.

2. **Insert Bypass** – This is a true bypass button for the insert that can be used in real time or with automation to bypass an insert.

3. **Select Insert Menu** – Clicking in this area brings up the Insert Selection menu, offering all the available plug-ins in your system. With the plug-in manager, this list can be customized to show only those plug-ins you use.

4. **Insert Preset Management** – This preset browser is for managing individual insert presets.
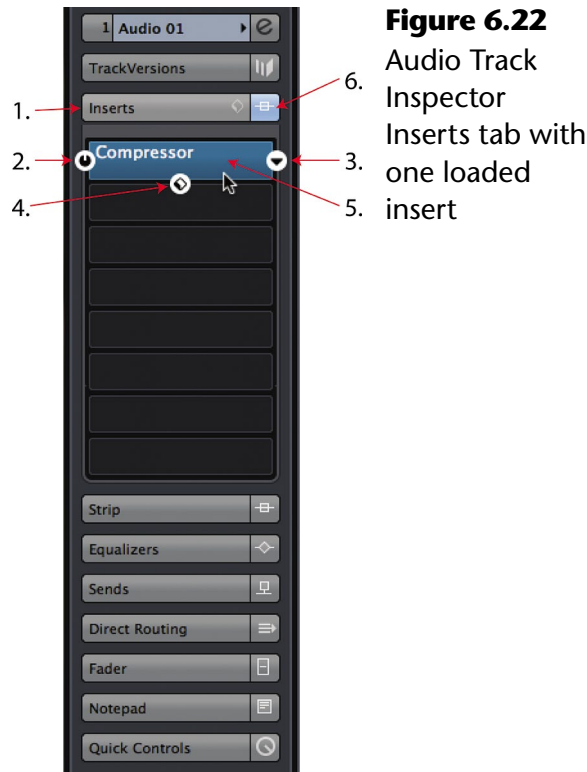
**Figure 6.22**
Audio Track
Inspector
Inserts tab with
one loaded
insert

5. **Edit Insert** – This opens the insert's GUI for editing. It will turn blue when the insert's GUI is open even if it is not visible as the front-most window. You can have many insert GUI windows open at the same time.

6. **Master Insert Bypass Indicator** – This button appears blue when there are active inserts on the track. Clicking on it will bypass all inserts and will turn it yellow. It appears gray when there are no inserts loaded.

7. **Inserts Preset Management** – Opens the preset management browser for inserts. These presets are for chains of plug-ins, not just one at a time. If you have created the ultimate bass tone using several plug-ins, you can save the whole thing as a preset here.

## Strip Tab

The Strip Tab provides basic controls for the dynamics processors. There are six slots in the strip section, each containing a type of dynamics processing. Some slots have more than one option for the type of processor.

- ❖ Gate
- ❖ Compressor
  - ❖ Standard
  - ❖ Vintage
  - ❖ Tube
- ❖ EQ Position: Dragging this block up or down will change the position of the equalizer in the signal flow of the strip.
- ❖ Tools
  - ❖ De-esser
  - ❖ Envelope Shaper
- ❖ Saturation
  - ❖ Magneto II
  - ❖ Tape Saturation
  - ❖ Tube Saturation
- ❖ Limiter
  - ❖ Brickwall Limiter
  - ❖ Maximizer
  - ❖ Standard Limiter

In the Inspector, you can only enable these processors and choose presets. In the MixConsole you have access to all the parameters for each processor.

## Equalizers Tab

Every Nuendo audio channel has a built-in equalizer that is quite capable. With a choice of filter types and full parametric control for each of the four bands, you have a great deal of tonal shaping ability right from the start on every channel (see Figure 6.23).

1. **Equalizers tab expansion toggle** – Open and close Equalizers tab.

2. **Equalization Curve Display –** This provides a graphic representation of the EQ curve and can also be used to edit each band by dragging the numbered EQ points around in the display.
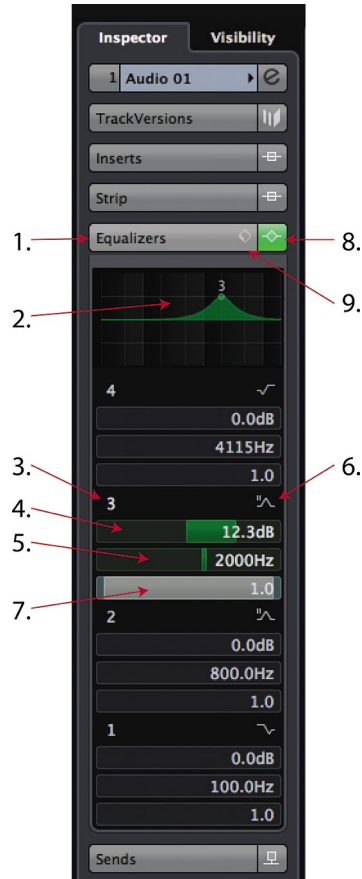
3. **Band Activation** – For each EQ band there is this activation button. This can be used in real time or with automation to bypass each band.

4. **Gain –** You can move the slider or enter a number in dB to the gain field.

5. **Frequency** – Move the slider or enter a frequency in Hz. Each band has the full range of frequencies, 20 Hz to 20 kHz.

6. **Filter Type Pulldown Menu** – Since the addition of VST 3 plug-ins, the Nuendo equalizer has several filter types to choose from. The original EQs from earlier versions are labeled type I. The newer filters are II, III and IV. For band 1, there are parametric, high shelving and low pass filters (LPF) (see Figure 6.24). For bands 2 and 3 there are parametric only, and for band 4, there are parametric, low shelving, and high-pass filters (HPF).

7. **Q or Bandwidth –** Adjust the slider or enter a Q value in the field to control the bandwidth or slope of the EQ filter. Try using this control on Shelving II, III, and IV or with HPF/LPF II.

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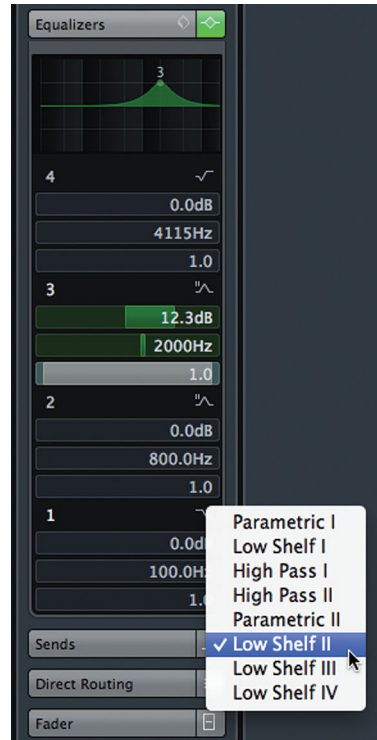
**Figure 6.24**
Filter type pull-down menu for band 1

8. **Master Equalizers Bypass Indicator –** This button appears green when there are active bands in the equalizer. Clicking on it will bypass all bands and it will turn yellow. It appears gray when there are no active bands.

9. **Equalizers Preset Management** – Opens the preset management browser for equalizers.

## Sends Tab

Every audio channel in Nuendo has eight available auxiliary sends (see Figure 6.25). They can be used for a variety of things, including sending signals to effects channels such as reverb, routing signals to other channels for parallel or alternate processing, or routing signals to outputs of the mixer for external use. The possibilities are endless, and much will be discussed about creative use of sends in Part IV: Mixing.

1. **Sends tab expansion toggle** – Open and close Sends tab.

2. **Master Sends Bypass Indicator –** This button appears blue when there are active sends. Clicking on it will bypass all sends and it will turn yellow. It appears gray when there are no active sends.

3. **Send Activation** – For each send there is an activation button. This can be used in real time or with automation to enable or disable the send.
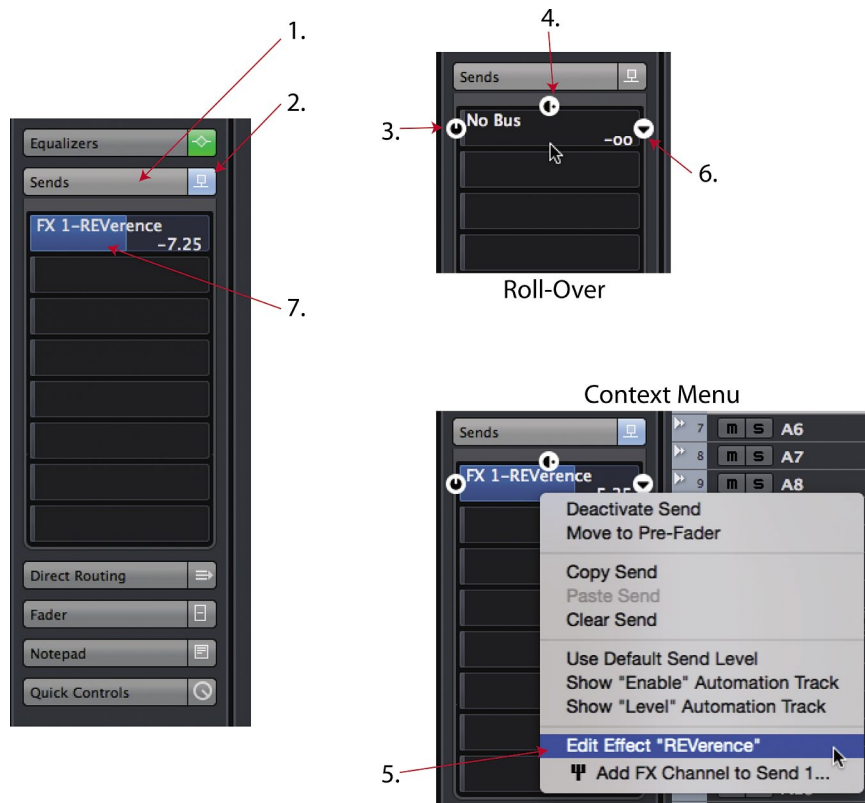
**Figure 6.25**
The Sends, roll-over and context menu

4. **Pre/Post Fader –** This determines where the signal for the send is derived in the signal flow of the channel. Blue=post-fader, green=pre-fader.

5. **Edit FX Channel Insert –** If the send is routed to an FX Channel, this button will open the first insert on that FX channel for editing. This is just a quick shortcut to the plug-in GUI and is very convenient. It will be grayed out if the destination is not an FX channel.

6. **Send Destination Select –** This pulldown menu will show all available destinations for this send. They could include FX channels, Group channels, VST outputs and even side-chain inputs to certain VST 3 plug-ins.

7. **Send Level –** You can move the slider or enter a number in dB to the level field.

## ACCESSING SEND PAN CONTROL

Sends also have a pan control if the destination has more than one channel. This is not visible in the Inspector but can be accessed in the Edit Channel Settings window discussed in the next chapter, Extended Layout.

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## Cue Sends Tab

The Cue Sends (see Figure 6.26) are specialized auxiliary sends used in conjunction with the Control Room for creating cue sends for performers to monitor during recording. There are four Studio Sends possible. Only the ones that have been defined in VST Connections will be available in this tab. Use of the Studio Sends will be covered in Part II: Recording.

## Direct Routing Tab

The Direct Routing function (see Figure 6.27) in Nuendo is primarily intended for film mixing but has applications in music mixing and live broadcast as well. When more than one VST output is defined, direct routing can be used to send a channel's output to one or more of those outputs (up to eight) with a simple click. This function can be automated, and the signal can be routed to more than one output at a time. This function will be explored more in detail in Part IV: Mixing.

## Surround Pan Tab

When a channel is routed to a multi-channel bus such as a 5.1 surround bus, Nuendo's surround panner is invoked and this tab provides quick access to a basic joystick control of the panner (see Figure 6.28). Double-clicking on the panner opens up the complete Surround Panner V5 interface that will be discussed in depth in Part IV: Mixing.



**Figure 6.26** The Cue Sends tab



**Figure 6.27** The Direct Routing tab



**Figure 6.28** The Surround Pan tab

## Fader Tab

The Channel tab (see Figure 6.29) for an audio track includes tools that are similar to, or duplicate, tools found in the Basics tab, plus some others, all in a new constellation that is handier for mixing than is the collection of tools on the Main tab. So much of the user interface in Nuendo is about the ever-changing needs of working in a studio situation, constantly switching tasks from recording to editing to mixing. You will find that having these duplicate controls in various locations throughout the GUI can be very helpful.

1. Surround Panner
2. Mute
3. Solo (Solo-In-Place)
4. Listen Enable (AFL/PFL Solo)
5. Edit Channel Settings
6. Channel Fader
7. Channel Meter
8. Numeric Channel Volume
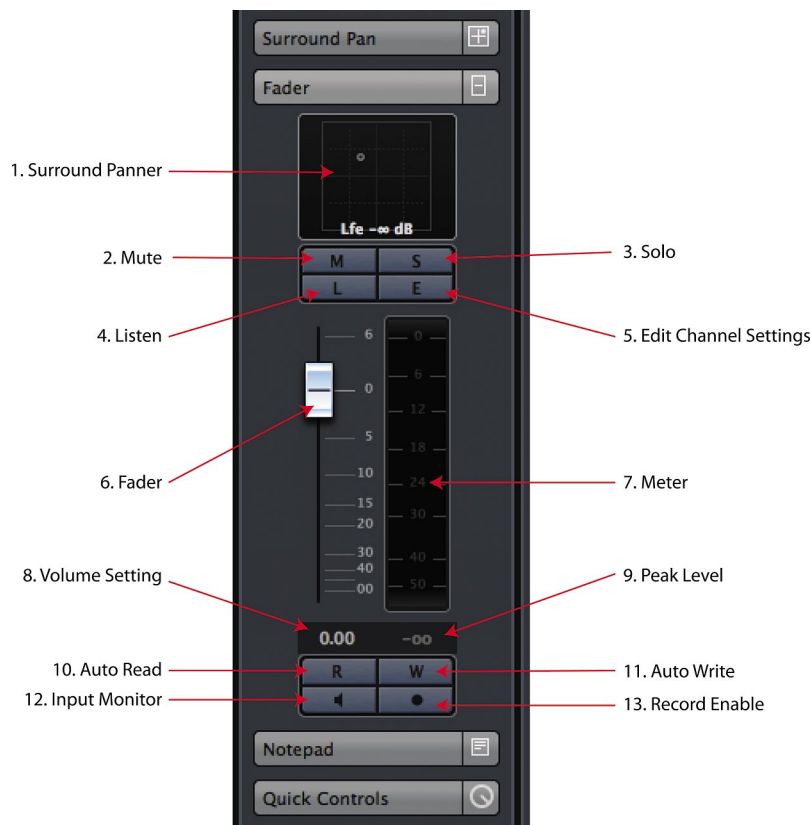


**Figure 6.29**
Audio Track
Fader tab

9. Numeric Peak Level

10. Automation Read

11. Automation Write

12. Input Monitoring

13. Record Enable

## Notepad Tab

One of my favorite tabs is the Notepad tab, as it allows you to jot down notes about this track (see Figure 6.30). I use them to document recording techniques used for a particular sound, such as the type of guitar and amplifier used, microphone choice, mic preamp, compressor, etc. These notes are saved with the project file and are helpful for recalling settings on outboard equipment and many other things. The Notepad icon appears blue if there is any text written there.



**Figure 6.30**
The Notepad tab

### PROJECT NOTEPAD

There is also a Project Notepad available from the Project menu. It's a great place to paste the lyrics to a song.

## Network Tab

The Network tab (see Figure 6.31) provides access to the network settings for this audio track. Network setting can vary from track to track, allowing access by only certain network users to specific tracks in the Project.
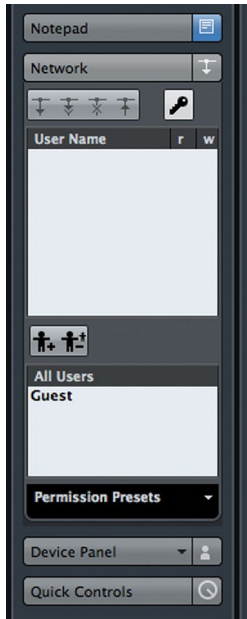
**Figure 6.31**
The Network tab
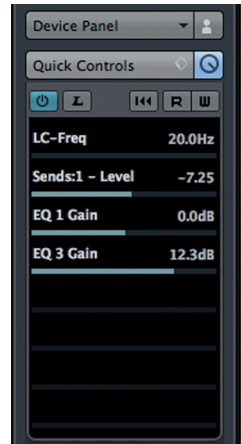


**Figure 6.32**
The Quick Controls tab

## *Device Panel Tab*

In this tab, MIDI control user panels can be displayed for devices associated with this track. This could be an externally controlled MIDI device or simply a few select parameters from an internal VSTi. User Panels for the Inspector should be formatted to fit the limited space and fixed width of the Inspector.

## *Quick Controls Tab*

Quick Controls are just what they sound like, controls that let you get at what you really need right away (see Figure 6.32). These are customizable controls that can consist of any combination of available parameters. There are some presets already made for you to try. Here's the first one: Volume, Pan, Pre Filters, and Sends.
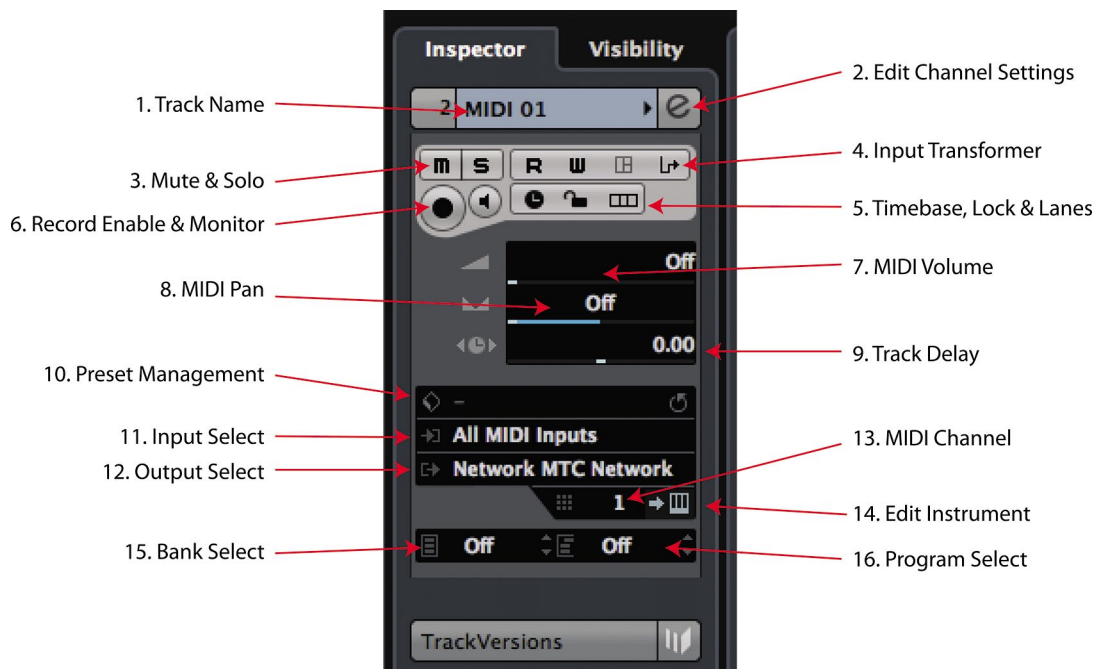
## **MIDI Track Inspector**

The MIDI track has a very different type of Inspector, since it deals with a completely different type of data than an audio track. Many of the controls are the same and function in a similar manner to their audio counterparts but there are also plenty of MIDI-specific controls to take a look at. Unless otherwise noted, controls work the same as for audio tracks.

## MIDI Basics Tab

The MIDI Basics tab (see Figure 6.33) looks very similar to the audio basics tab with some notable exceptions including the presence of MIDI channel assignments and program patch fields.

1. Track Name and Color

2. Edit Channel Settings

3. Mute and Solo

4. **MIDI Input Transformer** – This button opens a powerful tool for filtering and transforming incoming MIDI data as it's being recorded, allowing for creative use of MIDI controller data. Imagine mapping aftertouch to breath controller while you record.

5. Timebase, Lock and Lane Display

6. Record Enable and Monitor Status

7. **MIDI Volume** - This slider looks like the audio volume control but is actually sending MIDI volume controller data to the output destination.

8. **MIDI Pan** – This is a MIDI pan controller data and is not the same as audio pan.



**Figure 6.33**
The MIDI Basics tab

1. Track Name
2. Edit Channel Settings
3. Mute & Solo
4. Input Transformer
5. Timebase, Lock & Lanes
6. Record Enable & Monitor
7. MIDI Volume
8. MIDI Pan
9. Track Delay
10. Preset Management
11. Input Select
12. Output Select
13. MIDI Channel
14. Edit Instrument
15. Bank Select
16. Program Select

9. **Track Delay** – The MIDI track delay works in the same fashion as the audio track delay, allowing you sub-millisecond time shifting of elements on this track.

10. **Track Preset Management** – Works the same as for audio tracks.

11. **Input Selection** – Works the same as for audio tracks, just for MIDI inputs only.

12. **Output Selection** – Works the same as for audio tracks, but only to MIDI destinations.

13. **MIDI Channel** – Defines the MIDI channel on which data will be transmitted.

14. **Edit Instrument** – Opens the VSTi editor or a device panel for an external device that the MIDI track is routed to.

15. **MIDI Bank** – For choosing banks of presets on the MIDI device or VSTi.

16. **MIDI Program** – This allows direct access to programs stored in the connected VSTi or MIDI device. You can change programs remotely in order to audition various sounds or patches.

## MIDI Track Versions

MIDI tracks also have track variation capacity just like audio tracks, so you can try different versions and edits of the MIDI data.

## MIDI Inserts Tab

MIDI tracks can also use processing inserts in much the same was as audio tracks. MIDI inserts process the MIDI data as opposed to audio data for plug-ins. MIDI insert include things like arppegiators, MIDI echo, and quantizer. The MIDI inserts tab operates in the same way as for audio tracks, inserting and editing MIDI plug-ins. There are four MIDI inserts per track.

## MIDI Fader Tab

Similar to the Audio Channel tab, the MIDI Fader (see Figure 6.34) has controls for record enabling, mute, solo, and automation. However, these controls only affect MIDI data, not audio.

## MIDI Notepad

This is another notepad just like the one for audio tracks.

**NUAGE**
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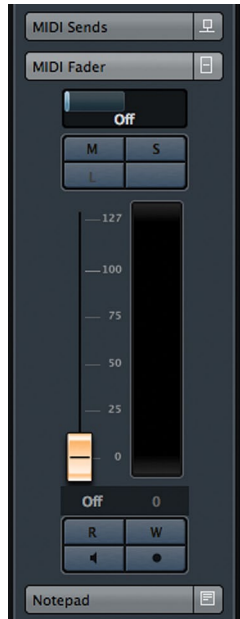
**Figure 6.34**
The MIDI Fader tab

**Figure 6.35**
MIDI Quick Controls tab with some MIDI controls

## NOTEPAD DIFFERENCES

All tracks have the same notepad tab except specialized tracks such as Ruler tracks and Marker tracks.

## *MIDI Quick Controls Tab*

There are some specialized tools available for MIDI Quick Controls such as the transpose and modulation controllers (see Figure 6.35). When you create a custom set of Quick Controls, you may save the entire setup as a track preset using the tools at the top of the Inspector.
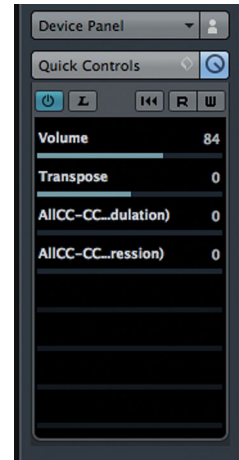
## *MIDI Instrument Tabs*

In order to give you immediate access to the audio associated with this MIDI track, there are the MIDI Instrument tabs. These tabs provide direct access to duplicate audio settings for the VSTi or External Instrument that MIDI track is routed to. Clicking on the tab's name reveals more tabs from that VSTi track. This makes for fast editing of sounds and rough mixing while working with MIDI tracks.

In this example, the MIDI track is assigned to an instance of Groove Agent. In Figure 6.36, the MIDI Instrument tab is opened and the Audio Fader tab for Groove Agent has been opened, gaining access to the actual audio level of the VSTi.
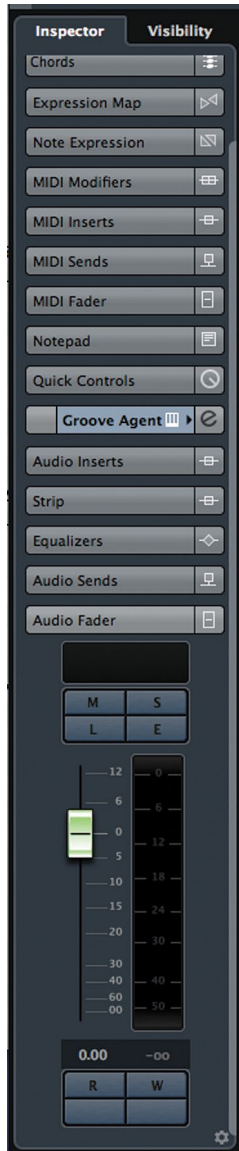
**Figure 6.36**
The MIDI
Instrument tabs
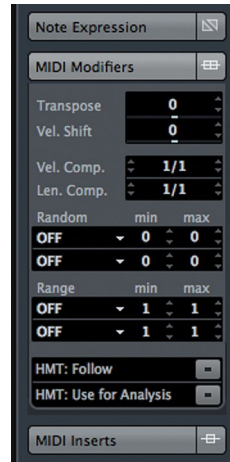
**Figure 6.37**
The MIDI
Modifiers tab

## MIDI Modifiers Tab

This tab (and those that follow) are not in the default view of the MIDI track Inspector. In order to see this tab you must right-click (Windows) or control-click (OS X) in the Inspector and check MIDI Modifiers in the visible list.

The MIDI Modifiers tab (see Figure 6.37) provides a way to manipulate or modify the playback of MIDI data by transposing the notes, changing velocity and timing or randomizing aspects of each MIDI note.

**Figure 6.38**
The MIDI Sends
tab
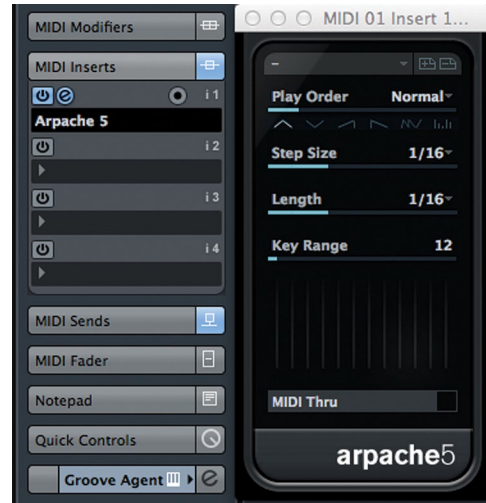
**Figure 6.39**
MIDI Inserts
Tab

## MIDI Sends Tab

MIDI sends (see Figure 6.38) work in the same way as audio sends except that the destination for a MIDI send must be a MIDI device such as a VSTi or External Instrument. They do not have a level control but MIDI effects can be applied to the sent data.

## MIDI Inserts Tab

MIDI tracks may also have inserts. These inserts process the MIDI data much like audio plug-ins modify audio data. For example, an arpeggiator can be inserted that will modify chords into arpeggiated lines. Figure 6.39 shows the Arpache 5 arpeggiator plug-in inserted into slot 1.

## MIDI Network, Quick Controls, and User Panel Tabs

These tabs function in exactly the same way as for audio tracks.

## Other Inspector Tabs

The remaining track types all have their own combination of Inspector tabs. As we move into using each track type, those Inspector tabs will be explored. Many share tabs with either the Audio or MIDI tracks and will be familiar. Others, such as Marker Tracks, have their own special Inspectors. The idea here is to get the essential track types explained with an overview of the rest.

## Nuage Inspector

The Nuage Master Unit can view and edit many of the same Inspector Tabs found in the Project window. In order to access the Inspector tabs, first select a channel in the Project. Next, select the blue "Channel" button to the right of the touchscreen. You should now be on the MAIN tab in the Nuage touchscreen.

### Nuage MAIN

The Nuage MAIN tab is very similar to the Basics Inspector tab in the Project. There are a collection of controls including input and output assignments, filters, input gain, polarity, and the level control on the right hand knob.

### Nuage EQ

The Nuage EQ tab gives you touchscreen control over the channel equalizer in the MixConsole. You can also use the knob set beneath the touchscreen to make further adjustments to the EQ.

### Nuage DYN

The Nuage DYN tab is the same as the Strip Inspector tab in the Project window. Here you have control over the dynamics processors of Nuendo.

### Nuage SENDS

The Nuage SENDS tab gives you complete control over the eight (8) sends for each channel. If the send is routed to an FX Channel, you can open the plugin GUI for that FX Channel directly from the touchscreen.

### Nuage CUES

The Nuage CUES tab has access to the four cue sends of the MixConsole.

### Nuage PAN

The Nuage PAN tab gives you touchscreen control over surround panning with the knob set providing advanced surround parameters on two pages of controls.

### Nuage INSERT

The Nuage INSERT tab allows you to insert and then adjust the parameters of plugins on the selected channel.

## *Nuage QUICK CONTROL*

The Nuage QUICK CONTROL tab shows the available Quick Controls that are defined for the selected channel. Each knob will control one of the eight possible parameters.

## *Channel Types*

For channels other than Audio tracks, the Nuage Inspector tabs remain the same, only becoming active for channels that have similar controls.

# Visibility Pane

The Visibility Pane is in the same location as the Inspector and is accessed by clicking on "Visibility" at the top of the Inspector area. The Visibility pane allows you to show or hide any track in the project, even entire folders full of tracks.

To hide a track, click on the white dot to the left of the track name. The dot will turn to a circle and the track will be hidden from the track list. The track is still active and audio there will still be present in the mix. This just removes it visually from the track list and event display.

Folders are noted by the triangular tab and can be toggled open or closed by clicking on this tab. If you hide a folder, all enclosed tracks will be hidden together.

## Sync Channel/Track Visibility

The same visibility features are also available in the MixConsole. You can show or hide channels in the mixer in the same fashion as tracks in the project window. You can also synchronize the visibility between the mixer and project window.

There is a hidden menu in the Visibility tab area that is only visible when you roll over it with the mouse. Roll the mouse just to the right of the word "Visibility" and a white dot will appear. Click on this dot and the Sync Track/Channel Visibility menu (see Figure 6.40) will pop up. There are several options:

❖ Sync Project and MixConsole: When checked, this option synchronizes the visibility of channels and their tracks between the project and MixConsole. Whatever channels are visible in the project will be the only ones visible in the MixConsole.

❖ Sync Project and MixConsole (2, 3, 4): The same for the alternate MixConsoles
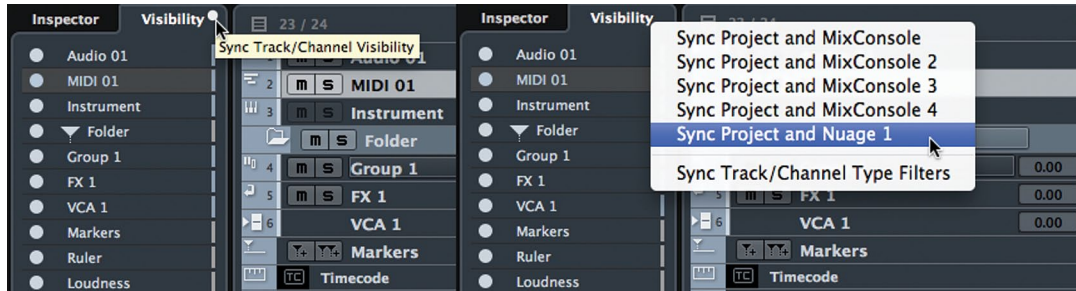
**Figure 6.40**
Sync Track/
Channel
Visibility button
and menu

❖ Sync Project and Nuage 1: Synchronizes the channel visibility between the project and Nuage Fader Units. If there is more than one fader unit in the workgroup, there will be individual sync options for each fader unit.

❖ Sync Track/Channel Type Filters: Since you can also display tracks by their type, this option allows you to synchronize the type filter between the Project, MixConsole, and Fader Units.

This is a powerful feature that helps organize what you see in the interface. With large projects in the hundreds of tracks, the ability to hide channels and tracks helps streamline workflow, displaying only what you need to see and nothing more.

## Event Display

The Event Display is the main editing area of Nuendo (see Figure 6.41). It is here that so much of the work is done. Every type of event in Nuendo can be represented here. Other items in the event display include viewing options (zoom, scroll, etc.) and navigation tools as described below.

1. **Cursor** – The playback cursor is a vertical line that lays across the entire event display area. It marks where the transport is located in time. When Nuendo is in play, the cursor will move across the event display indicating its current position.

2. **Audio Event** – Audio Events are portions of audio files that will be played back at certain points on the time line.

3. **MIDI Events** – MIDI Events consist of notes and controller data that are played back on the time line.
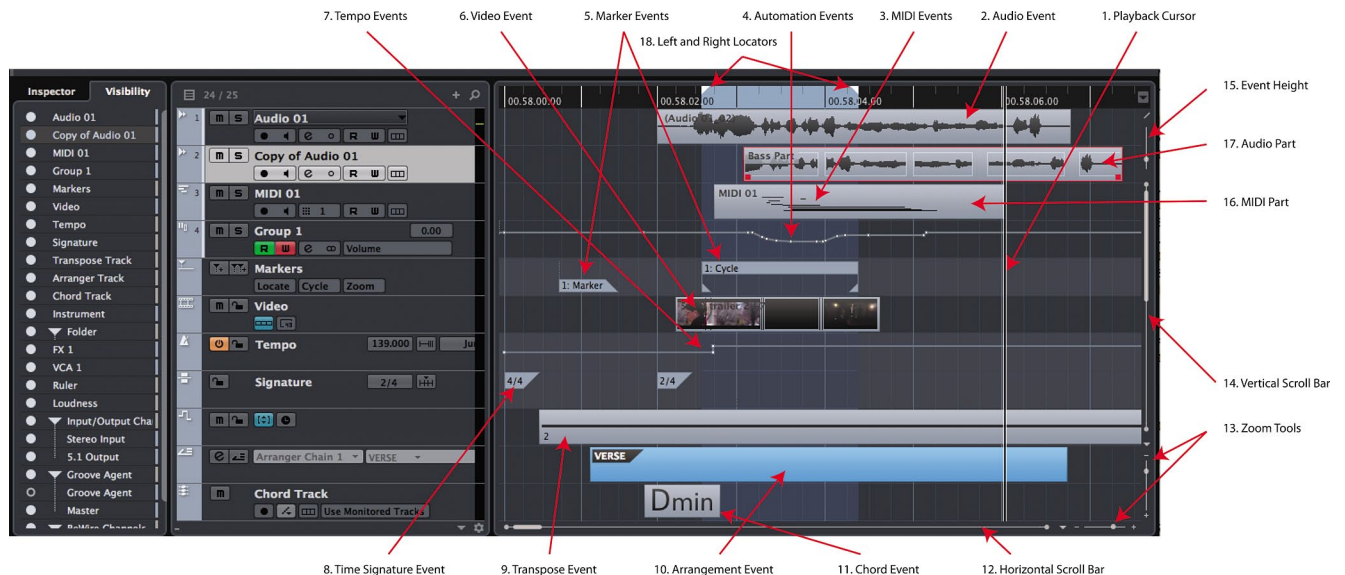
**Figure 6.41** The Event Display showing all possible event types

4. **Automation Events** – Automation Events are points on the time line where an automated control has reached a certain value. Automation data changes smoothly between these individual events to make up complex automation curves.

5. **Marker Events** – Both Markers and Cycle Markers are events that reside on Marker tracks.

6. **Video Events** – Video Events are portions of video files that play back at certain times in the project.

7. **Tempo Events** – Tempo Events mark when the tempo of the project changes. This can happen suddenly with a jump or gradually over time.

8. **Time Signature Events** – Time Signature Events mark when the time signature of the project changes.

9. **Transpose Events** – Transpose Events mark when the global key of the project changes either up or down.

10. **Arrangement Event** – When writing music, entire sections of multiple tracks can be defined as a section (verse, chorus). Then these sections can be played back in different orders using Arrangement events.

11. **Chord Event** – A Chord Event is where the harmony of the music changes structure. Using the Chord track and Chord events, entire pieces of music can be created quickly and changed easily.

12. **Horizontal Scroll Bar** – This scroll bar can be used to navigate the timeline of a project. Slide the block left to move earlier in time or right to move later in time.

13. **Zoom Tools** – These sliders adjust the horizontal and vertical zoom level for the event display. There are little popup menus that give you other choices for the zoom level such as Zoom to Selected or Zoom to Full.

14. **Vertical Scroll Bar** – Sliding this scroll bar will move the event display up or down to show tracks that do not fit in the current window size.

15. **Event Height** – This slider increases or decreases the height of Events in the display. For example, turning this slider up will cause audio waveforms to be taller/thicker in order to provide more accurate editing of quiet signals.

16. **MIDI Part** – A MIDI Part is a collection of more than one MIDI Event in a container so that all the events within the part can be moved and edited as one unit. This can be used to create musical parts such as "Verse Bass Part" for example. It becomes much easier to copy the bass part to other sections of a song.

17. **Audio Part** – An audio part is the same structure as a MIDI part only with audio events instead of MIDI events. You can also create the "Verse Bass Part" out of audio events that you've edited together to create a performance of the bass. Now, the entire bass part can be moved or copied easily.

18. **Left and Right Locators** – The left and right locators are important tools in Nuendo, very useful for editing, mixing, navigation, and even recording in cycle mode.

## Racks Pane

If the Racks pane is turned on in the Project window layout, the right side of the Project window shows the VST Instruments inserted in the project or the MediaBay file management tool.

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## VST Instruments

When the VST Instruments tab is selected, any VSTi in the current project will be listed here. There are two types:

&#10070; Track Instruments – VSTi inserted into an Instrument track

&#10070; Rack Instruments – VSTi inserted on their own, without an instrument track

Here you can open up the GUI of the instrument to change sounds or make adjustments.

## MediaBay

MediaBay is Steinberg's file database management system for keeping track of and searching for all types of media in your system. The MediaBay tab gives you access to this system right in the Project window.

That covers all the GUI elements and layout of the Project window. While there is still so much to explore in functionality of the project window, this section was designed to give you a basic overview.

# Transport Panel

The Transport Panel is used to operate Nuendo's timeline (see Figure 6.42). It can be used to play the project, record events into the project, and locate to various positions along the timeline for starters. It is configurable just like so many other windows in Nuendo. Let's take a look at its default configuration first and then follow up with all the other controls it has available.

1. **Performance Monitor** – This is a readout of the processor load on the computer.

2. **Record Mode** – There are different modes of recording for both Audio and MIDI tracks. These modes are critical to how recordings are retained when you record more than one take of a particular section. These will be discussed in Part II: Recording.

3. **Locators** – The left and right locators are displayed here along with functions that relate to them such as auto punch in and out plus the pre- and post-roll values for playback.
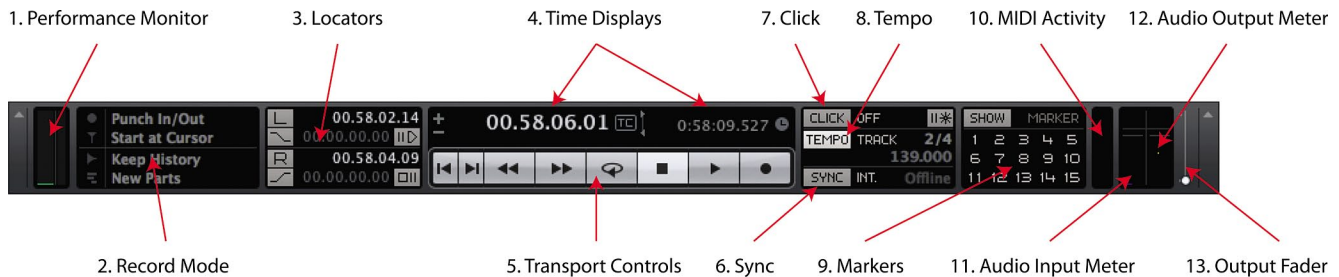
**Figure 6.42** Default Transport Panel

4. **Time Displays** – This time display shows the current cursor position using the same format as in the Main Ruler in the Project window. Changing the format here for this counter will also change the format of the main counter. The secondary display can show another time format.

5. **Transport Controls** – Basic transport controls that are also found in the Project window.

6. **Sync** – This area contains the activate sync button and displays the current sync status. Synchronization is covered in Part V: Accessories.

7. **Click** – This button turns the internal metronome on or off and is highlighted when active.

8. **Tempo** – This area gives you access to the basic tempo track functions. Simple tempo settings can all be made here.

9. **Markers** – These buttons allow you to create and then jump to the first 15 markers.

10. **MIDI Activity** – This indicator shows MIDI in and out activity.

11. **Audio In Meter** – This audio meter shows the level coming into the Default Input Bus as defined in VST Connections. It will be in the same channel width as the default bus.

12. **Audio Out Meter** – This displays either the level of the Control Room channel if it is active or the Main Mix bus as defined in VST Connections.

13. **Output Fader** – This mini-fader controls the level of the "Main Mix" VST Output.

That is a lot of control packed into a relatively small space in the GUI. But there's more. Right-click (Win) control-click (Mac) to open the Transport panel configuration popup menu. There are several configurations for the Transport Panel that can be useful. If you wish to configure your own, either check all the items you wish to see or go to Setup for complete access to position of all controls.

The only three items not visible in the default Transport are the Jog/Shuttle and Arranger controls, shown here in Figure 6.43.

**Jog/Shuttle** - The Jog/Shuttle controls allow movement of the playback cursor at various speeds, similar to shuttling an analog tape machine.

**Nudge** - In the very center of the Jog/Shuttle wheel are two buttons for bumping the transport +/- one timecode frame at a time. This is very helpful for film and post-production work in trying to find one particular video frame.

**Arranger** - The Arranger tools are for on-the-fly rearrangement of compositions or songs.
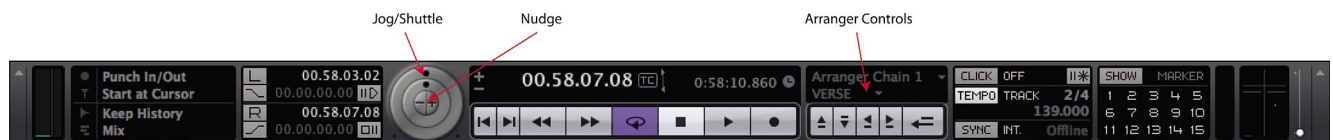


**Figure 6.43** The Jog/Shuttle and Arranger controls

# Virtual Keyboard (NEK)

The Virtual Keyboard is a handy musical keyboard built in to your QWERTY computer keyboard (see Figure 6.44). By selecting this option, the Transport adds this to the display:

The Virtual keyboard is also available from the Devices menu. This is very handy for a long flight with the laptop and no access to a proper MIDI keyboard. When the keyboard is active, most key commands are blocked so the keys can be used for notes. Only key items such as save, play, stop, and record are working.



**Figure 6.44**
Virtual
Keyboard in
Transport Panel

# The MixConsole

The MixConsole contains many of the same controls found in the Inspector except they are displayed for all the channels in the project at once. It allows you to see and adjust the sound for many tracks together instead of one at a time, giving you a different perspective on the overall mix. This follows the more traditional concept of a "mixer" or "mixing desk."

Pressing F3 or selecting it from the Devices menu will bring up the MixConsole (see Figure 6.45). The default layout shows the faders for all the channels in the active project side by side in the same order in which they appear in the Project window, plus a toolbar at top.

Just like other windows in Nuendo, the layout of the MixConsole can be changed to meet different needs. Clicking the "Setup Window Layout" button in the upper left will show you the layout options (see Figure 6.46). There are eight options, six for the areas above the faders and two for the side panes.



**Figure 6.45**
Default
MixConsole
View

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Yamaha & Steinberg
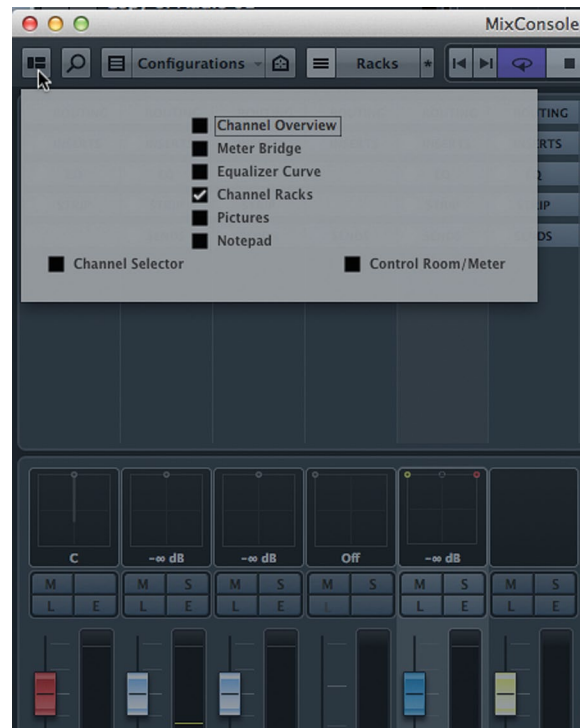
**Figure 6.46**
MixConsole
Setup Window
Layouts

The six areas above the faders contain information and controls for individual channels:

❖ Channel Overview: Level meters for every channel in the mixer at once, with navigation

❖ Meter Bridge: Individual level meters inline with the fader

❖ Equalizer Curve: Adjustable graphic representation of EQ settings

❖ Channel Racks: Inspector tabs, EQ, strip, sends, etc.

❖ Pictures: Customizable pictures to identify channel

❖ Notepad: Notepad for each channel

The two side panes offer channel selection, metering, and control room access.

❖ Channel Selector: Show/Hide and Select channels

❖ Control Room/Meter: Metering and Control Room access

Click on any of these options to show them in the MixConsole. Each section of the MixConsole is elastic and can be resized simply by grabbing the border between sections and dragging it to the desired size. (See Figure 6.47)

**Figure 6.47**
MixConsole with all sections open

# Channel Fader Section

The main section of the MixConsole shows the faders, pan control, mute/solo, automation and record enable functions. Figure 6.48 shows a diagram of the fader section.

1. Pan – For positioning the signal within a multi-channel mix bus, i.e. stereo, 5.1, etc.

2. Mute/Solo – These buttons will mute the signal or solo that channel.

3. Listen (L) – The Listen button will solo that channel using the AFL/PFL Listen bus directly to the Control Room without disrupting the mix of all the channels.

4. Edit Channel (E) – This will open up the Channel Edit Settings window for complete access to all parameters for that channel.
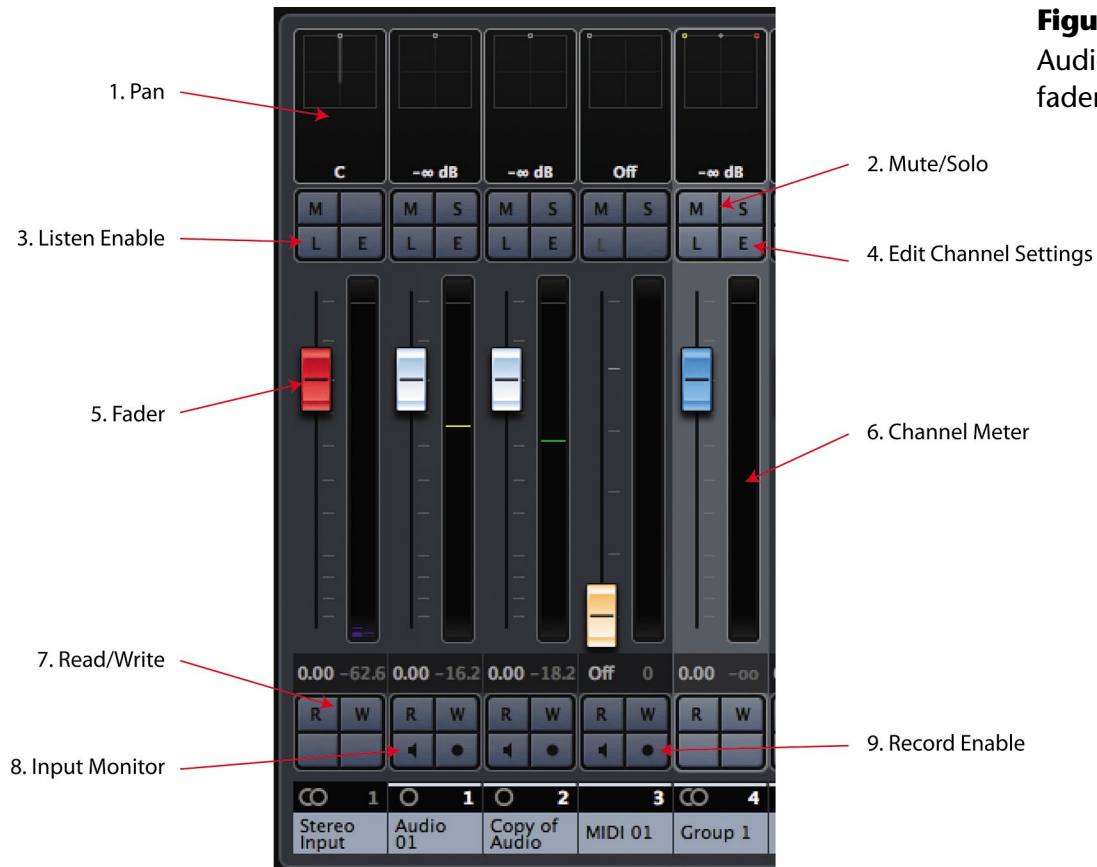
**Figure 6.48**
Audio Channel
fader section

1. Pan
2. Mute/Solo
3. Listen Enable
4. Edit Channel Settings
5. Fader
6. Channel Meter
7. Read/Write
8. Input Monitor
9. Record Enable

5.  Fader – Sets the level for that channel.

6.  Channel Meter – Shows the level for this channel.

7.  Read/Write – Enables the automation mode for that channel.

8.  Monitor – Allows you to listen to the input for that track, whether MIDI or audio.

9.  Record Enable – This places the track into record where either MIDI or audio can be recorded into the track.

# Toolbar

Much like the toolbar in the Project window, the MixConsole toolbar has a variety of controls and is also configurable. Some of these tools are the same as in the Project window, others are unique to the MixConsole. Right-clicking in the toolbar gives you access to the setup options (see Figure 6.49).

**Figure 6.49** Default Toolbar Set

# Find Track/Channel

This is a quick and easy way to locate a specific channel by text search. Simply click this button and start typing the channel name. The list will be filtered to show you the results. Clicking on the name will select that track.

# Channel Visibility

This is the same toolset as in the Project window. You can filter by channel type, use intelligent channel agents, and save visibility configurations.

# Transport Controls

Duplicate transport controls are shown here for convenience.

# State Buttons (Global Commands)

The state buttons apply to every channel in the project. They are global commands that affect the status or state of all channels at once.

> ❖ Deactivate Mutes: Unmutes every channel.
>
> ❖ Deactivate Solo: Clears all the soloed channels. This is for the Solo In Place (SIP) mode only.
>
> ❖ Deactivate Listen: Clears all Listen-enabled channels. The Listen function is for AFL/PFL solos.
>
> ❖ Activate/Deactivate Read: This will either enable automation Read mode for every channel if none are active or deactivate Read mode for all channels if there are any currently in Read mode. The button turns green if any channel is in Read mode.
>
> ❖ Activate/Deactivate Write: If the button is red, some channels are already in Write mode and this will deactivate it for all channels. Otherwise, it will activate write on every channel in the project.

❖ Bypass Inserts: Clicking this button while holding Option (Alt) will bypass the Inserts rack for every channel in the mixer. Clicking it again will re-enable all of the inserts.

❖ Bypass EQs: This is the same function for the equalizer rack for all channels.

❖ Bypass Channel Strip: This is the same function for the Strip dynamics rack for all channels.

❖ Bypass Sends: This is the same function for the Sends rack for all channels.

## Link/Unlink Selected Channels

These tools are for linking parameters of the selected channels together, including VCA Fader control. Details will be covered in Part IV: Mixing.

## Locators (Optional)

Optional tools start with the Left and Right Locators. You can manually enter locator positions and then move the cursor to that locator by pressing the L or R buttons.

## Time Display (Optional)

The main and secondary time displays can be shown in the MixConsole's toolbar.

## Markers (Optional)

Push-button access to the first ten Markers is available.

## Zoom Palette (Optional)

Since the MixConsole is scalable, zoom tools are available to increase or decrease the horizontal and vertical aspects of the mixer elements. You can choose the number of channels visible in the current window size, for example.

## Performance Meter (Optional)

A small performance meter can be displayed in the toolbar.

## Setup…

As with most windows in Nuendo, the toolbar can be customized. The MixConsole toolbar has the same Setup window allowing you to choose which elements are visible and what order they appear in the toolbar (see Figure 6.50).
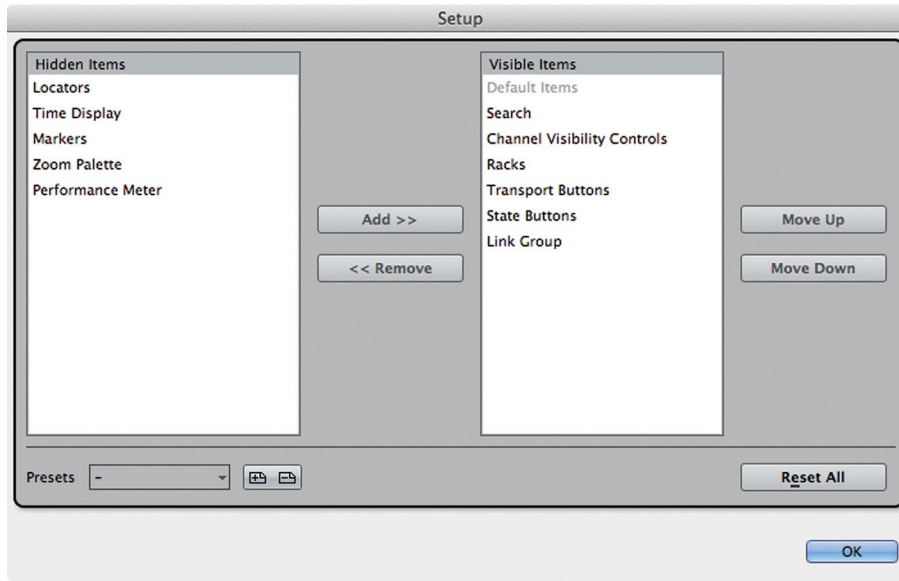
**Figure 6.50**
MixConsole
Toolbar Setup

# Channel Selector (Left Side Pane)

When the Channel Selector is enabled, a track list appears on the left side of the MixConsole. It has two panes; visibility and zones.

## Visibility

The visibility pane is exactly the same as the visibility pane in the Project window, allowing you to show or hide channels in the MixConsole (see Figure 6.51). If Sync Track/Channel Visibility is enabled for the Project window and MixConsole, changes made to visibility in either window will be reflected in the other window.

## Zones

The Zones pane is unique to the MixConsole and allows you to lock channels to one side of the MixConsole (see Figure 6.52). Once locked in position, scrolling through the channels in the mixer will not affect the locked channels. They will remain either at the left or right side of the MixConsole.

This is helpful when you want to maintain control over specific channels, such as the lead vocal or dialog stem, while scrolling through the rest of the project.

**Figure 6.51** Visibility pane



**Figure 6.52** Zones pane

# Control Room/Meter (Right Side Pane)

Enabling the right side pane gives you access to the Control Room Mixer right there in the MixConsole. This is handy since the Control Room settings are used constantly in most studios. Metering is also something used constantly and that is also accessible in this pane.

## Control Room

The Control Room pane has two tabs: Mixer and Setup.

### Mixer

The Mixer tab has the operational settings for Control Room such as the main volume, speaker selection and monitor source selection (see Figure 6.53).

### Setup

The Setup tab allows you to insert plug-ins into the various Control Room channels along with other settings.

## Meter

The Meter pane displays the Main Mix Meter. There are two types of meters, normal (Master) and loudness.

### Master

The Meter Master tab displays the normal level meter. This meter measures the level of the Main Mix as defined in VST Connections. It has various calibrations to choose from, including Peak, K-System, and AES17 standards (see Figure 6.54).



**Figure 6.53**
MixConsole
Control Room
Mixer
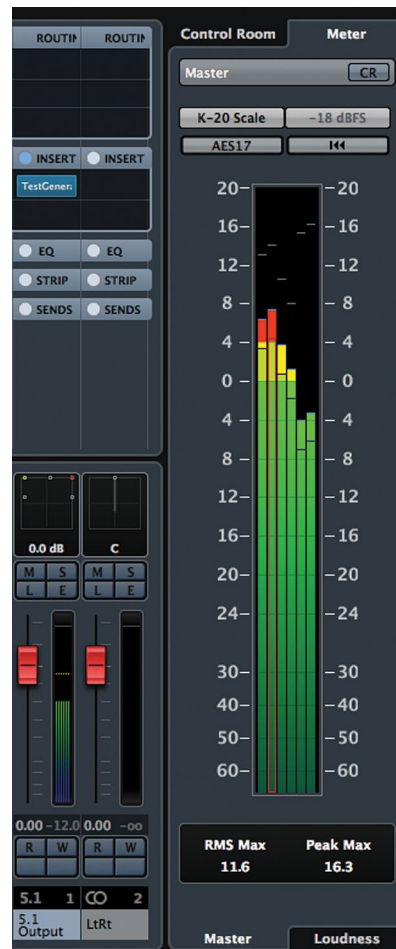


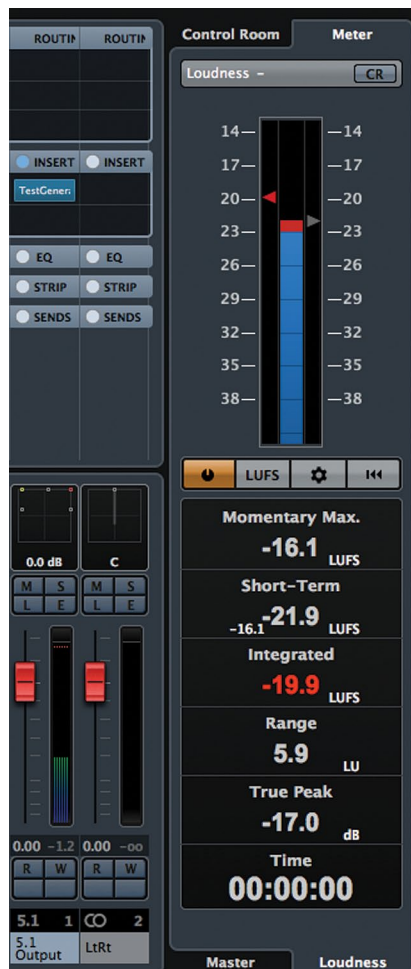**Figure 6.54**
MixConsole
Master Meter

## Loudness

The Loudness meter is designed to help maintain the dialog level in order to meet broadcasting standards put in place by various networks (see Figure 6.55). This combats the problem of having commercial breaks sound so much louder than the movie or show. To fight the loudness wars, the level of material is restricted to a certain loudness measurement. Nuendo's loudness metering follows the accepted standards and is adjustable to meet your requirements.

## Control Room – Meter Combination

At the top of each meter tab is a power button marked "CR." Enabling this will add a condensed version of the Control Room parameters to the meter pane. Since metering and Control Room are used so often during the course of recording sessions, the ability to have them all together in one display can be very helpful to your workflow (see Figure 6.56).



**Figure 6.55**
MixConsole
Loudness meter



**Figure 6.56**
Control Room –
Meter
combination

# Channel Overview

The Channel Overview is at the top of the MixConsole. It is a small meter bridge that will display levels for every channel in the project. Larger projects will have smaller level meters so that they all fit together here. You can fit more than 100 channels on a typical laptop screen. Of course larger screens will display more meters (see Figure 6.57).

Clicking anywhere in the Channel Overview will scroll the MixConsole to those channels. The blue line beneath the meters indicates what channels are currently displayed below.



**Figure 6.57** MixConsole Channel Overview 115 channels

# Meter Bridge

The Meter Bridge should not be confused with the Channel Overview. The meter bridge simply adds a row of meters above the channel faders. They duplicate the metering seen next to each channel fader (see Figure 6.58).

Right+click on any meter to access the metering settings (see Figure 6.59). You can alter the meter signal position, peak options and reset the peak indicators from this pop-up menu.

You can also choose to view the Wave Meters, which display the audio waveform as a vertical display in the meter bridge. This type of meter display allows you to see sounds before they happen, on a vertical timeline (see Figure 6.60).

The center hash mark indicates the current cursor position. Waveforms that appear below this hash mark have not been heard yet. They approach the hash mark and can be heard as they cross this line. This is a helpful meter view when mixing film and television long form, as you can anticipate mix moves before they happen by viewing the wave meters.

**Figure 6.58**
MixConsole
Meter Bridge
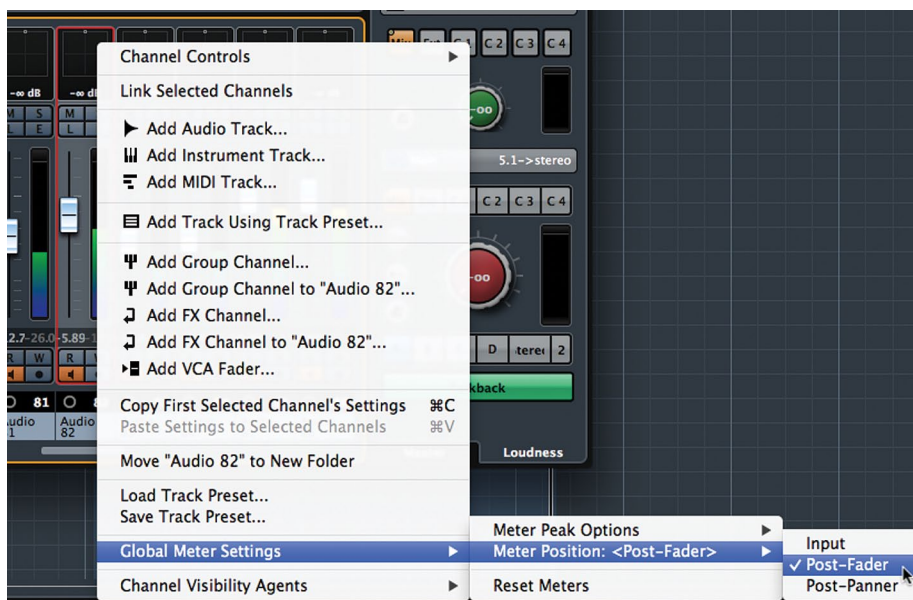


**Figure 6.59** Meter Settings pop-up
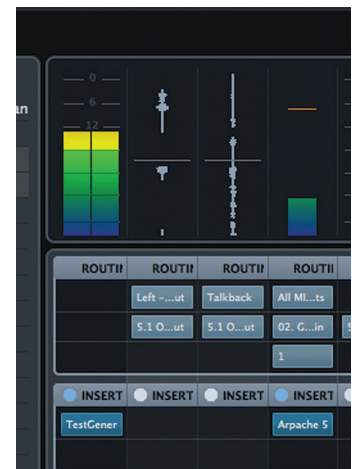


**Figure 6.60** Wave
Meters in action

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# Equalizer Curve

Enabling the Equalizer Curve in the MixConsole adds a row of displays above the channel faders that represent the EQ curve that is being applied on each channel (see Figure 6.61).

Clicking on this display will open a pop-up window that allows you to control the equalizer graphically. Click anywhere in the display to start modifying EQ bands. Moving left or right adjusts the frequency while moving up or down adjusts the gain. Holding Shift while moving up or down will adjust the Q or bandwidth for that band (see Figure 6.62).

Repeated clicks will enable additional bands of EQ. You will notice that a spectrum analyzer is embedded in the display to assist in EQ decisions.



**Figure 6.61** Several channels with EQ curves displayed
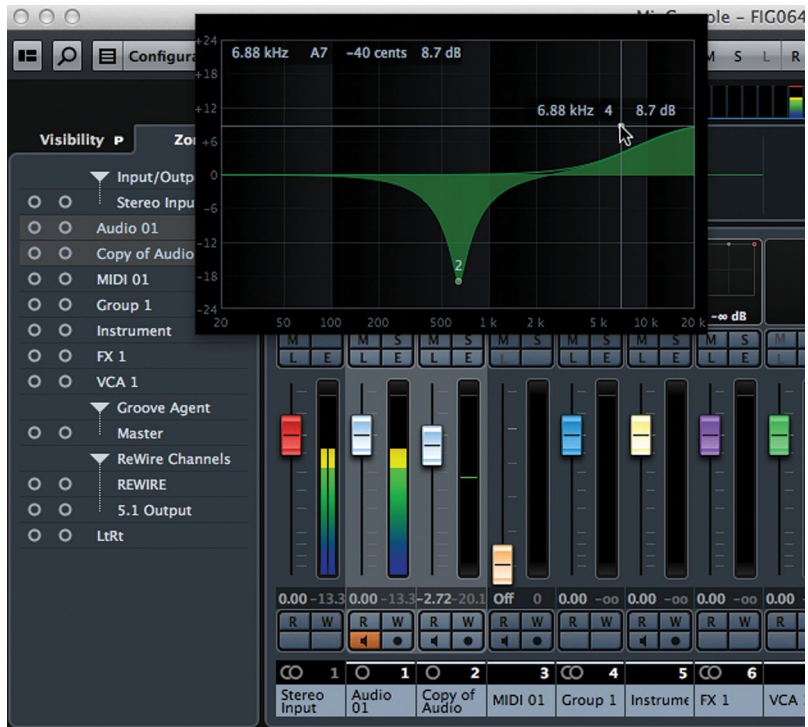


**Figure 6.62** Equalizer Curve Pop-up control

# Channel Racks

Channel Racks are most similar to Inspector tabs. They provide the same controls over all the settings for each channel. There are ten racks available, five of which are optional and not displayed by default.

Once you have enabled Channel Racks in the window layout, the five default racks appear above the channel faders (see Figure 6.63).

Clicking on the Select Racks button in the Toolbar allows you to show the remaining five racks or remove any rack from the display. This way you'll see only the controls that you need to see (see Figure 6.64).



**Figure 6.63**
Default
Channel Racks
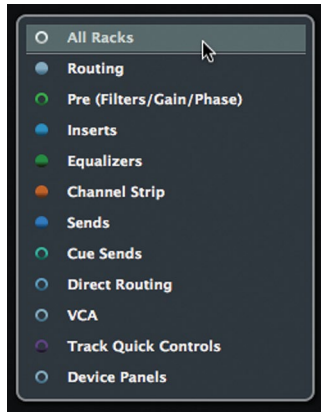
**Figure 6.64**
Select Racks menu to enable/disable each rack



**Figure 6.65**
Routing Rack Audio and MIDI channels

## Routing

The top rack is the Routing rack (see Figure 6.65). Here you can set the input and output for each channel. Certain channel types only have outputs such as Group and FX channels. MIDI channels also have inputs and outputs but they are for MIDI ports. Additionally, MIDI tracks have a MIDI channel field.

## Pre (optional)

The Pre rack (see Figure 6.66) contains controls similar to those found in the input section of a traditional analog console:

- ❖ Input Gain
- ❖ Phase Invert (Polarity Reverse)
- ❖ High-pass Filter
- ❖ Low-pass Filter

**Figure 6.66** Pre rack

**Figure 6.67** Insert racks, no plug-ins
and first plug-in inserted

## Inserts

The Inserts rack is where VST plug-ins can be inserted into each channel. There are eight total insert slots per channel, six located pre-fader and two located post-fader. Initially, when you first open the Inserts rack, you will only see the first insert slot. As you add plug-ins, the remaining slots will become visible one at a time (see Figure 6.67).

### Fixed Slots Option

There is an option for the Inserts rack that will show all the available inserts at once so you may choose which slot to insert a plug-in into. For instance, if you wish to insert a brickwall limiter after the fader on the Main Mix, you would need to see all eight slots at once to choose a post-fader position for the limiter.

This option is available from the Rack Settings menu located in the Toolbar. Select the "Fixed Number of Slots" option to show all eight slots (see Figure 6.68).

Now it is possible to insert the limiter into slot number seven to be positioned after the channel fader in the signal flow of the channel (see Figure 6.69).

## Equalizer

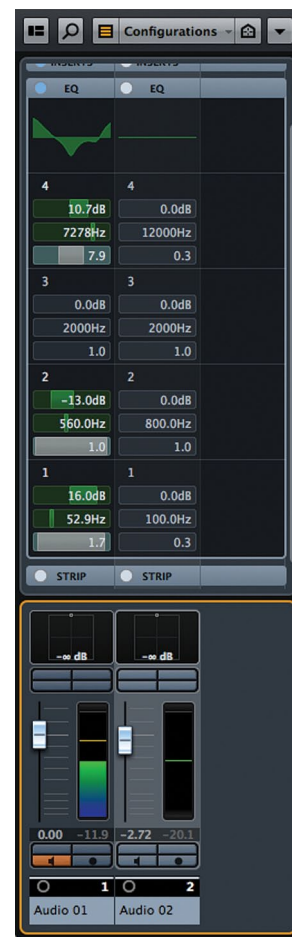The Equalizer rack combines the functionality of the EQ Curve with dedicated controls for all four EQ bands together (see Figure 6.70). You can change settings by clicking in the curve display or adjusting the individual parameters below.



**Figure 6.68** Rack Settings menu, fixed slots option



**Figure 6.69** Limiter inserted into slot seven



**Figure 6.70** Equalizer rack

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## *Dragging EQ Bands*

One unique feature of the Equalizer rack is the ability to copy EQ bands between channels by dragging them in the MixConsole (see Figure 6.71). Click in the header of an EQ band and drag it to another channel EQ to copy the settings. You can only copy settings to the same band of another channel, i.e., from band 3 of CH 11 to band 3 of CH 14, etc.

The red highlighted band indicates the source settings. Once you let go, the settings are applied to the destination band.

## Strip

The Strip rack opens up the dynamics section of each channel. Here you have access to the gate, compressor, tools, saturation and limiter. Clicking on the name opens up the parameters for that dynamics processor and activates it (see Figure 6.72).
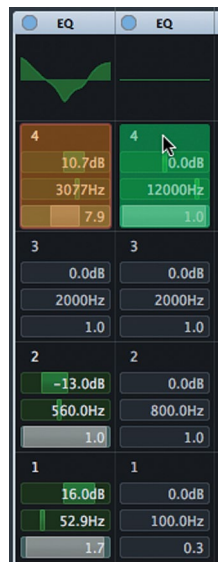


**Figure 6.71**
Dragging EQ band settings
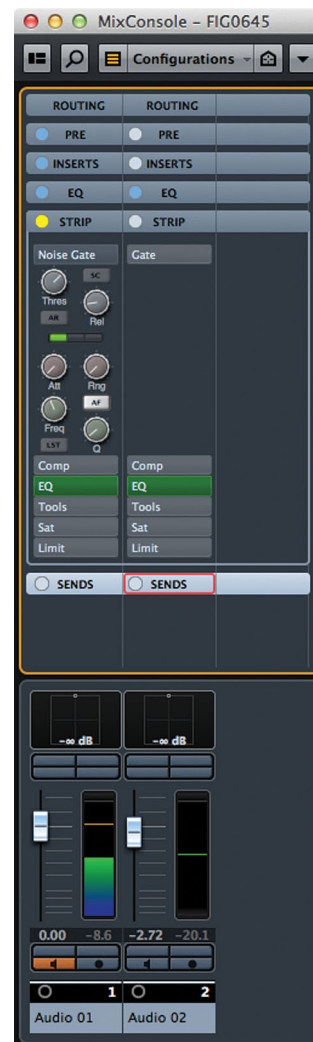
**Figure 6.72**
Strip Rack with activated gate

## Equalizer Position

You even have access to the EQ here in the strip. Clicking on the EQ tab opens up controls for the four band EQ. But there is another reason for the EQ to be present here in the Strip rack.

Dynamics processors are affected by the frequency response of input signals. Therefore the position of the equalizer in the signal flow of the channel can greatly affect how the dynamics processors function and sound.

For example, compressors will react more to low frequencies because their energy is greater than high frequencies at the same operating level. If the EQ is before the compressor in the signal flow, boosting low frequencies can cause the compressor to overreact and create "pumping" artifacts. A possible solution would be to move the equalizer after the compressor in the signal flow.

In the Strip rack, you can drag the EQ tab up and down to change its position in the signal flow. The top tab (Gate) is the first position in the signal flow. If you drag the EQ tab to the top, the signal flow will be changed to process the EQ first (see Figure 6.73).

You can freely position the EQ at any point in the Strip rack for optimum results.



**Figure 6.73**
EQ Tab moved to the first position in the channel's signal flow

# Exclusive Expanded Rack Option

At this point, you might notice that the Racks have taken up a great deal of vertical space in the MixConsole. On most monitors you would need to scroll up and down a bit to see all the open Racks. If this is not convenient for the current workflow, the option exists to force only one Rack to be open at a time, keeping the MixConsole a bit more tidy. The Rack Settings menu has the option for "Exclusive Expanded Rack," which will force only the current rack to be open and the rest to automatically close (see Figure 6.74).

# Sends

The Sends rack (see Figure 6.75) accesses the eight auxiliary sends for each channel. This rack also responds to the "'Fixed Slot'" option and will only display the used sends unless that option is checked.

Aux sends can be routed to many destinations, providing a great deal of routing flexibility. Of course they are perfect for sending signals to FX channels (for reverb, delay, etc.) but they can also be used to create parallel routing schemes for drum mixing and dub-style side-chain compression, for example. For surround mixing, the sends include surround panners and downmixing abilities that are automatically inserted when needed.
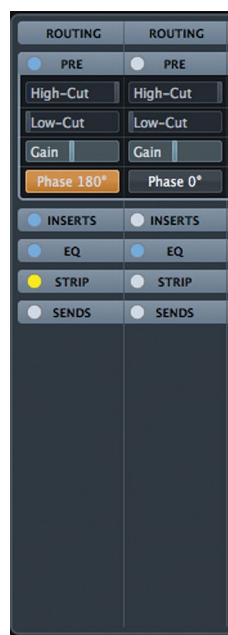
**Figure 6.74**
Pre Rack Exclusive
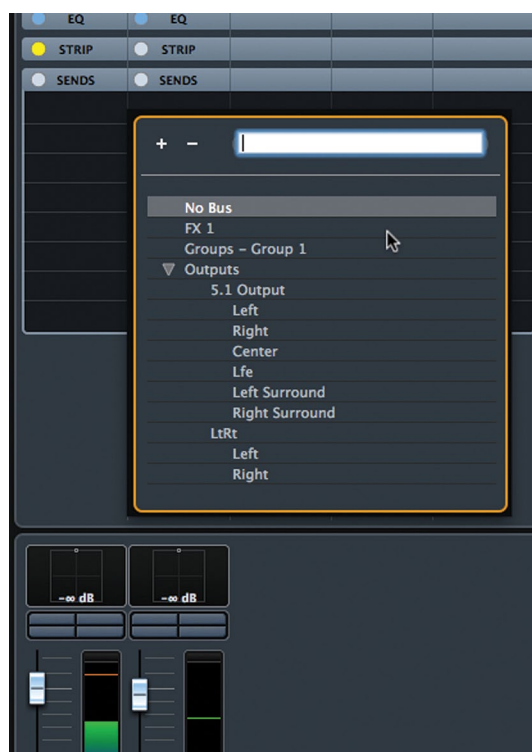
**Figure 6.75**
Sends Rack

The Sends can be routed to any of these destinations:

❖ FX Channels

❖ Group Channels

❖ VST Outputs

❖ VST Plug-in Side Chain Inputs

*Pre- or Post-Fader*

By default, aux sends are routed post-fader. In other words, the aux send takes its signal from right after the channel fader. This makes sense for reverb and delay sends since as you turn the channel fader down, the send to the reverb is also reducing, thereby lowering the reverb amount together with the source itself. This makes mixing signals together easy, with proportionate amounts of FX like reverb and delay.

There are however, times when it is necessary to have these signals levels be independent of each other. This requires a pre-fader send, where the signal is sourced just prior to the channel fader. In order to do this, right click on the aux send in the rack and choose "'Move to Pre-Fader." This will change the color of the send level from blue to green to indicate pre-fader status (see Figure 6.76).
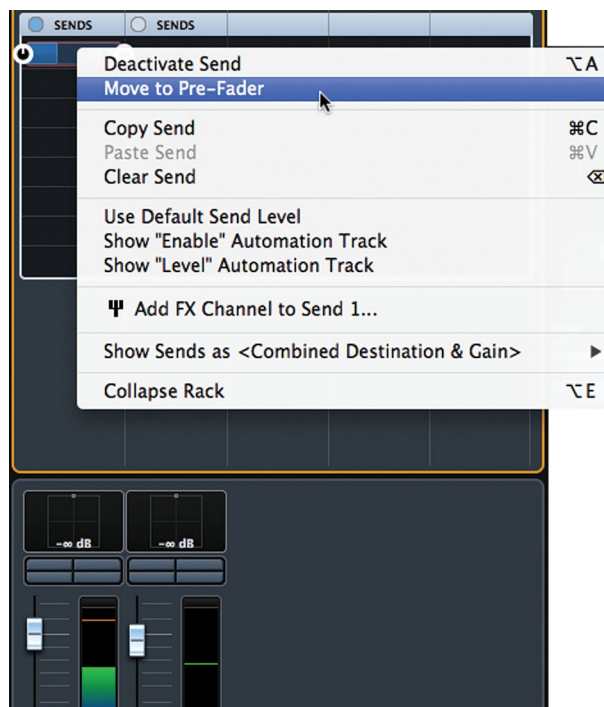


**Figure 6.76**
Send Context Menu – Move to Pre-Fader

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## PRO TOOLS NOTE

Pro Tools routing requires the use of buses as an intermediate step between the source and destination. In Nuendo and Cubase, this step is eliminated. Once you create a channel that can be a destination for routing, i.e. FX, Group, output etc., that channel becomes available as a destination in any routing menu. The "bus" is automatically created. If you add a 5.1 Group channel to your project, it immediately becomes a destination for either output routing or send routing.

Nuendo also handles the channel configuration automatically. If you are routing from a mono channel to a 5.1 Group, a surround panner is inserted. Conversely, if you route a 5.1 channel to a stereo Output, a downmix converter (MixConvert) is inserted, combining the six channels into two. There is no limitation on the number of destinations in a Project except for the processing power of the workstation (see Figure 6.77).
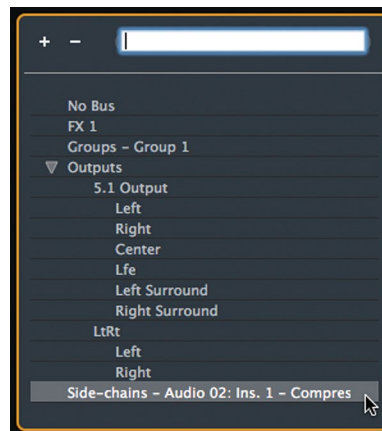


**Figure 6.77**
Sends Routing
Menu: All
Desintations

## Cues (optional)

The Cues rack accesses the four stereo Cue Sends available in the Control Room. These are designed to create monitor mixes for talent in the studio to hear themselves as they perform.

Only the Cue sends that have been created in Control Room will be seen in the Cues rack. Each Cue has a level, pre/post fader and pan control in the Rack. Hovering over the center of the slider will reveal the pre/post fader option (see Figure 6.78).

**Figure 6.78** Four Cue Sends pre/post fader
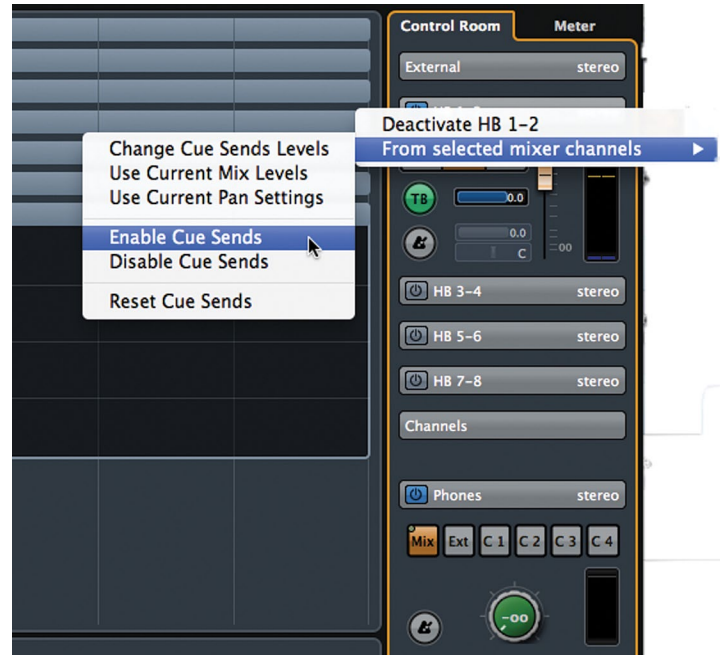


**Figure 6.79** Control Room contextual menu

## Quick Cue Send Creation

Creating Cue sends can be time consuming on a project with many tracks. There are macro functions for the Cues that alleviate tedious tasks in this process. A common scenario is duplicating the main mix blend from the channel faders into a Cue. The idea is that the Cue can then remain static for the performer while allowing changes to be made to the main mix for monitoring in the control room.

Let's say you have a blend of the drum channels on the channel faders that sounds good and you want to transfer that blend to the first Cue for the drummer to hear while performing. Here's a shortcut.

1. Select all the drum channels you wish to include in the blend.
2. Access the Control Room mixer either by itself or in the MixConsole.
3. Right-click over the Control Room mixer to open the context menu (see Figure 6.79).
4. Select Cue 1>From selected mixer channels>Enable Cue Sends
5. Select Cue 1>From selected mixer channels>Use Current Mix Levels
6. Select Cue 1>From selected mixer channels>Use Current Pan Settings

**Figure 6.80**
Duplicated
blend on Cue 1

Now, the same blend of channels, including the panning, is duplicated on Cue 1, and the sends have all been set to pre-fader (see Figure 6.80). So any changes made to the channel faders will not affect the balance of the Cue send. This process can be performed with many channels at once instantly so you don't have to manually set each Cue send.

## Direct Routing (optional)

The Direct Routing rack accesses the eight Direct Routing slots for each channel (see Figure 6.81). This allows you to switch the output destination of a channel between eight different destinations. This happens in real time, without switching noise. You can also automate these routing changes.

It is possible to route the channel to two different destinations at the same time. A special "Summing Mode" is enabled from the Direct Routing contextual menu by right-clicking on the Direct Routing tab in the MixConsole (see Figure 6.82).

**Figure 6.81** Direct Routing rack
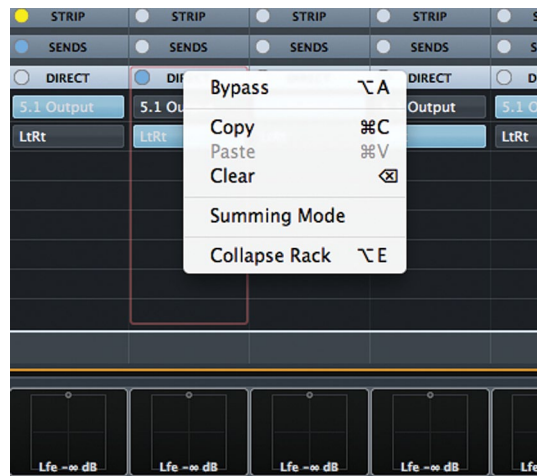


**Figure 6.82** Direct Routing contextual menu

Once enabled, clicking on a second routing will not disable the primary routing, thus sending the signal to two destinations. This offers yet another layer of routing flexibility in the MixConsole.

All told, including Direct Routings, Sends and Cues, each channel can have up to 20 destinations at once!

## Track Quick Controls (optional)

The Track Quick Controls rack offers eight slots for easy access to any control in the entire channel itself. You can custom configure a set of Quick Controls or choose from presets available in the Inspector tab of the Project window. Any parameter from any Rack can be placed into one of the Quick Control slots to create a custom set of controls for just the items you need (see Figure 6.83).

## Device Panels (optional)

If a Device Panel has been assigned to this channel, the first eight parameters of the panel will be available here in the MixConsole .

# Pictures

Pictures are a great way to visually identify channels in the MixConsole. Anyone familiar with the method of using white tape to label a traditional analog console will understand the fun of using colors, shapes, and other markings to label the console. It also makes for quicker identifying of the various channels in a large project (see Figure 6.84).

**Figure 6.83**
Quick Controls - Preset
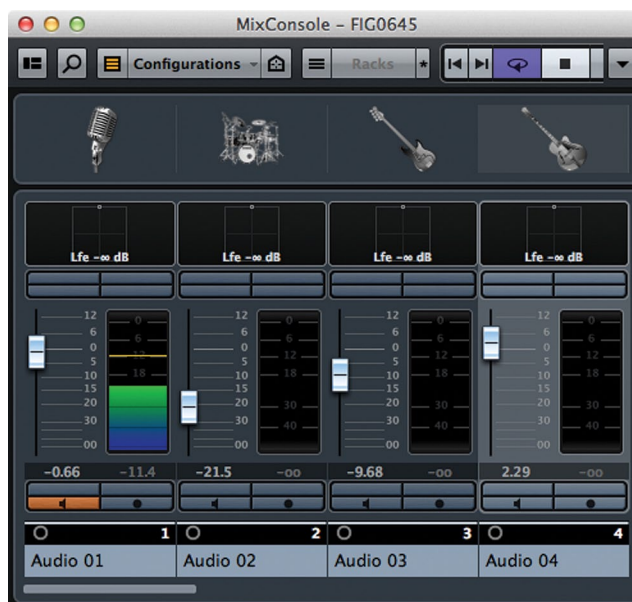
**Figure 6.84**
Pictures labeling the MixConsole

Clicking in the Pictures area opens up the Track Pictures Browser. There is a whole factory library of graphics to depict various instruments. You may also use your own photos or images to label channels. Import photos of actual instruments and equipment to add a level of detail to the MixConsole, including mic positioning and equipment settings (see Figure 6.85).

## Notepad

Finally there is the Notepad. Each channel can have a note attached to it to provide details concerning that track. This can be used for anything: descriptions of microphone setups, tunings, equipment settings, etc. It is convenient to see these notes just above each channel fader (see Figure 6.86).
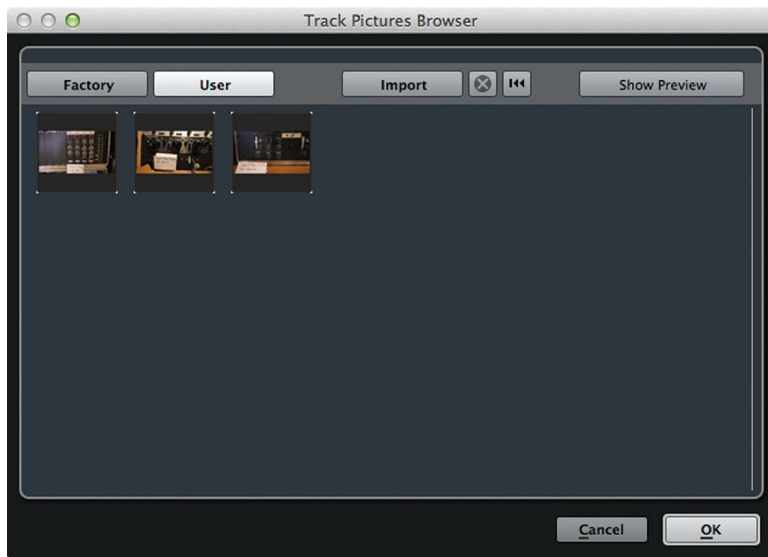


**Figure 6.85**  Track Pictures Browser



**Figure 6.86**  The Notepad

# NUAGE
## COURSEWARE
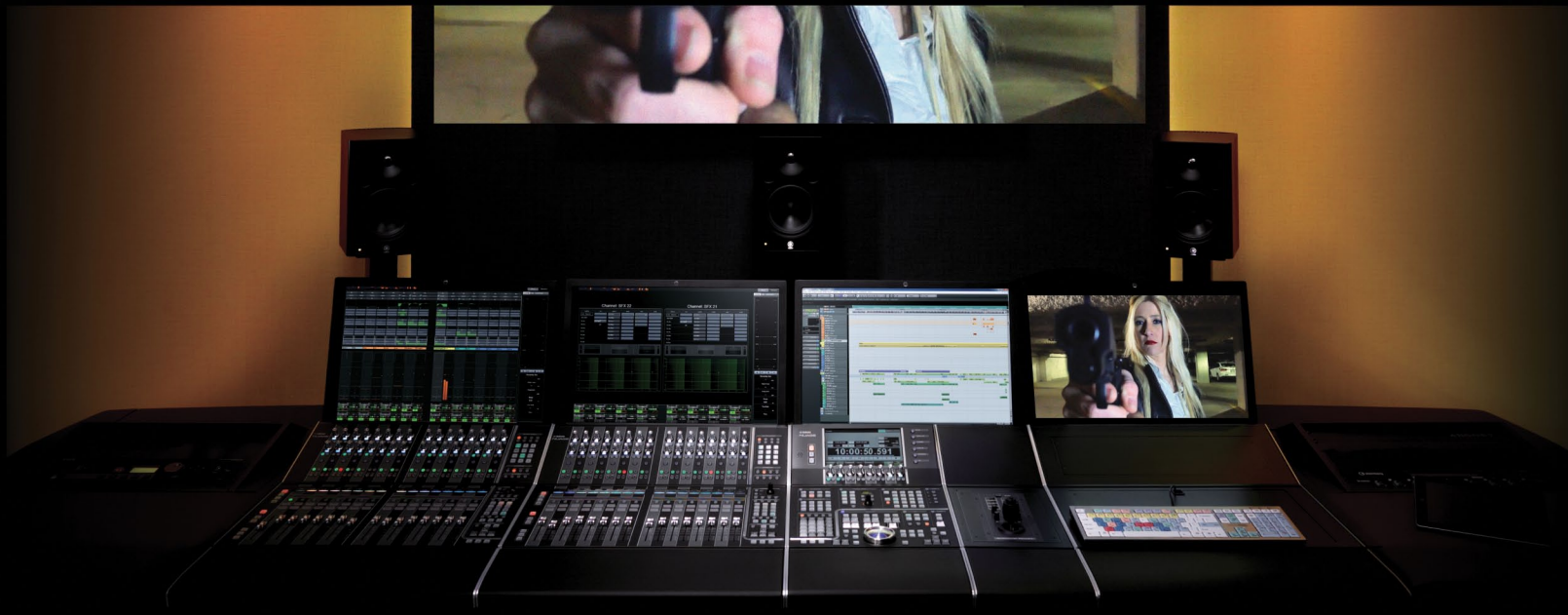
PART I: SETTING UP
by Ashley Shepherd

# Chapter 7
# Nuage Fader Unit and Control Room

**NUENDO** 7
Advanced Audio Post-Production System

**YAMAHA**

**CUBASE PRO** 8
Advanced Music Production System

# NUAGE

# Nuage Fader Unit and Control Room

- ❖ Nuage Fader Unit Channel Section Control
- ❖ Editing Plug-In Parameters
- ❖ Flip Mode
- ❖ Nuage Control Room

In this chapter, we will explore the Nuage Fader Unit and how to access the various parts of the MixConsole with hardware controls. Then we will explore the Control Room features on both the Fader and Master units.

# Nuage Fader Unit Channel Section Control

**(tutorial video: "Section Control")**

The area in the upper right of the Nuage Fader unit is labeled Section Control. These buttons give you access to each rack in the MixConsole. For example, if you press the EQ button, the equalizer rack of the mixer will open up above that Fader unit, as seen in Figure 7.1.

## Parameter Display

The multi-function knobs are now assigned to equalizer parameters, two per channel. Those parameters are displayed directly above the multi-function knobs to clearly identify the knob parameters along with functions for the two buttons just below each knob.

Initially, the upper knob controls the gain for this EQ band and the lower knob controls frequency. If the lower button Q is pressed, the lower knob will switch to control the Q or bandwidth of the EQ band. The upper left button turns the band on or off. The upper right button performs an "invert gain" function that reverses the direction of the gain setting. This is helpful for finding problematic frequencies and then reducing them using the Invert button.

Understand that the knobs and buttons will perform different functions depending on which part of the MixConsole is assigned to them. The labeling is clear on the screen, so that understanding which parameters are being addressed is simple. Plus when you touch a knob, the corresponding parameter label above it becomes highlighted.

# Slot Switching

Of course two knobs are not enough to control the complete parametric equalizer in Nuendo. That is why there are eight slot buttons in the section control of the Fader unit. For the equalizer, there are four slots corresponding to the four bands of EQ. You can change to another EQ band by pressing the corresponding slot number. For example, if you press slot 4, the knobs will operate the parameters for the fourth band of the equalizer, as seen in Figure 7.2.

If you change the section to the Sends as shown in Figure 7.3, there are eight slots available, one for each aux send in Nuendo. The slot buttons are slightly lit to indicate what slots are available in that section. The brightly lit button indicates the active slot.



**Figure 7.1**
Section Control set to EQ and display of parameters
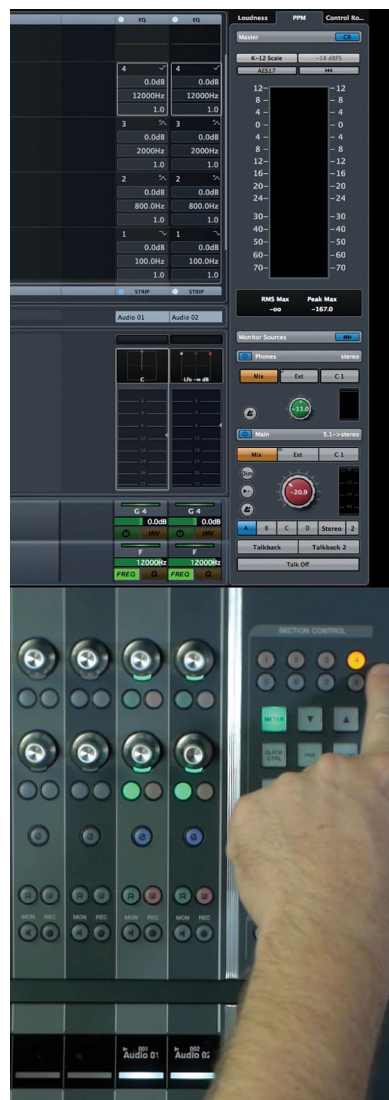


**Figure 7.2**
Slot 4 switches the knobs to the fourth band of EQ

Each section of the mixer has differing controls assigned to the multi-function knobs. The knobs adapt to the parameters assigned to them. For example, if the pan section is selected, then the pan control is assigned to the top knob. If the channel is routed to a surround destination, the pan controls expand to 16 parameters instead of the simple L-R control. Now all eight slots become active for that channel, giving you access to 16 panning parameters as seen in Figure 7.4.

Explore each section of the MixConsole using the Section Control to see how the parameters are mapped to the knobs. Note that when there is no section selected, the knobs default to the pan controls.
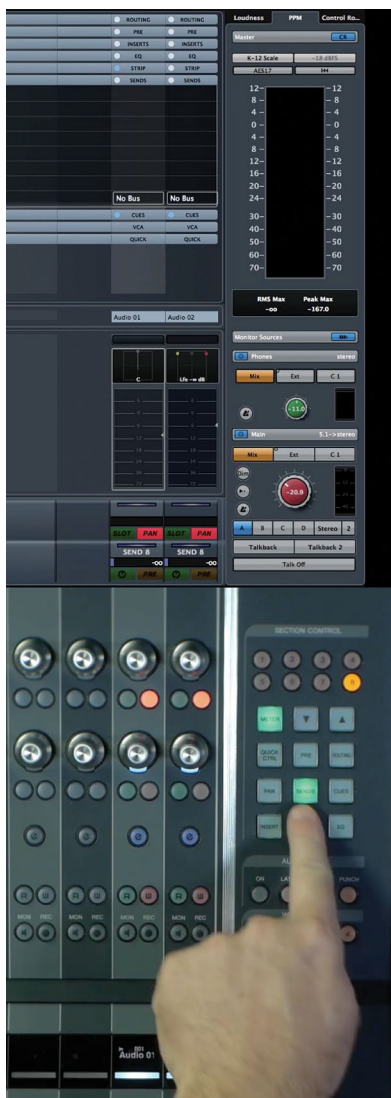


**Figure 7.3**
Section Control set to Sends 1-8

**Figure 7.4**
Surround panner with all 8 active slots

# Meter Switching

The meter button switches the channel metering between normal Graph meters and the time-based Wave meters. The Wave meters are useful for speeding up the mixing process. Using Wave meters, you can see the sound waveform as it approaches the playback zenith, allowing you to prepare your fader moves without stopping playback, like seeing into the future.

# Section Control Customization

With the addition of the VCA section, there are now more than nine sections to the MixConsole. With only nine buttons to switch between sections, it is not possible to select them all. Using the Nuage Fader Setup window in Nuendo, these buttons can be customized to switch sections of your choosing.

To customize the section controls, open Devices>NUAGE FADER Setup in Nuendo and click the Section Control tab. You will see a graphic representation of the Section Control shown in Figure 7.5. Each of the section buttons is now a pull-down menu used to choose the section that opens when the button is pressed. This will allow you to rearrange the section control to your preference.
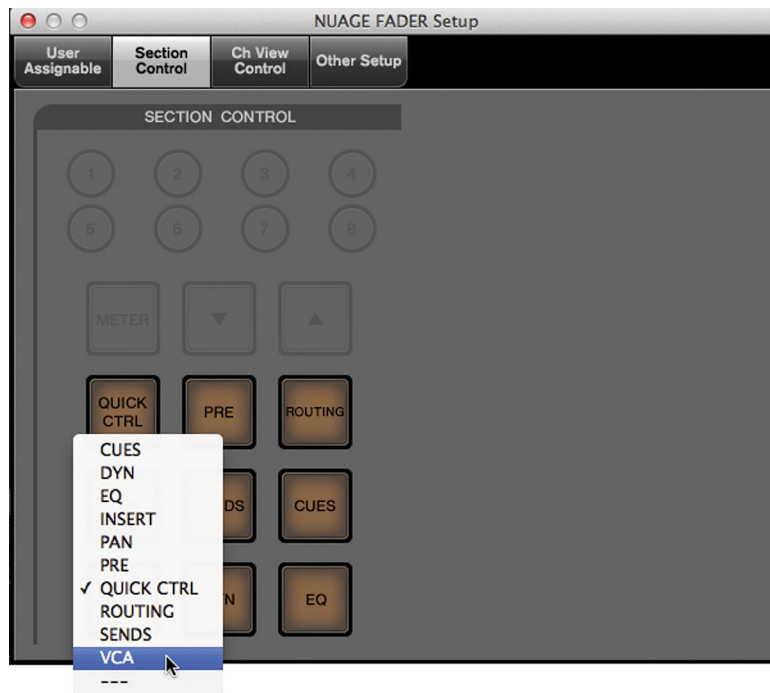


**Figure 7.5**
Nuage Fader
Setup window

NUAGE
Yamaha & Steinberg

# Channel Settings Block Mode

Since there are only two knobs per channel strip, only two parameters of any channel can be addressed in the normal mode. However, there is channel block mode, which changes the arrangement of the knobs so that they all address one channel at a time, 32 knobs at once.

By pressing the [e] button for any channel, the fader unit will enter Channel Settings block mode for that channel, as shown in Figure 7.6. The display above that fader unit changes to show just one channel and the knobs all address its parameters.



**Figure 7.6** Channel Settings Block Mode Dynamics

In Figure 7.6, the section control is set to dynamics with the first four processors enabled. You can see all the various parameters for each processor assigned to the knobs below. This makes it much easier to address everything about the dynamics at once.

Notice that there is a fifth processor, the limiter. Using the slot buttons, additional pages of parameters can be accessed. Pressing the slot 2 button, as seen in Figure 7.7, shows the fifth dynamics processor mapped to the knobs.

So even in Channel Settings mode, the section control and slot buttons work in the same fashion as their normal mode, switching between the various racks of the MixConsole but just on one channel at a time.

## NO SECTION SELECTED

When in block mode and no section is selected in the Section Control, a composite channel strip is mapped to the knobs with limited access to all sections of the channel at once.



**Figure 7.7** Slot 2 showing the limiter

# Channel Settings Dual Block Mode

Since mixing is really about the relationship between channels, not just one channel in isolation, it can be useful to see and address all the settings for more than one channel together.

Nuage provides a dual block mode to see two channels at once on the screen and have two blocks of 16 knobs address both channels. Figure 7.8 shows two channels in dual block settings mode on the EQ section. The complete set of equalizer parameters are mapped to each block of 16 knobs, giving you total control over these two channels.

The section control works as before, switching both channels between the various parts of the mixer. Since there are only 16 knobs per channel, an extra slot is necessary in the dynamics section to access all the processors.

Each Fader unit in a Nuage system can display two different channels in dual block mode. If there are three Fader units, a total of six channels can be edited in block mode. If the units are not linked, each unit can display different sections for the two channels.



**Figure 7.8** Channel Settings dual block mode with EQs

# Editing Plug-In Parameters

Plug-ins traditionally are edited onscreen with custom GUIs that allow the mouse to control each parameter visually. When working with the Nuage Fader unit, plug-ins are controlled with the multi-function knobs. The following step-by-step procedure takes you through the process of opening and editing a plug-in using only the Fader unit.

1. Switch to the Inserts section using the section control on the Fader unit.

2. Select slot one and pick a channel to insert a plug-in. Figure 7.9 shows several channels with the first insert slot selected.



**Figure 7.9**
Insert slot one selected

3. Press knob 1 on the channel you've chosen. This opens a list of plug-ins available on your system.

4. Turn knob 1 to scroll through the list of plug-ins shown in Figure 7.10. (Press knob 1 again to toggle any folders open or closed within the plug-in list.)

5. Scroll to the desired plug-in.

6. Press knob 1 again to select and insert that plug-in.8. The plug-in's GUI will open on the screen full size and the entire set of knobs will be assigned to each plug-in parameter, as shown in Figure 7.11.



**Figure 7.10**
Scrolling through the Plug-in list

**Figure 7.11**  The StereoDelay plug-in mapped to the knobs on the Fader unit

You can now use the knobs to control the parameters of the plug-in.

Rearranging the knob assignments is easy using the padlock icon buttons to unlock the knob assignments and freely choose others. Follow these steps to change the assignment of a knob from one parameter to another.

1.  Turn off the assignment lock by pressing the right button of the chosen knob.

2.  Using the mouse, move the cursor over the new parameter that you want to assign to that knob. Notice that as you roll over various parameters, their data appears in every unassigned knob's value display, as seen in Figure 7.12.

3.  Once the desired parameter is being shown in the knob's display, press the assignment lock button again to lock that parameter to the knob.

4.  Repeat for all desired knobs and parameters. If you leave the assignment lock turned off, that knob will become unassigned or blank.

**Figure 7.12** Freely assigning parameters to unlocked knobs

Now you have the plug-in parameters laid out on the knobs just the way you prefer, customized to your workflow. When you next load this plug-in, the knob layout is saved and will open up the same way.

---

### BRING THE KNOBS TO YOU

This method can be used to configure plug-in parameters that are closer to your central mix position, lessening the need to reach and lean to the side to get to a desired parameter. Non-essential parameters can be left unassigned to eliminate cluttering the display above the knobs. Esoteric parameters can still be adjusted by a mouse on the screen when necessary, helping keep the display efficiently uncluttered and clean.

---

# Flip Mode

**(tutorial video: "Flip Mode")**

At any point in time, you can flip the parameters controlled by the knobs down to the faders. This is called Flip Mode and allows you to use the faders instead of the knobs to adjust any parameter of the channel. This is very useful for writing automation that might otherwise be cumbersome using a knob.

For example, when automating aux sends, flipping them to the fader is much more convenient as the sends level is presented just like the channel level, as a fader. However, any parameter can be flipped to the fader. Automating surround panners can be more effective on several faders rather than using the touch screen graph or X-Y knobs.

The multi-function knobs are continuous controls while the faders are absolute, having a maximum and minimum position. This can be helpful when you need to execute jumps in parameters such as panning during a film mix. Faders make this type of automation move easier and more intuitive.

In order to flip parameters from the knobs to the faders, you must use the two flip buttons located on the left side of the Fader unit. You can flip one row of knobs to the faders by using the KNOB 1 or KNOB 2 button. Figure 7.13 shows the aux send levels from knob 1 flipped to the faders. Notice the KNOB 1 button is lit up indicating which knob has been flipped to the faders.
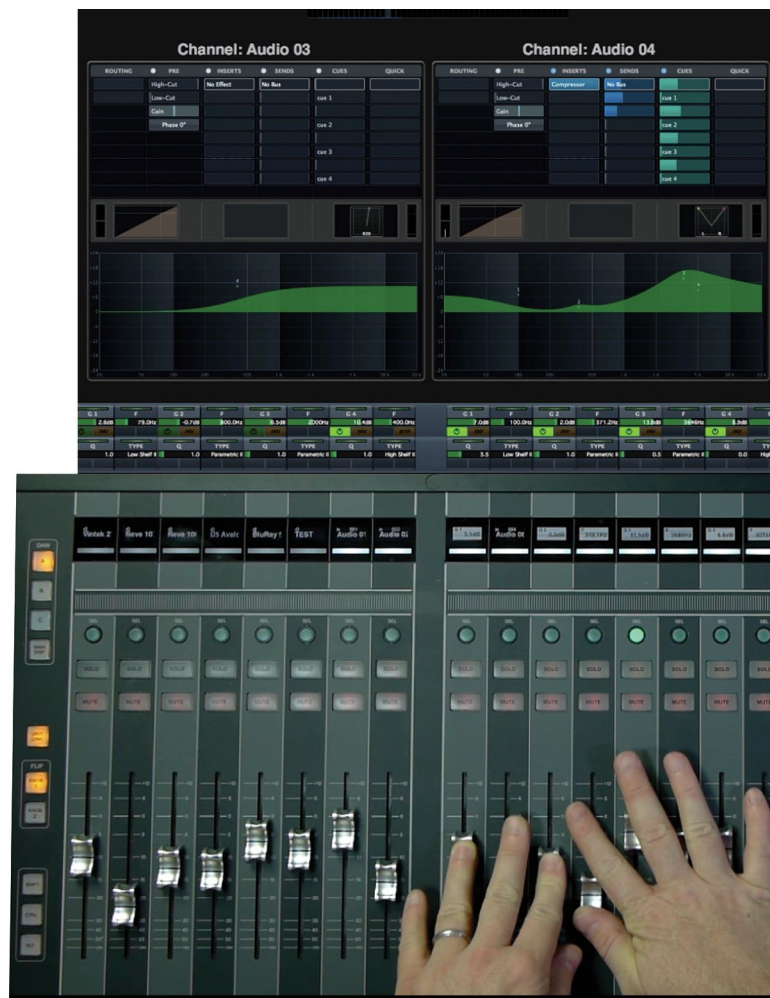


**Figure 7.13**
Knob 1 flipped to the faders

---

## FLIP MODE ANYTIME

The knobs may be flipped to the faders at any time regardless of what parameters are assigned to the knobs. If no parameter is assigned to a particular knob, when flipped, the corresponding fader will move to −∞ (-inf).

# Nuage Control Room

Both the Nuage Fader and Master units have dedicated Control Room features. The Fader unit controls are limited while the Master unit has a complete Control Room section with multiple touch screen pages.

Speaker selection, monitor source selection and volume adjustments are very likely the most used operations in any studio. With the talkback, cues, and studio calibration abilities, under-standing and being able to access all the Control Room functions is critical to creative and efficient recording, editing and mixing.

## Control Room Basics

**(tutorial video: "Master Control Room Basics")**

The basic Control Room features are the volume setting, speaker selection, and downmix presets. All of these reside in the Master unit's Control Room section, shown in Figure 7.14, along with the condensed controls found on the Fader unit.



**Figure 7.14**
Master and Fader Unit Control Room Sections

## Control Room Level

Probably the most used knob in the entire studio is the Control Room level, which determines how loud the speaker system is set. In most situations, this is adjusted quite often during sessions. Although in certain situations, the Control Room level should be set at a constant reference level, such as when film mixing in a calibrated dub stage.

On both the Master and Fader units, the Control Room level is adjusted by the black knob in each Control Room section. As you adjust this knob, a numeric readout on the Master unit details the current volume setting in decibels. The range is from –infinity to +12 dB.

| AVOID CONTROL ROOM OUTPUT CLIPPING |
|---|
| Since Control Room uses the DA converters directly connected to speaker systems, ensure that the output levels do not level exceed 0dBFS to avoid digital clipping and possible speaker damage. If you find that comfortable listening levels consistently are causing clipping of the Control Room output, the physical speaker system's level should be increased to provide more headroom. Metering of the Control Room output is available in Nuendo's Control Room Mixer and the touchscreen of the Nuage Master unit. |

### *Reference Level*

In calibrated mixing rooms such as film and television mixing stages, standards require setting the speaker system to a pre-defined absolute volume level. Standards set by broadcast stations, networks, and formats such as Dolby include calibration of the dB SPL levels in the mixing studio.

The Control Room has an adjustable reference level that can be defined in two ways: a preference setting or manually using the Master unit. Once you have determined what your reference level needs to be by following the specific calibration procedures, you can set the reference level in Nuendo's preferences, as seen in Figure 7.15. The reference level is defined as the dB gain of the Control Room Level.

When the Ref button is pressed on the Master unit, the Control Room level will be changed to -7.5 dB.

To manually set the reference level using the Master unit, adjust the volume setting to the desired value. While holding the Master unit's [Alt] key, press the Ref button. The new reference level is set.

**NUAGE**
Yamaha & Steinberg
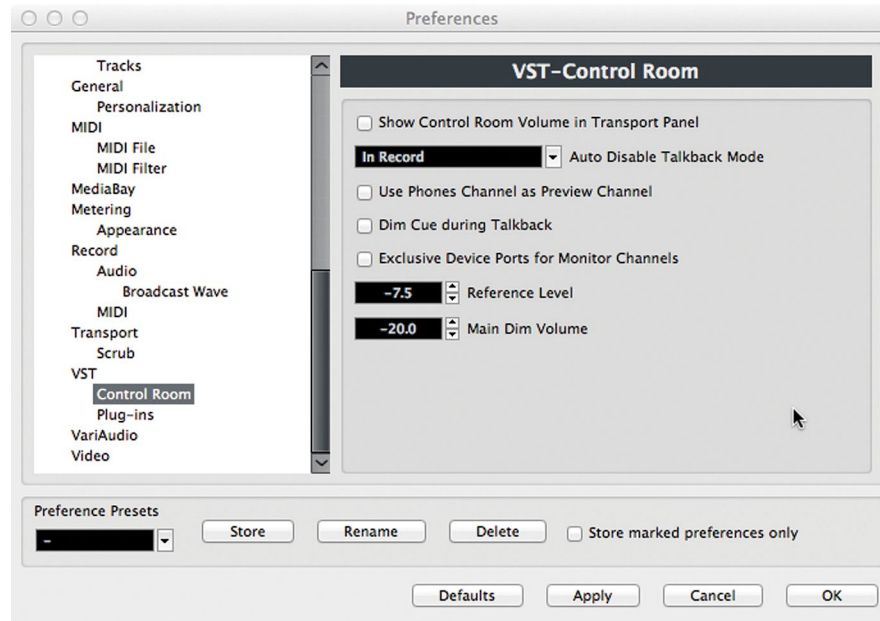
**Figure 7.15**
Control Room
preferences
with the
Reference level
set to -7.5 dB
and the Dim set
to -20 dB

## *Dim Setting*

It may be necessary to quickly turn down the level of the Control Room in order to hear another conversation in the studio without stopping playback or for any number of other reasons. The Dim button will reduce the Control Room level by a set number of decibels according to the preference setting, as seen in Figure 7.15. For example, if the Control Room level is currently set to -10 dB and the Dim button is pressed, the resulting level will be -30 dB, reflecting the sum of both settings.

## *Mute Button*

As the name implies, the Mute button will silence the Control Room output immediately.

# Monitor Select

In most professional studios there are several speaker systems that can be used for monitoring. The purpose of this is to hear the mix in different types of playback systems, whether multi-channel versus stereo or mono, or small, medium, and large speakers that mimic various consumer listening environments.

Control Room provides the ability to easily switch between four independent speaker systems that can vary from mono, stereo, 5.1, and on into multi-channel theatrical systems. On the Nuage Master unit, you can switch between them with the touch of a button, as shown in Figure 7.16.

**Figure 7.16**
The four
Monitor selec-
tors A, B, C, D

---

## DEFINITIONS: MONITOR

The word "monitor" can be used in several ways in audio parlance: as a verb when describing the act of listening ("We are monitoring the surround mix"); as a noun when describing speaker systems ("The large studio monitors are very heavy"); and even as an adjective when describing an audio signal ("Switch the monitor source to the DVD player"). In Nuendo's Control Room, a monitor is considered a speaker system. A monitor source is an audio signal that is available in Control Room. And the act of monitoring something is the combination of a signal source, speaker system, and level setting while listening.

---

To switch Monitors (speaker systems) simply press the desired button on the Master unit: A, B, C, or D. Channel routing, downmix and any calibration that has been assigned to each speaker system is automatically switched by Control Room.

### Downmix Setting

The downmix setting is located just to the left of the Monitor switches, as seen in Figure 7.16. Control Room can take multi-channel mixes (surround, stereo) and reduce the number of speaker channels used to play the source signals. This is helpful for two reasons: to preview how your mix will sound on various playback systems and to accommodate studio monitors that have fewer channels than the source signal (listening to a 5.1 mix on stereo speakers, for example).

There are four downmix presets per Monitor in Control Room. Depending on the widest signal (number of channels) in Control Room, these presets can be different. Typically they start with 5.1 surround and reduce to mono.

1.  5.1 Surround
2.  Stereo
3.  Mono
4.  - empty -

The fourth preset would be used if the widest signal was greater than 5.1, such as 7.1 or Atmos. If a Monitor has fewer channels than the source signal, a downmix preset must be used in order to hear the signal completely. This is handled by Nuendo automatically. However, you can further downmix the signals by choosing a narrower downmix preset.

The downmix preset that is chosen for a particular Monitor will be remembered the next time that Monitor is selected. This makes for fast and efficient speaker system selection with minimal fuss, keeping you in the creative mindset.

# Monitor Source Select

**(tutorial video: Master Monitor Sources)**

Nuendo's Control Room can have multiple signal sources available for monitoring. These can be a combination of mix sources from within the currently active project, external sources, and cue mixes. All of these sources can be selected on the Master unit in the Monitor Source section, shown in Figure 7.17.
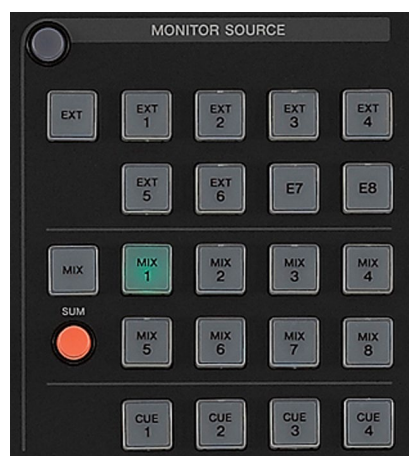


**Figure 7.17**
Monitor Source section

## Mixes

Mixes are signal sources from within the currently active project. They can come from VST Output buses, Group channels, or VST Input buses. These mixes change depending on the active project and its contents.

Additionally, mix sources can be combined together in Control Room using the Sum button, seen in Figure 7.17. When "Sum" is active, you may select more than one of the mixes to monitor together. This is most helpful in film mixing when you wish to combine various stem signals together, such as dialog and Foley, without hearing the remaining sound effect and music stems.

| SUM MODE ONLY FOR MIXES |
| --- |
| The sum mode is only for Mix sources, not external inputs or the cues. Each Control Room output can monitor either the Mixes, an external input, or one of the cues. |

## External Inputs

External inputs can be anything connected to the audio interface inputs, including iPods, DVD players, other computers, etc. External inputs can be any supported channel width and will be routed to Control Room Monitors automatically based on their configuration.

In order to hear an external input, you must press the EXT button to switch Control Room to external monitoring and then choose one of the eight possible external sources.

## Cues

Cues are the four Control Room outputs designed to provide monitoring for talent in the studio, usually on headphones. It is possible to monitor each Cue in the Main Control room channel by selecting it as a Monitor Source. This is handy for ensuring that the talent is receiving a proper mix for the task at hand.

# Phones Channel

The Phones Control Room output is designed to feed headphones used by the engineer in the studio as opposed to the cues for talent in the studio. The Phones channel can also be controlled by the Nuage Master unit. By pressing the Phones button in the Control Room section, the level and mute controls are switched over to the Phones channel. In the display above the level knob, a headphone icon appears, shown in Figure 7.18, indicating that you are operating the Phones channel.

**Figure 7.18**
Control Room
OLED display in
Phones mode



**Figure 7.19**
Cue send mute
buttons

The Monitor Sources also switch to the Phones channel. The Phones channel can monitor a source other than the main channel, such as mix, external, or cue.

## Cues

The four Cue sends have very simple mute controls on the Master unit as seen in Figure 7.19. This allows you to quickly turn off any Cue with a button push. Additional Cue controls are found on the touchscreen.

## Control Room Touchscreen Pages

Each part of the Control Room has a touchscreen page on the Master unit, providing hardware control over even more parameters. To access these pages, press the blue Display Access button for the Control Room. Pressing Display Access repeatedly will step you though each page.

### Main

The main control room page, shown in Figure 7.20, has duplicate controls for each hardware knob and button. The row of multi-function knobs beneath the touchscreen addresses these additional features, including click level and pan, Listen bus level, and Listen Dim settings.

**Figure 7.20** Control Room Main page

## Speaker Control

The Speaker Control page accesses Monitor selection, downmix presets, hardware bass management (available on Nuage IOs) and speaker channel soloing. By tapping on a channel button in the display (shown in Figure 7.21), that speaker will be soloed, which is very handy for resolving center channel issues, among other things.

## Inserts

Each Control Room channel may have multiple plug-in inserts. This touchscreen page accesses them all, including inputs such as the Talkback and External. In Figure 7.22, the tabs along the top of the screen access each channel's plug-ins. For both External Inputs and Monitors, you must use hardware control to switch between each one to see its available insert slots.

**NUAGE**
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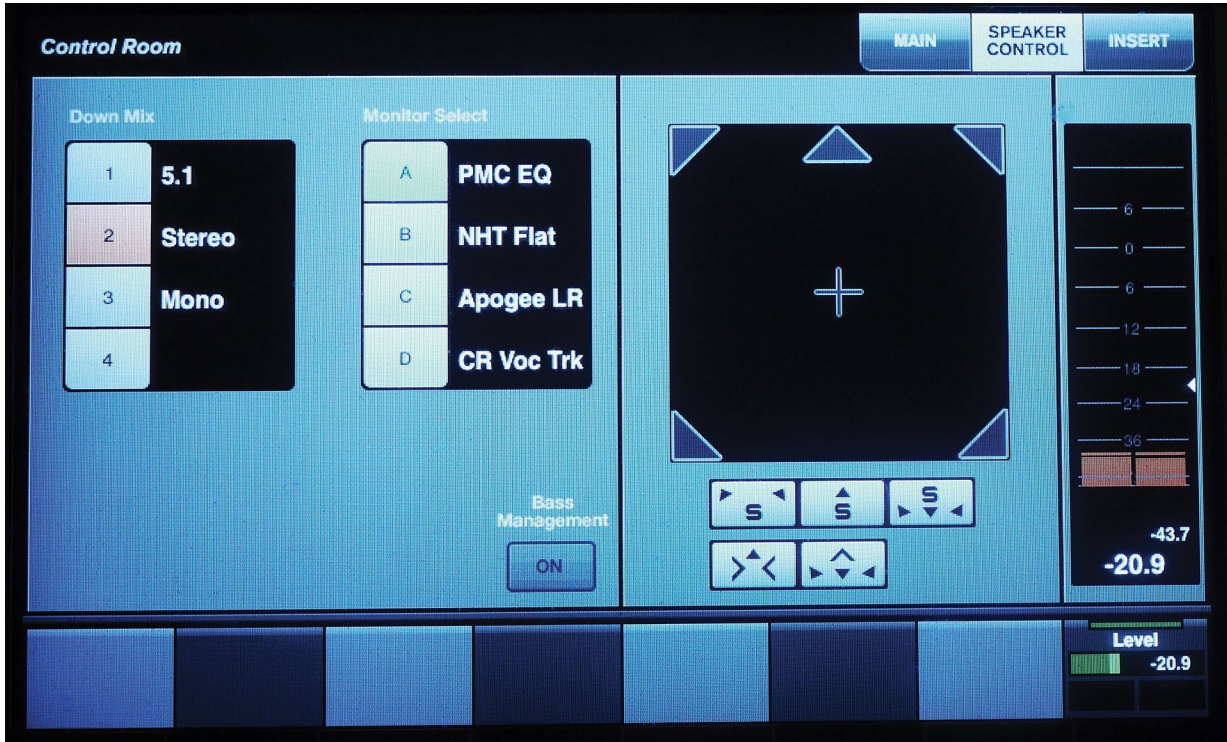
**Figure 7.21** Speaker Control page



**Figure 7.22** Control Room Inserts page
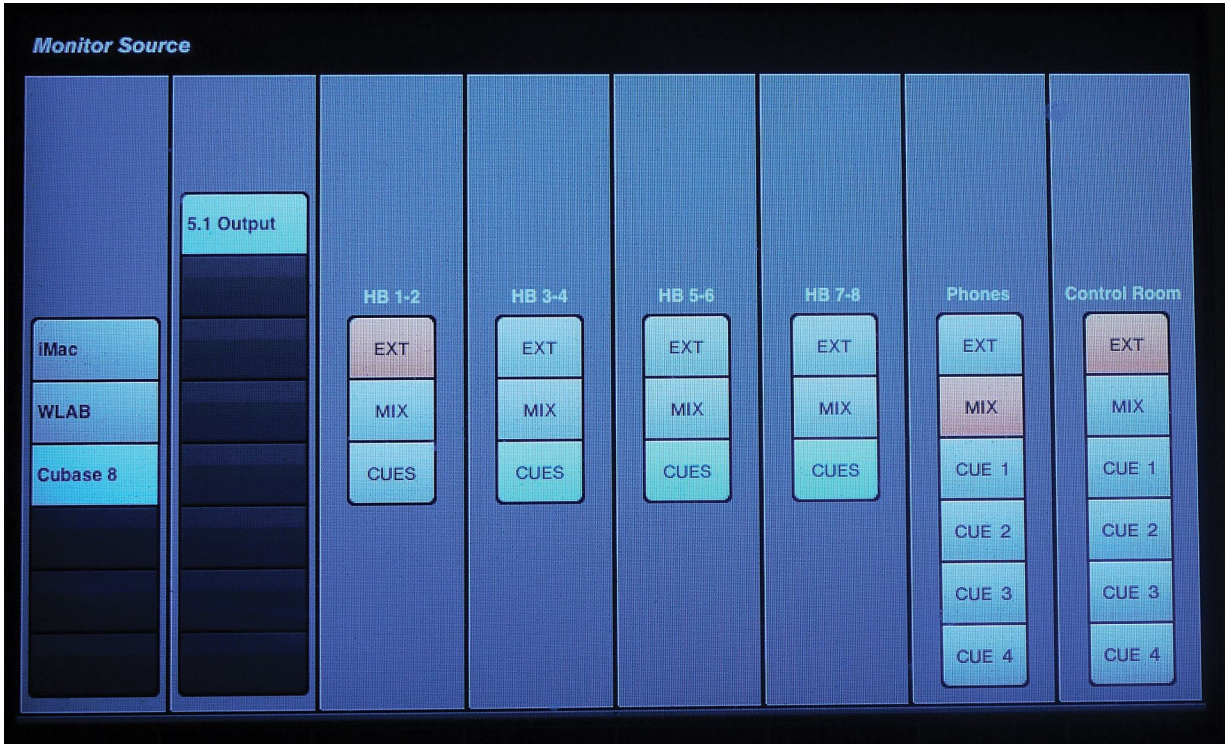
**Figure 7.23** Monitor Sources page



**Figure 7.24** Cues page

## Monitor Sources

The Monitor Sources page shows you all the Control Room outputs and their source selection, as seen in Figure 7.23. This gives a quick glance at what signals are being monitored for each output. You access this page by pressing the Display Access button for the Monitor Source.

## Cues

The Cues page is where you can enable the Talkback channel, adjust the click level and pan, and select the monitor source for each Cue independently. Figure 7.24 also shows the level metering for each Cue, which helps avoid any clipping of headphone signals.

| BRICKWALL LIMITER PROTECTS HEARING |
| --- |
| Using a brickwall limiter on the output of each Cue can help prevent hearing damage due to accidentally overdriven headphones. It can be very painful to receive an unintended burst of loud and distorted audio through headphones. Accidents do happen but a limiter can protect the talent's hearing just in case. |

# NUAGE

## COURSEWARE

PART I: SETTING UP

by Ashley Shepherd

# Chapter 8
# Extended Layout

NUENDO 7
Advanced Audio Post-Production System

YAMAHA

CUBASE PRO 8
Advanced Music Production System

# NUAGE

## Extended Layout

- ❖ Channel Settings
- ❖ The Pool
- ❖ The Sample Editor
- ❖ MediaBay
- ❖ Workspaces

In addition to the three basic windows described in the previous chapters—Project, Transport, and Mixer—there are several other windows that are central to the operation of Nuendo:

❖ **Channel Settings –** Consolidates all settings from the Inspector into one single window for a selected channel.

❖ **The Pool** – Organizes all audio and video media used in a project.

❖ **The Sample Editor** – Facilitates editing of audio clips, offline processing, and warping functions such as pitch correction and time stretching.

❖ **MediaBay** – Gives you access to all media files on your computer and connected network drives. Categorization of all your media allows for quick searching and auditioning of audio, video, and MIDI.

In this chapter, we will take a look at these windows and discuss their basic function and operation.

# Channel Settings

The Channel Settings window consolidates settings found in the Inspector section of the project window and from the mixer's expanded views into one place. Only the selected channel will have its settings displayed here.

As with so many windows in Nuendo, the Channel settings window is configurable. Various sections of the window may be turned on or off using the familiar setup window.

## TRACK TYPES WITHOUT CHANNEL SETTINGS

If you select a track type in the project window that has no equivalent channel in the mixer, the Channel Settings window will display the last channel selected (e.g., if you select a Folder track in the project window, the Channel Settings window will remain on the previously selected channel).

To access the Channel Settings window, click the "e" symbol found in several places in the GUI:

- ❖ Main Tab of the Inspector
- ❖ Track List in Project window
- ❖ Fader section of the Mixer

Once the Channel Settings window is open, it will display settings for whatever channel is currently selected. For multiple selected channels, it will display the last channel selected or clicked. Only one Channel Settings window can be open at a time.

# Audio Channel Settings

Audio Channel Settings will be similar among all channels types that have actual audio passing through them.

- ❖ Audio Channels
- ❖ Group Channels
- ❖ FX Channels
- ❖ Input Channels
- ❖ Output Channels
- ❖ VST Instrument Channels

Looking at Figure 8.1, there is a toolbar at the top of the window and various sections and panes below. By default, four sections are displayed for an audio track:

1. Inserts/Strip
2. Channel Strip/Equalizer
3. Sends/Cue Sends
4. Channel Faders

The only optional section available is Direct Routing, shown in Figure 8.2. To display Direct Routing, click on the Setup Window layout button in the upper right and check the box for Direct Routing.

1. Inserts - Strip    2. Channel Strip - Equalizer    3. Sends - Cue Sends    4. Channel Fader - Pan
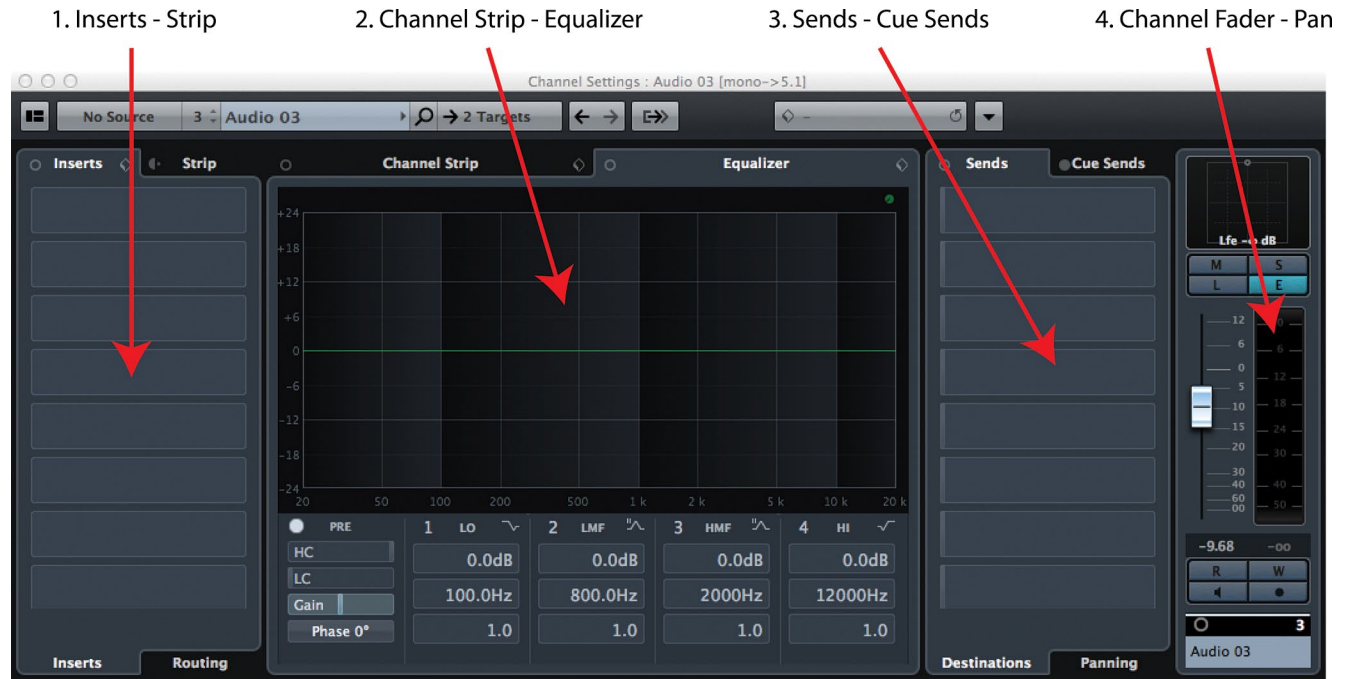


**Figure 8.1**  Channel Settings for an Audio track



**Figure 8.2**  Channel Settings with Direct Routing

## Inserts/Strip

The first section can display either the eight Inserts or the dynamics Strip. On the left side of the Strip tab, there is an icon to represent pre or post Inserts. Clicking on this icon will rearrange the signal flow order of the Inserts and the Strip. If the Strip is moved to pre-inserts, then the tabs will switch positions to indicate this new signal flow, as seen in Figure 8.3.

Clicking on the Strip tab will switch the section to the Strip where you can change the position of the EQ within the Strip signal flow just like the MixConsole.
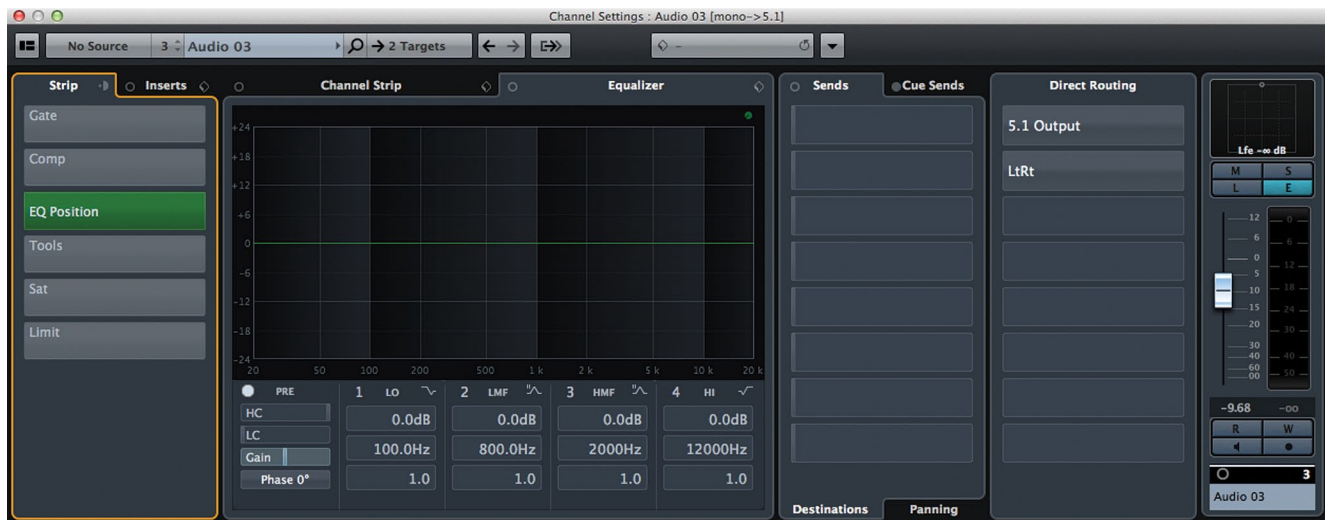


**Figure 8.3** Strip in pre-inserts position

## Channel Strip/Equalizer

The next section displays the equalizer controls by default. Clicking the Channel Strip tab will open the controls for the dynamics processors, as seen in Figure 8.4. Also, note that the equalizer curve is now displayed below in the Inserts/Strip section and can be modified graphically. The EQ, input gain, phase, and filter parameters also move to the lower section in the Channel Strip display, giving you control over most of the channel parameters in one view, hence the Channel Strip name.

## Sends/Cue Sends

As the name implies, the next section can display either the eight Sends or the four Cue Sends. In the Sends view, there are two tabs at the bottom, one for the routing destination and level of the send and the other for the panning of the send.

Here's where multi-channel routing can be addressed with Sends. Either a surround panner or MixConvert plug-in will be visible here if multi-channel audio being used. Figure 8.5 shows a surround panner for the first aux send.



**Fig 8.4** Channel Strip view



**Fig 8.5** Sends Panning view with a surround panner

## Direct Routing

In the Direct Routing section, you can create eight different routing destinations and switch between them by clicking each routing. If you right-click at the bottom of this section, you access the Summing Mode option to enable more than one routing at a time, as shown in Figure 8.6.
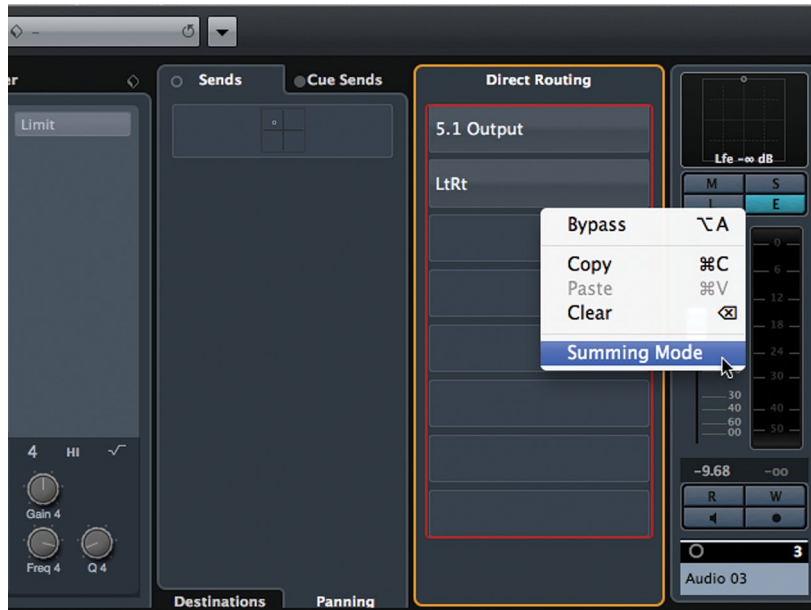


**Fig 8.6**
Summing Mode Option menu

## Channel Faders

The Channel Faders section shows the channel fader by default. However, if you enable the Show Output Chain option from the Toolbar, the channel fader for the routing destination will also be displayed, as seen in Figure 8.7.

## Toolbar

The Channel Settings Toolbar has several buttons and a functions menu. The buttons do the following:

❖ Select the input routing

❖ Switch to the Input Channel's settings

❖ Select tracks by number

❖ Select tracks by name

❖ Search tracks by name

❖ Switch the Channel Settings to one of multiple targets
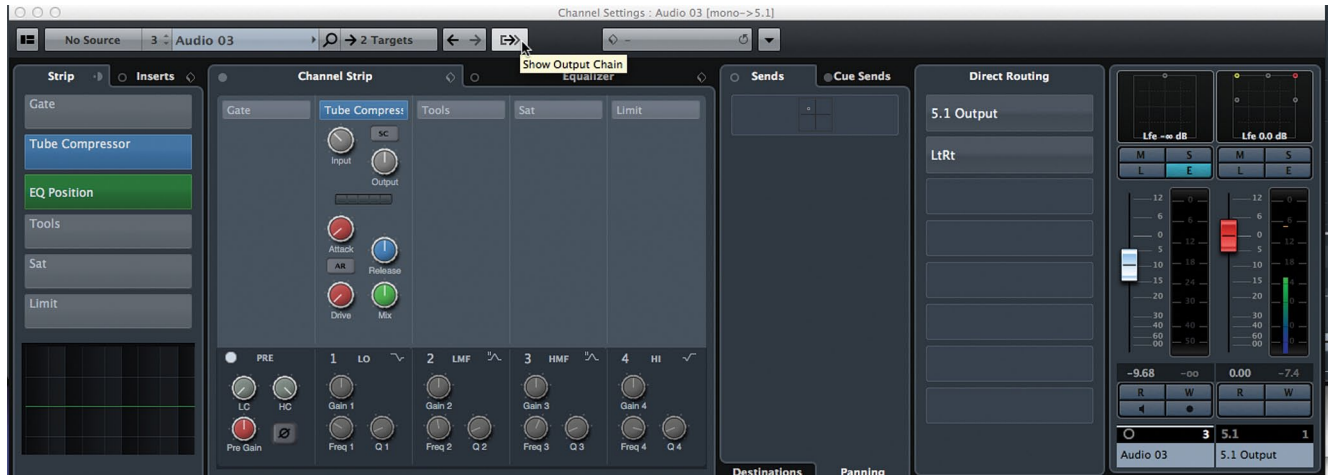
**Fig 8.7**  Channel Fader with Output Fader

> ❖ Select the primary Output destination
>
> ❖ Go to previous channel
>
> ❖ Go to next channel
>
> ❖ Show Output Chain

## MIDI Channel Settings

The MIDI Channel Settings window is fairly simple. The Toolbar remains the same. There are two sections; MIDI Inserts and MIDI Sends.



**Fig 8.8**
MIDI Channel
Settings

# Nuage Channel Settings Mode

**(tutorial video: "Channel Settings Block Mode")**

On the Nuage Fader Unit, there is a mode whereby all the settings for one channel occupy the entire screen and all 32 encoders. This makes it very easy to address many parameters of a channel at once with the control surface.

Press any channel's "e" button on the fader unit and the display will switch to Channel Settings mode, showing the entire channel on one screen. The knobset will now control settings for just one channel. This is block mode. For more details, please refer to Chapter 7.

Most hardware control surfaces offer access to only one channel at a time. With the Nuage Fader, each unit can access two channels at once while the Master unit can address yet another.

The ability to view several channels at once gives you added creative control by letting you manage the relationship between two different channels at the same time. And mixing is all about relationships between things in the mix.

# The Pool

The Pool is the place where you can manage all the audio and video files that are part of a project file. It is here that you can see every audio file that has been recorded or directly imported into the project. Even audio files that have been deleted or "undone" after recording will still remain in the trash folder of the pool. Nuendo makes it difficult to truly erase an audio file by accident. Several steps must be taken to erase a file from disk. I appreciate this as a fail-safe way to handle recorded audio files.

Audio and video files that are in the pool might not actually be used in the project window but remain a part of the project file. For example, you could import 24 audio files into the pool at one time. They do not immediately have to be placed on audio tracks in the project window. They can remain happily in the pool until they are needed.

**NUAGE**
Yamaha & Steinberg
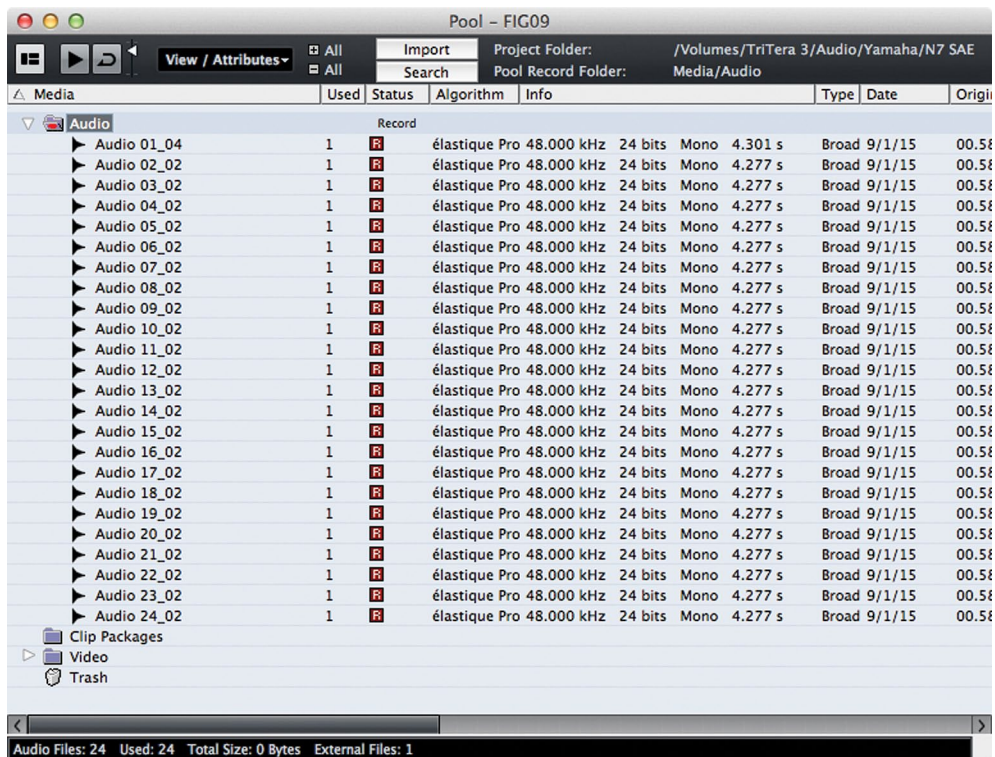
**Figure 8.9**
The Pool with 24 imported audio files

---

## PRO TOOLS TIP

For Pro Tools users, the pool is the equivalent of the region list, just in a separate window and with a great deal more options and organizing ability.

---

## Audio File Location

Files in the pool do not have to be located in the active project folder! This is very important. Files located anywhere on your system, from local hard drives to networked storage, can be added to the pool. Very often, video files reside on another physical hard drive due to the size and bandwidth needs of HD video.

This complicates things when it comes to backup, archiving, and transfer of projects from one system to another. Fortunately, the pool lists the directories of every file in its display and offers the option to copy those files into the current project folder if needed.

### CAREFUL FILE MANAGEMENT

Since audio files from outside the project folder can be used in the pool and in the project in general, care must be taken not to muddle the file structure. This occurs when saving copies of just the project file and not all the media files to another directory, assuming that all the media will follow to the new location. I have had many clients with issues concerning missing files as a result of this type of misunderstanding, not just with Nuendo but with Cubase, Pro Tools, Digital Performer, you name it. Keeping all the audio files for a particular project in the project folder itself is the best way to avoid problems later when transferring or backing up projects.

For this same reason, be cautious when erasing audio files. If you are simply removing files from the pool that are unique to the project, that is one thing. However, if you are using audio files from a sample library or a series of loops, the audio file might exist in another location and could be used in another project. If you choose to erase this file permanently, it will be removed from that location, perhaps destroying parts of your sound FX library or loop collection.

The pool offers ways of sorting and organizing audio files using attributes such as name, size, creation date, format, etc. You can even create custom attributes to fit your particular needs. Additional folders can be created within the main Audio folder to group related audio files. In film work, the sheer number of files generated requires some amount of compartmentalizing just to make sense of it all: dialog, Foley, ambience, etc.

Many functions of the Pool are accessed from the contextual menu. Right-click (Win) or control-click (Mac) to view these options, as shown in Figure 8.10.

## The Pool During Recording

Since recording is the first activity discussed in this book, let's look at how the pool can be used during recording. When you first create a new project, the pool will be completely empty. Once you have recorded on one or more audio tracks, the pool will list the files that were created as a result. As an example, let's set Nuendo to record on 14 audio tracks, 12 of which are mono and two that are stereo. These are the basic tracks for a 5 piece rock band.

**NUAGE**
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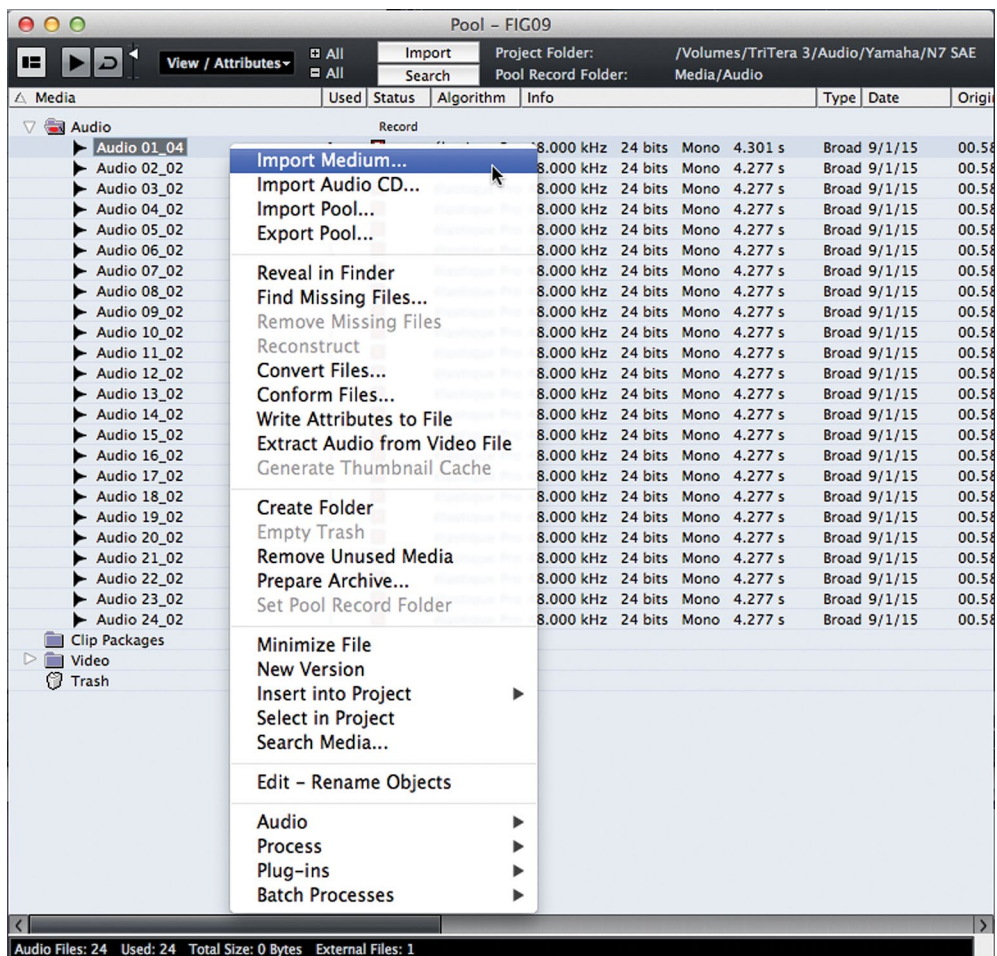
**Figure 8.10**
The Pool's con-
textual menu

The tracks break down like this:

| | | | |
|---|---|---|---|
| 1. | Kick drum | 8. | Bass DI |
| 2. | Snare drum | 9. | Bass Amp |
| 3. | Hi-hat | 10. | Guitar Amp |
| 4. | Rack Tom | 11. | Keyboard DI |
| 5. | Floor tom | 12. | Acoustic guitar |
| 6. | Overheads (stereo) | 13. | Harmony vocal |
| 7. | Room mics (stereo) | 14. | Lead vocal |

Let's say we record the first take but it's a false start, only about 20 seconds into the tune. Figure 8.11 shows what the Pool would look like after the first take.

**Figure 8.11**
The Pool after the first take

We have 14 files inside the Audio Files folder. Audio files are named according to the name of the track in Nuendo followed by a number indicating the order in which it was recorded (_01, _02 etc.). They are arranged in alphabetical order by default but can be reordered using any of the attributes shown in the pool. The info column lists all the files as being of the same format except for the two stereo tracks having two channels instead of one.

## PRO TOOLS TIP

Nuendo records interleaved files for multi-channel audio tracks, unlike Pro Tools, which records multiple mono files, one for each channel of a multi-channel track. If you are sharing files with Pro Tools systems, interleaved files will have to be converted to multiple mono files in order to be directly transferred to Pro Tools systems. Nuendo provides a special function that can convert multi-channel tracks directly into multiple mono tracks or vice versa. This is covered in Part III: Editing and Part V: Tools and Accessories.

Since this was a false start and no one is interested in keeping the take, we can simply use the undo function ([Cntrl]/[Cmd]+Z) and the files will be removed from the project window, gone. But not so fast... In the pool, these files have simply been moved to the trash folder, as seen in Figure 8.12. They have not yet been erased from the hard disk. If, all of a sudden, the bass player thinks there was something interesting about that take, the files are retrievable. You can simply use the redo function from the edit menu ([Cntrl]/[Cmd]+[Shift]+Y) to restore the files back into the project window and into the audio files folder of the pool. It is also possible to drag the files from the trash folder and into the audio files folder by hand and then place them into the project window.

**Figure 8.12**
The Pool after undoing the first take

## BACK INTO THE POOL

Audio files in the pool's trash folder cannot be directly placed into the project window. They must first be placed into the audio files folder within the Pool.

If everyone is sure that the first take was junk and should be thrown away forever, you can choose to empty the trash from the contextual menu. Up pops the empty trash dialog giving you an important choice: erase the actual audio files from the disk or remove the "clips" from the pool, as shown in Figure 8.13. Clips are Nuendo's references to actual audio files and will be discussed in the next section, the Sample Editor window.

❖ **Remove from Pool.** The audio files will no longer be a part of the project but they will still exist in the Audio folder inside the project folder. You can still re-import them back into the project. They are not gone for good.

❖ **Erase.** The actual audio files will be permanently erased off the hard disk. There is NO UNDO for this action!



**Figure 8.13**
The Empty Trash dialog

Now, let's continue and record takes two, three, and four. Take two was just as bad as one and was erased. Take three was pretty good until the second chorus. Take four was a punch-in for the second chorus. Now we have two takes that we are keeping. The pool now has audio files _03 and _04 listed, as shown in Figure 8.14.

Even though takes one and two were erased from the hard disk, Nuendo will increment the audio file numbering regardless of which files have been removed or erased. This way, you always can tell the distinct order in which audio files have been recorded.

## CAUTION

Be aware that if you decide to change the name of a track at any point, Nuendo will start naming the audio files recorded onto that track using the new name and a reset count of "_01." It is always best practice to name your audio tracks appropriately before you start recording.
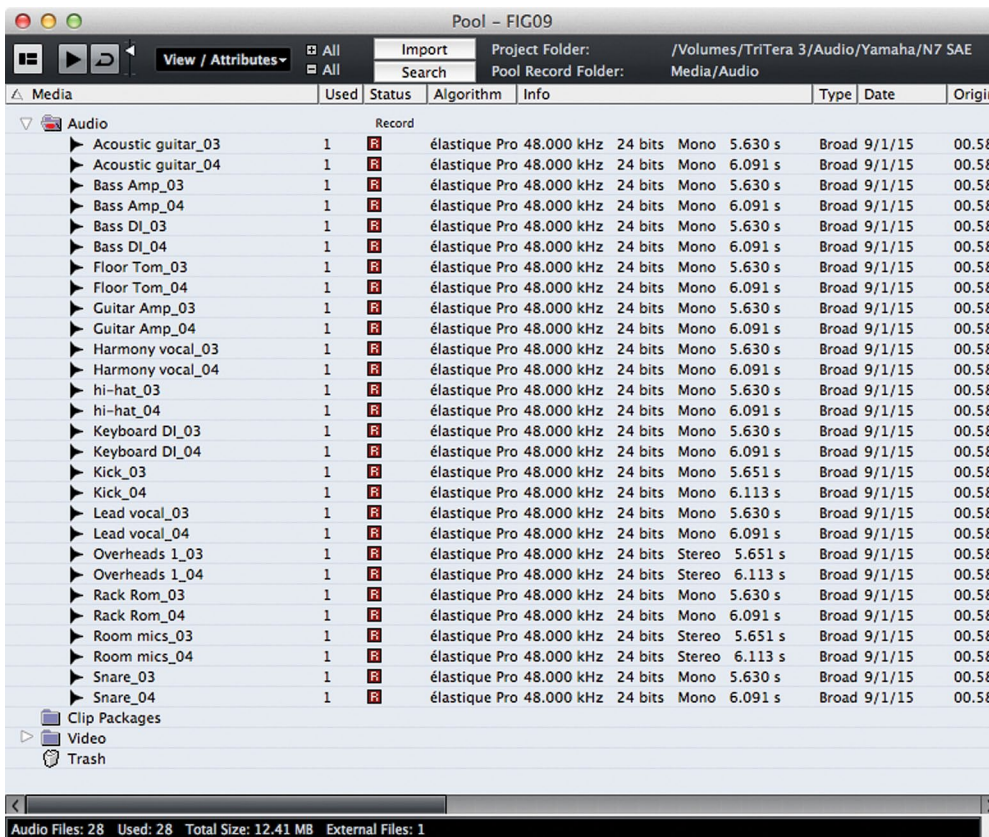


**Figure 8.14**
Takes 3 and 4

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# File Naming in the Pool

You may rename files within the pool. Renaming files here will change the actual name of the file on the hard disk. To rename a file in the pool, first select one file by clicking on it. Then click a second time but hold it for a second. When you let go, the name will be highlighted and you can enter new text. Once you press enter or return, the changes are made to the file on disk and in the pool. This will update the modified date of the disk file. So beware that sorting by modified date will be different when altering the name in the pool.

# Pool Status Column

The status column in the pool provides instant feedback on which files have been recorded in this version of the project or if they are located in the project folder, missing from the pool, or have had processing applied to them. The status of each audio file is represented by an icon in the status column, as shown in Figure 8.15. Understanding the condition and location of audio files is made easy using this visual representation of status.

 Not located in Audio folder

**Figure 8.15**
Status Icons

 Missing from Pool

 Recorded in current version of project

 Processing applied

## The Pool Record Folder

As discussed earlier, it is possible to create multiple folders within the audio files folder of the pool. Each of these subfolders can be used as the pool's record folder. That is, all newly recorded audio files will be placed within the selected folder. By default, the main Audio Files folder is the pool record folder.

In order to change the pool's record folder, simply click in the status column of the folder you choose and the "Record" status indicator will move to that line. Also, a red dot will appear inside the folder icon, indicating that is where any newly recorded audio files will be placed.

**Figure 8.16**
Setting the pool record folder

## THE POOL'S VIRTUAL FOLDER STRUCTURE

Note that these folders only exist in Nuendo's Pool. They are not created on the hard disk. All audio files on disk are contained within the Audio folder inside the project folder. The folder designations are for organizational purposes inside the pool only.

It is possible to have each track record audio files to unique folders in your computer system, even on separate drives, as this may be required for high sample rate sessions with many tracks. Setting the record folder for individual audio tracks will be covered in Part II: Recording.

By creating multiple folders, you can be organizing your project as you record and import files. For example, a feature film has at least five basic types of sounds:

 ❖ Dialog

 ❖ Foley

 ❖ Ambience

 ❖ Sound Effects

 ❖ Music

We could begin by creating five folders to hold these sound categories. During recording, we can set the pool's record folder to the category of sounds we are working with so that all audio files of that type are placed within the proper folder.

It is also possible to create nested folders to further categorize audio files. Figure 8.17 is an example of a feature film audio file organization scheme. With thousands upon thousands of audio files possible, having a deep organization system will improve workflow and help you to focus on the more creative aspects of the project.
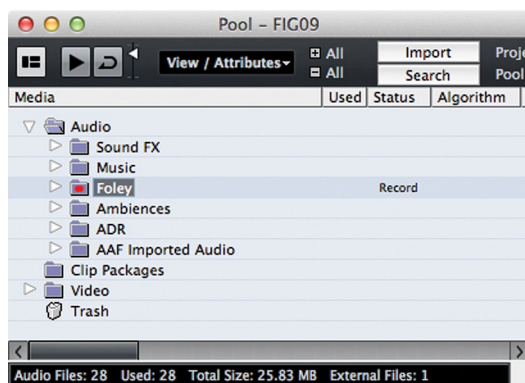


**Figure 8.17**
Feature film example pool structure

## MOVING FILES BETWEEN FOLDERS

Note that audio files may be freely moved between folders at any time. Even if an audio file was recorded in the "dialog" folder, you may drag it into the "sound effects" folder later.

# The Sample Editor

The sample editor is used to isolate single audio files for editing and processing. Think of it as a mini project window for one audio file only. But before we can discuss the sample editor, we must explore how Nuendo refers to audio files and processed audio files.

## The Audio File, Clip, and Event Relationship

Nuendo uses a special method of addressing audio files on the disk that allows you to endlessly process, edit, and manipulate them without altering the original audio file at all through the use of audio "clips." The relationship between the audio files and audio clips can be confusing, since they are usually identical and only changes once we begin to process the audio files. Processed audio is saved in separate audio files on disk, preserving the original recording. These processed files are then assimilated into the clip and heard as a part of the original audio. This structure is hidden from the user and is meant to maintain the processing history of each audio recording so that changes can be made seamlessly without altering the original audio file.

### Audio Clips

An audio clip is a container for one or more audio files that are related to each other in that they are all derived from the same original audio file. Everything in a clip is derived from one single audio file on disk. Portions of that file may have been processed in one way or another and those processed portions will be contained in the clip. This appears seamless to the user, as if there is only one audio file in the Sample editor.

For example, let's say you record a vocal and, during the take, the singer pops the mic on the word "please," creating unwanted low-frequency noise ('plosives are caused by air bursts hitting the microphone diaphragm). In order to correct this you want to process just that syllable using a high-pass filter to remove the "pop" from the recording.

To begin with, the original audio file is contained in a clip. When you process just that one syllable, the new processed audio is written to disk in another audio file. Inside the clip, this new audio file is placed at the same location as the original pop sound. The clip plays the original audio file until it reaches the point where the processing starts, switches to the newly processed audio file and then returns to the original after that section.

To you, this is invisible. You do not see any indication that this has occurred. It still appears as if you have destructively altered the original audio file by processing that one section. However this is not the case. The clip container keeps track of any and all the various changes you make to an audio file so that at any point in time you can revert all the way back to the original unprocessed file as it has remained on the disk, untouched.

### NOTHING IS LOST

Even when the entire audio file is subjected to processing, the clip keeps references to both the original and newly processed files. The clip may only play the fully processed version, but if you should decide to revert back to the original, you can easily do so, as the original file is untouched. This is what is meant by non-destructive processing. In many other DAWs, such as Pro Tools, file processing (Pro Tools Audiosuite) actually replaces the audio file on disk, thus destroying the original recording.
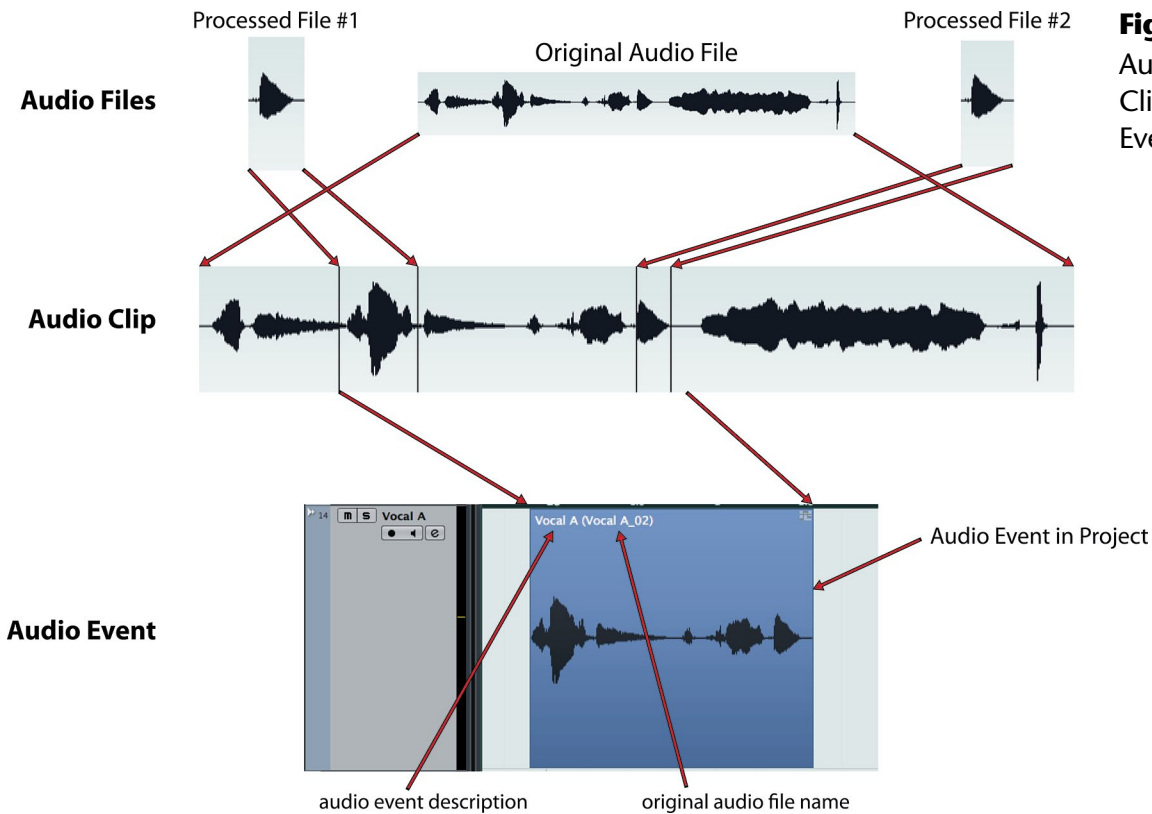
Think about this for a second. You could process a file in various ways, perhaps 50 or 60 different times, and still be able to return to the untouched original at any time. It is even possible to remove intermediate processing from the clip while retaining all other processes (with certain limitations, including time-stretching and non-linear processes). This is unprecedented flexibility, allowing you to try out any editing or processing steps without fear of altering the original sound file. Nuendo keeps track of all of this in the offline process history discussed in detail in Part III: Editing.

## Audio Events

An audio event is some portion or all of an audio clip that is played back as part of the project. The chunks of audio you see in the project window are all "events." The audio file on disk is part of an audio clip, which is then used to create an audio event in the project window. Figure 8.18 illustrates this by showing how three audio files are used to make one audio clip, which then can be used to create an audio event in the project.

### PRO TOOLS TIP

In Pro Tools, this kind of processing (offline) is known as Audiosuite processing. The difference between the two is mainly in how files are handled. In Pro Tools, each processing step creates a new audio file that is used directly in the session as a region. In Nuendo, processed audio files are merely referenced by the clip, which is then used in the project as an event. This difference allows for Nuendo to have the offline process history with complete historical undo functionality for each processing step applied to the audio file.

**Figure 8.18**
Audio Files,
Clips and
Events

Processed File #1  Processed File #2
Original Audio File

Audio Files

Audio Clip

Audio Event

Audio Event in Project

audio event description    original audio file name

## Sample Editor Layout

The sample editor, shown in Figure 8.19, could be called the "Clip Editor" for all intents and purposes. It is the tool that is used to edit the audio clip, process various parts of the audio file, and even define boundaries of the audio event.



**Figure 8.19** The Sample Editor

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The layout of the sample editor is similar to the project window with several tabs on the left side, overview, info, and tools on top and the waveform display in the middle. A single Sample Editor can display only one audio clip at a time. However, you can have multiple sample editors open at the same time, allowing you to edit more than one clip at a time.

### VARIAUDIO AND MULTIPLE CLIPS

One exception is that multiple clips can be edited together when using VariAudio to tune vocals for example. You will be able to see the pitches for multiple clips together in one Sample Editor for easier editing.

## Regions

Audio clips may also contain regions, which are basically defined portions of the clip. These regions are defined and then contained within the sample editor and can be used to create events, mark certain areas for processing, or simply to note things within a clip.

For example, loop CDs (audio) often contain a complete drum loop and then component parts such as kick, snare, hats, and crashes all within one ID marker on the CD. After importing tracks from such a CD, you can use the sample editor to define the drum loop and individual sounds as regions within the clip. These regions can then be dragged into the project window to create events that are prepared and ready to use.

In order to access regions, you must set the sample editor layout to display the region list. Once open, the region tools are available at the top of the list. Click the add region button (+) to create a region from the selection made in the sample editor. Figure 8.20 shows the
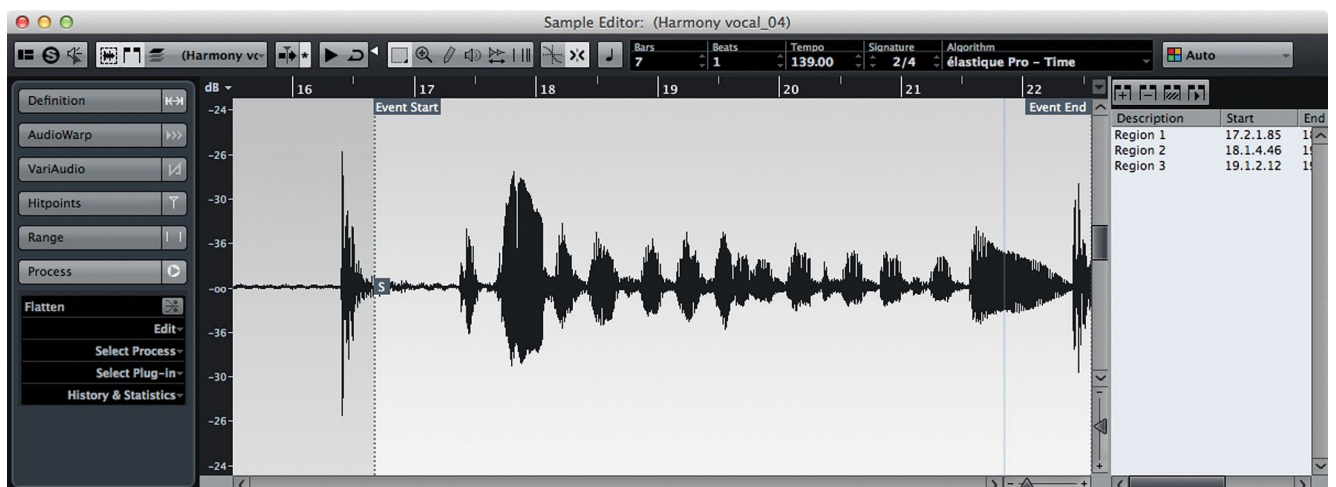


**Figure 8.20** Region list and tools

sample editor with three "loop" regions defined for this clip. These regions can be used to create events in the project window later.

The second method of creating regions involves the cycle record mode. Using this mode described in Part II: Recording, each recorded pass during a cycle record will automatically create a region in the resulting clip. This facilitates easier editing of takes afterwards.

## Sample Editor Inspector Tabs

Down the left side of the sample editor are the tabs that give you access to many of the processing possibilities. I will go through a brief description of each tab as an overview in this section. The specific uses and details will be covered in Part III – Editing.

### Definition

The definition tab, shown in Figure 8.21, provides tools to edit the musical time aspects of an audio file. For example, drum loops can have relevant musical time intervals defined so they may be matched to the tempo of the project.
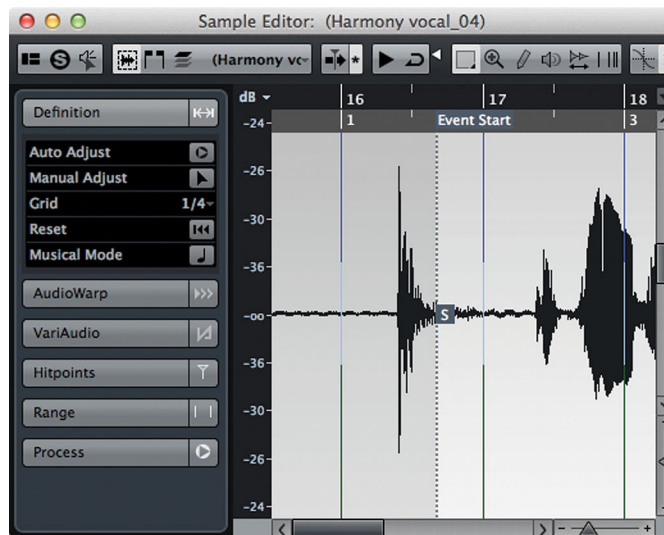


**Figure 8.21**
Definition Tab

### AudioWarp

Audio warping is time stretching that is used to actually do the tempo matching of an audio clip. The tools in this tab shown in Figure 8.22, determine how time stretching is applied to the clip. Audio Warp and the Definition tabs work together.

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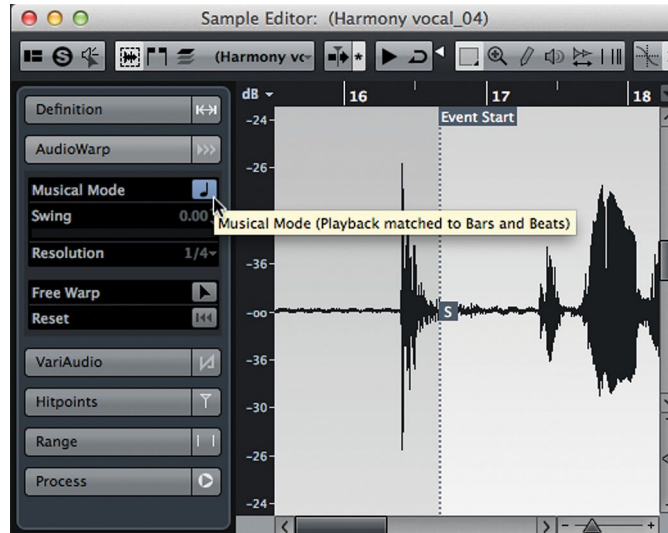
**Figure 8.22**
AudioWarp Tab

## VariAudio

The powerful set of tools shown in Figure 8.23, gives you pitch and envelope control over audio clips. VariAudio functions similar to Celemony's Melodyne $^{TM}$ software. The pitch of each note can be modified in order to "tune" vocals, for example. You may also change the length of individual notes and control the transition from one note to the next.
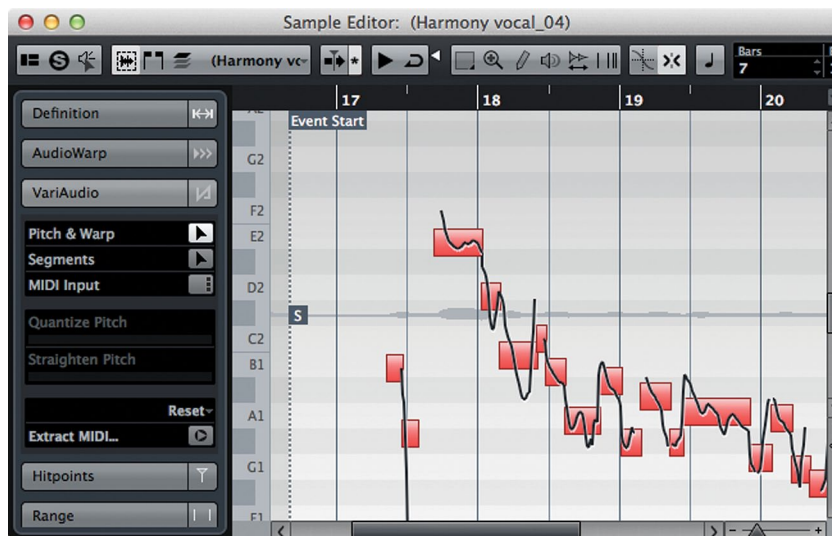


**Figure 8.23**
VariAudio Tab

## Hitpoints

The Hitpoints tab, shown in Figure 8.24, is related to audio warping in that it allows you to detect and edit percussive and transient sections in an audio clip. Once these sect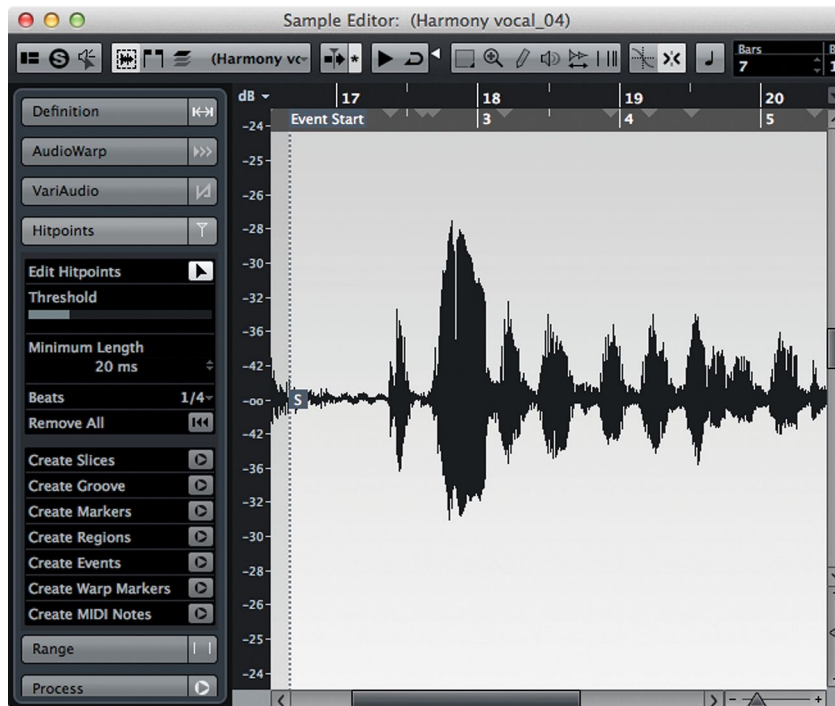ions have been determined, you can do such things as reorder the sections, process individual sections and apply time stretching in order to match tempos similar to the Audio Warp features.



**Figure 8.24**

Hitpoints Tab

## Range

The range tab shown in Figure 8.25, provides a display for the currently selected range in the Sample editor. There are also two menus for zooming and selecting. You can also manually enter values for start, end, and length to create a selection.

## Process

The Process tab, shown in Figure 8.26, gives you access to the processing history of a clip, plus functions such as "flattening" of any realtime processes (time-stretching, pitch shifting/tuning) into a new audio file in order to conserve CPU resources. The process history allows you to alter or remove any processing that has been applied to the clip, returning to the original recorded audio file.
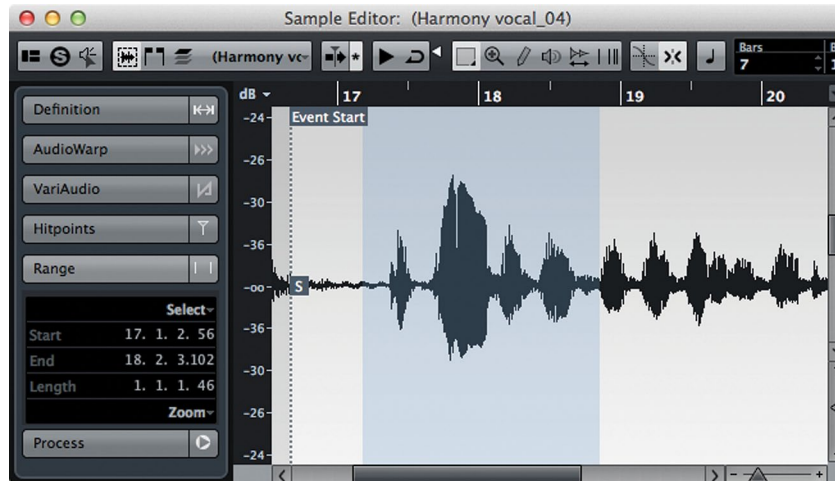
**Figure 8.25**
Range Tab
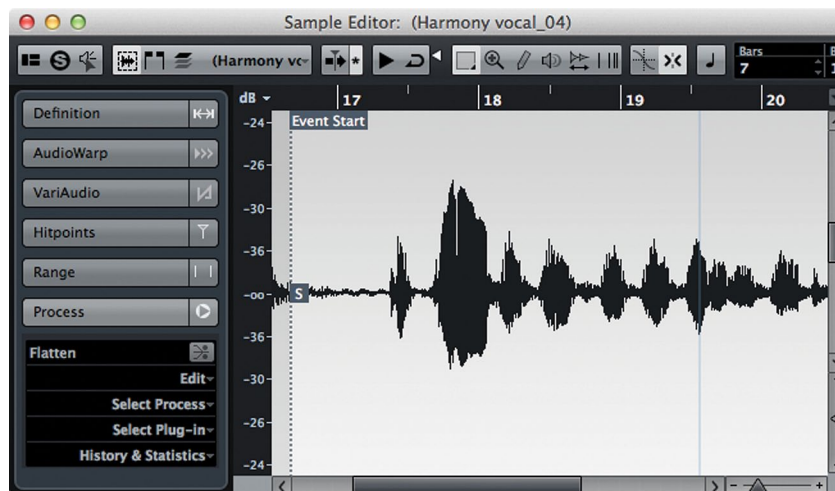


**Figure 8.26**
The Process Tab

# MediaBay

The MediaBay is similar to the Pool in that it gives you access to various media files you can use in Nuendo. However, the MediaBay scans all of your hard disks for any type of media file, keeping track of their location and allowing you to search this database for just the file you need. Queries can be made for name, file type, meta-data, length, format—you name it, and you can search for it in the MediaBay. These files include preset files for anything in Nuendo: channels, VSTi's, plug-ins, groups of audio files, sound FX libraries, MIDI files, the list goes on.

Basically, the MediaBay provides one-stop shopping for all the files on your system. Once you find a potential file, the tools are there for you to audition that file before bringing it in to your project. With extensive Boolean and attribute search tools, even gargantuan libraries can be managed and utilized quickly with the MediaBay, shown in Figure 8.27.
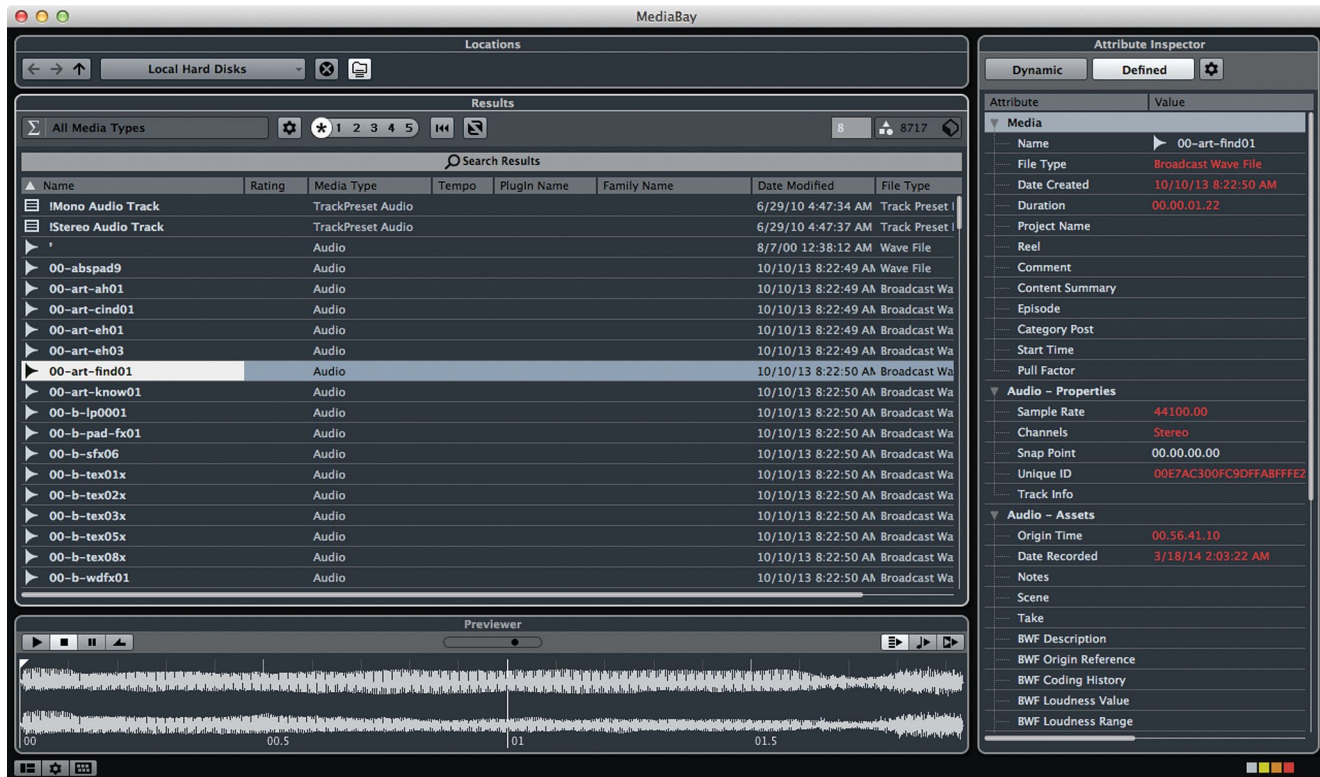
**Figure 8.27** The MediaBay

As the specific documentation for the MediaBay is quite good in Nuendo's Operation Manual, this book will concentrate on actually using the MediaBay in various situations. Specifics related to those items will be discussed as they come up in each chapter.

# Workspaces

Nuendo has a lot of windows. Many appreciate this wonderful flexibility, but for others it can be a burden. For everyone, there are Workspaces. A Workspace is a set of windows in Nuendo including their position, size, and configuration. Defining several workspaces, you can quickly switch between different workflow setups.

For example, you could create a specific workspace for ADR recording, with the timecode, project, video, and mixer windows all placed and configured as you would need them. Then you could switch to another workspace setup for SFX creation using the MediaBay, project, video, and pool windows all placed as you prefer. These switches can be performed with key commands or Nuage User Defined Keys, making the changes instantaneous. No more

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mousing around to move your windows, trying to get them set up *just right*. Simply hit a key command and one step sets everything in position.

Workspaces are stored by using the Workspaces menu shown in Figure 8.28. Here you can add new workspaces or recall stored ones. Each workspace can have its own key command for easy recall. Set up your favorite window layout and save it.
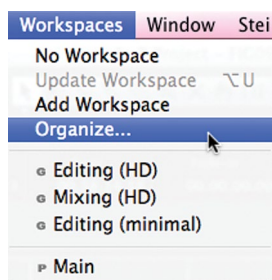


**Figure 8.28**
The Workspaces menu

You can manage all the workspaces you create in the Organize Workspaces dialog shown in Figure 8.29. Since workspaces can be global or specific to the project, this dialog helps you work with the various ones, deciding which are global and which are local to the project.
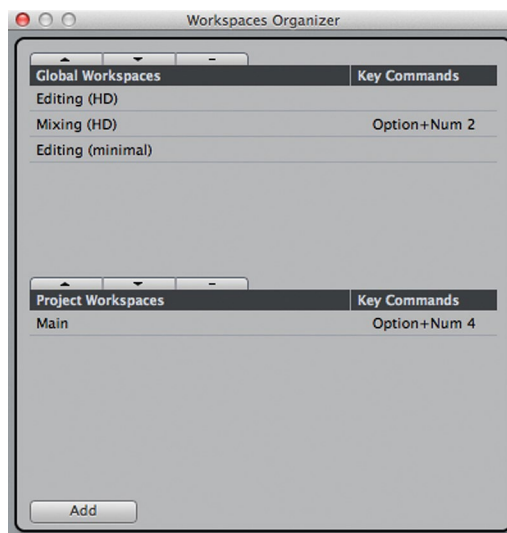


**Figure 8.29**
The Workspaces Organization dialog

# NUAGE
## COURSEWARE

PART I: SETTING UP
by Ashley Shepherd

# Chapter 9
# Navigation

NUENDO 7
Advanced Audio Post-Production System

YAMAHA

CUBASE PRO 8
Advanced Music Production System

# NUAGE

## Navigation

- ❖ Timeline Navigation
- ❖ Timeline Navigating with Nuage
- ❖ Channel/Track Navigation
- ❖ Nuage Channel/Track Navigation
- ❖ Master Unit Track Navigation

The ability to navigate efficiently around a project in any DAW software is key to working fast and effectively. I find that most of my day ends up being spent just moving around the project in order to edit and mix. Nobody wants to wait around while you rewind back to the first verse to redo a vocal take. While I miss the forced break working with 2" tape during winding, I'd rather spend that time doing something productive or coming up with creative ideas.
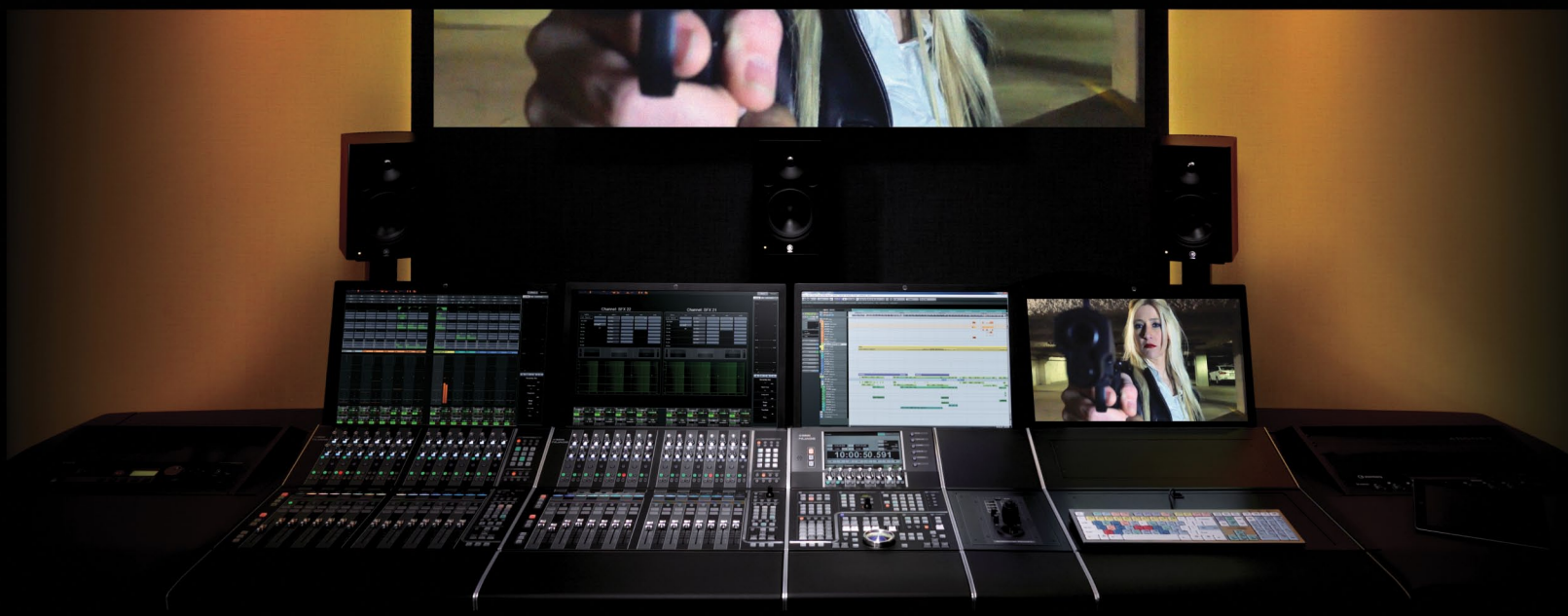
To that end I have put together some tips on how I navigate Nuendo projects quickly and without too much setup time. Some users may find that using a large list of markers can help them move around. I like having a roadmap of the project too, but my technique involves just a few key commands and a preference setting or two. These will get me flying around a project with ease.

<div style="border: 2px solid green;">

### PRO TOOLS NAVIGATION VS. NUENDO NAVIGATION

Here's one area that differs a good bit from the way Pro Tools normally operates. If you are migrating from Pro Tools into Nuendo, take a bit of time here to really get the hang of locating and moving around, as this is such an important skill when working with any DAW.

The most obvious difference is that in Nuendo, the selection of events or range is not tied to the cursor position. In Pro Tools, by default, the cursor's position is locked to the current timeline selection. When you make a selection and start playback, playback will start right at the beginning of the selection (perhaps with pre-roll).

In Nuendo, the cursor's position is independent and can start anywhere you'd like regardless of your current selection. I find this to be much more convenient for my workflow, as playback is more independent of editing tasks.

Of course Pro Tools can be configured to have the selection separate from the cursor position but then locating becomes a bit more difficult. Nuendo can also be configured to have the selection determine the cursor position in the special "Edit Mode" (designed for video post-production) as discussed in Part III: Editing.

</div>

# Timeline Navigation

Let's start by importing a song from a CD into a blank project for practice and demonstration purposes.

1. Create a new, empty project.

2. From the file menu, choose Import>Import from Audio CD.

3. Make sure the CD is in the drive.

4. Up pops the Audio CD Import dialog (Figure 9.1). Select the track you wish to import.
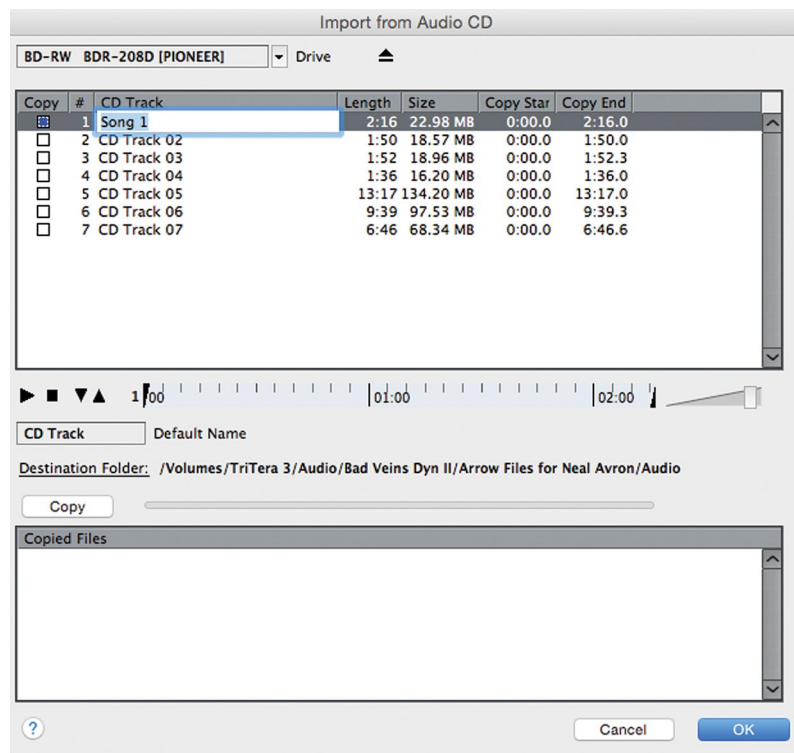


**Figure 9.1**
The Audio CD Import dialog

5. By double-clicking the name, you can change it, making it more relevant than "Track 01."

6. Click "Copy" in order to extract the audio file and put it in the project's Audio folder.

7. Click OK and the audio file will be placed on a newly created stereo audio track for you as seen in Figure 9.2

**Figure 9.2**
Newly created audio track with CD audio on it

---

### BEFORE YOU HIT OK

Make sure not to skip step 6 as it is tempting to just hit "OK" once you have selected a track to import. Multiple tracks may be selected but they must be copied into the project folder before being used in the project window as an audio event.

---

Hit the spacebar to start playback. You should see the cursor moving across the project window and hearing your favorite tune-of-the-moment. Now hit the spacebar again to stop playback.

## Zooming Horizontally

After importing the CD track into the project, you might not be able to see the entire sound file in the project window. You may need to zoom out to see the entire thing. Nuendo's default key commands for zooming are:

- ❖ G = Zoom Out
- ❖ H = Zoom In
- ❖ Shift+F = Zoom to Entire Project (I think of this as zoom to "[F]ull")

---

### SINGLE KEY COMMANDS

One of the really nice things about Nuendo key commands is that they can be simple single keystroke commands that do not require a modifier key (such as Alt or Control) to function, making their use much quicker and easier.

---

So, repeatedly hit G to zoom out until you can see the entire CD track. Or you can use the Shift+F command to instantly zoom out to see the entire contents of the project. This is especially handy in larger projects such as feature films, where the entire project could be an hour long or longer.

Note that this function zooms out to see every event in a project including automation events, tempo, MIDI, and audio—any type of event that can be present in a project is included. Zoom to full will include *every* event in the project, so long as it is visible in the project window. If an event is on a track that is not displayed in the project window (such as a hidden automation track) and you use the zoom to full command, that event will not be taken into consideration when determining how far out to zoom.

### WHY G AND F?

Why G and F? These keys are located in the center of any standard QWERTY keyboard so they are easiest to get to for either hand. You will find that the default key command layout has many of these ergonomic considerations factored into the choice of keys.

The zoom commands usually center around the cursor. So as you zoom in on a project, you will be zooming in around the cursor position. If the cursor is not visible in the project window, then zooming will be focused on the center of the current display area. As soon as you zoom out far enough to see the cursor, it will then become the center focus for zooming. Mess around with this to get a feel for how the zooming works with the imported CD track.

There are a number of other possible zoom commands that may be programmed as key commands. As you develop your workflow style in Nuendo, these commands can be added as you find a need for them. For example, there is a command to zoom to selected, whereby the project window will zoom horizontally to all the currently selected events.

## QuickZoom

QuickZoom is a command that has a dedicated button on the Nuage Master Unit. It will zoom in at a 5:1 ratio for fine editing. When the button or command is executed again, the zoom level will return to the previous setting.

## Project Ruler Zooming

You can click anywhere on the project ruler to reposition the cursor to that location. Also, if you click and hold within the ruler, you may zoom in and out by dragging up and down from there. The combination of dragging up, down, left, and right on the ruler will move the cursor around and zoom in or out all in one motion. While this technique is quick, it might not be precise enough for certain situations. It's just another method of getting around in Nuendo.

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# Zooming Vertically (Track Height)

For precise editing of audio waveforms, it can be necessary to zoom vertically in order to see more low-level detail in the waveform. Nuendo's track height can be increased from very small to the height of the entire screen, as shown in Figure 9.3.

You can grab the bottom border of a track in the track list and drag it up or down to resize the height of a single track. This can also be done with more than one track at a time. Select several tracks and drag one border up or down to resize all selected tracks at once.
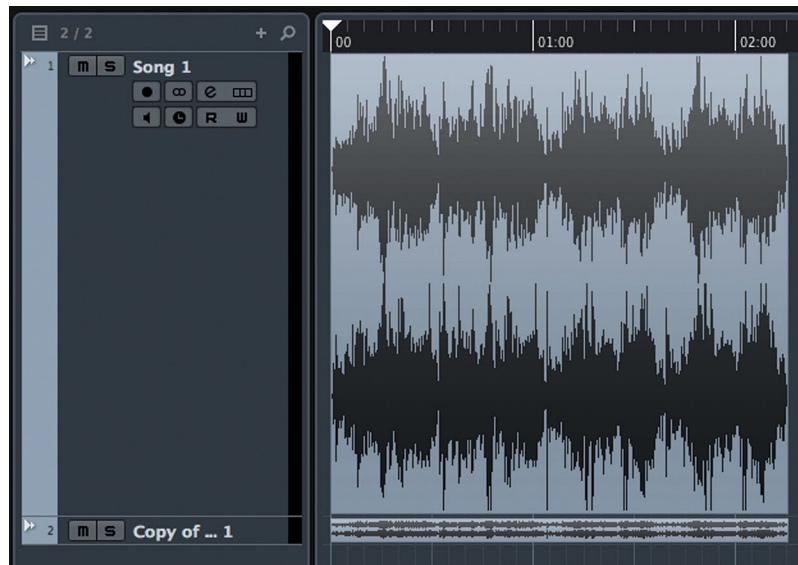


**Figure 9.3**
Large and small track heights

## Zoom Selected Tracks (Z)

One zoom command I find very helpful is Zoom Tracks Exclusive (Z). What this command does is enlarge the selected track or tracks while also reducing the height of all other visible tracks to small, as shown in Figure 9.4. Pressing Z again will reduce the height of the selected tracks to small. You can go back and forth with the key command to toggle the height of the selected tracks.

Where I find this most useful is when editing a particular track, I'll hit "Z" to enlarge that selected track while reducing the clutter of other tracks in the Project window in one step. This allows me to visually focus on this one track for editing. Since it is just one key command, it saves time.

Before Zoom Selected

After Zoom Selected
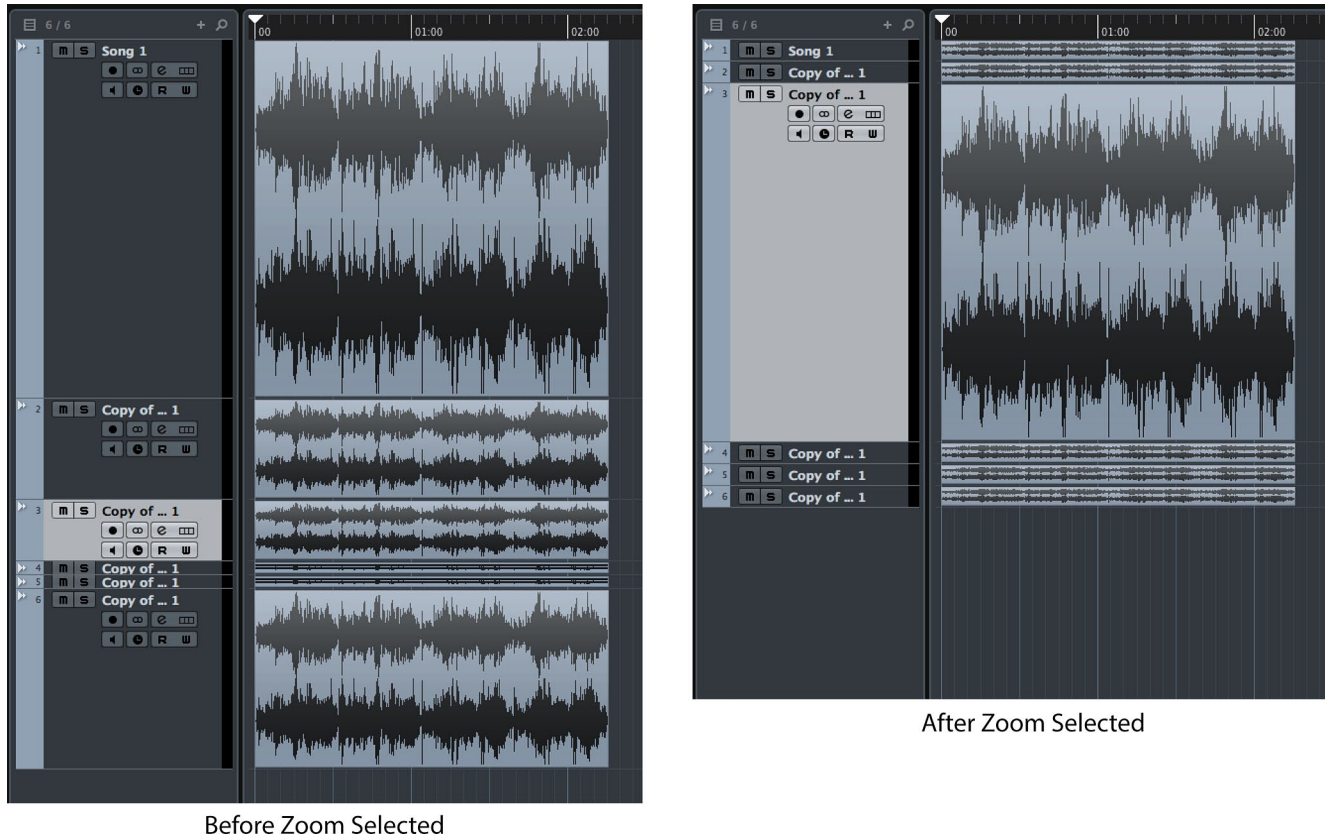
**Figure 9.4** Various heights before and after "Z" Zoom selected

# Basic Transport Commands

The most obvious way to move the cursor around in the project is to use the Transport panel controls just like those on a traditional tape deck. These controls work just as you'd imagine and also have default key commands that can be customized. The default values are very handy and will work for most folks just fine. While the spacebar for play/stop is standard on most DAWs, the other commands can be found on the keypad area of your keyboard.

❖ Play/Stop = Spacebar

❖ Rewind = Minus (-) key on the keypad

❖ Fast Forward = Plus (+) key on the keypad

❖ Record = Star (*) key on the keypad

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> **NOTE**
>
> Open the Key Commands window from the File menu and look at the Zoom category for a complete list of possible zoom commands, as seen in Figure 9.5. There are 40!
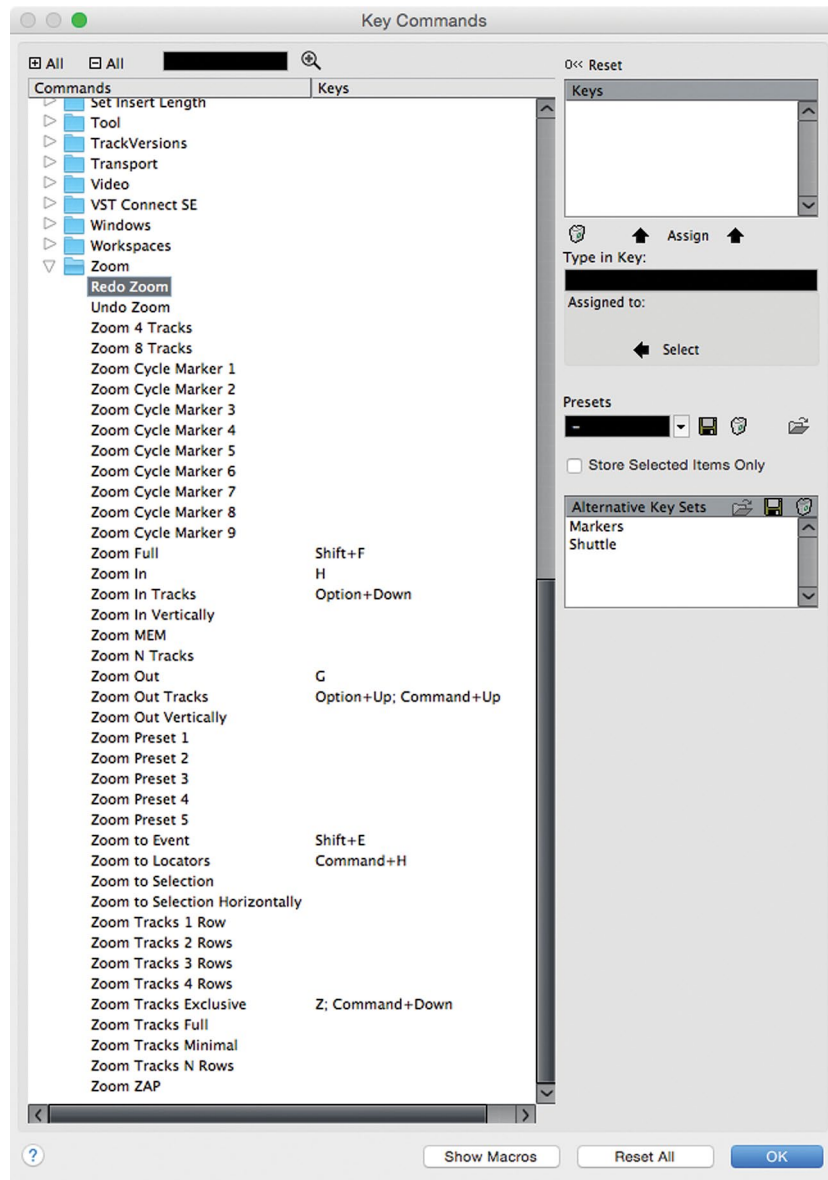


**Figure 9.5**
Zoom Category in Key Commands

By using these key commands, you can freely move the cursor around the project and start playback from any point in the timeline. Additionally, if the jog/scrub controls are visible (Figure 9.6), they may be used to audibly move the playback cursor around as if you were rocking the reels of an analog tape machine.
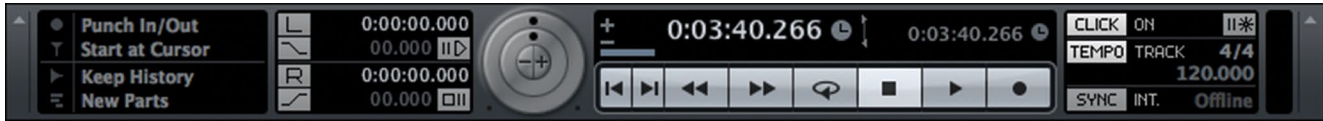


**Figure 9.6** The transport panel with jog and shuttle controls

# Return to Start Position

One of the first options for navigation and playback is whether or not Nuendo returns to the starting position after stopping. This is handled by a preference choice. Open Nuendo's preferences by choosing File>Preferences in Windows or Nuendo>Preferences... in OS X. In the Transport pane shown in Figure 9.7, you will find the checkbox for Return to Start Position on Stop. When checked, Nuendo's cursor will jump back to the position it was in when playback began.
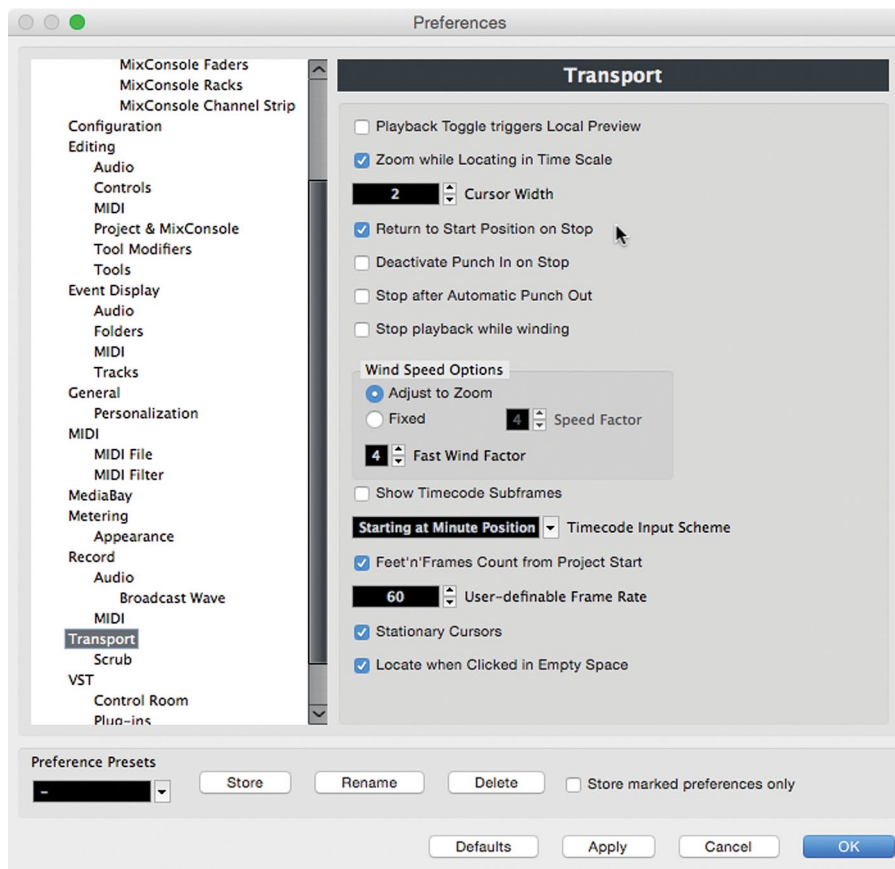


**Figure 9.7**
Nuendo's Transport Preference pane

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During recording, for example, it is convenient to return to the start to hear what was just recorded. However, in post-production workflows, this behavior could be counterproductive. In order to switch quickly between these modes, you can create a custom key command to switch this preference on or off.

Figure 9.8 shows the Key Commands dialog setting up the command Control+R to switch this preference on or off. Now you can have both behaviors available at any time without opening up the Preferences.

## NUAGE USER DEFINED KEYS

The Nuage Master unit user defined keys can also be assigned to specific Preferences. This possibility expands workflow variations at the touch of a button.
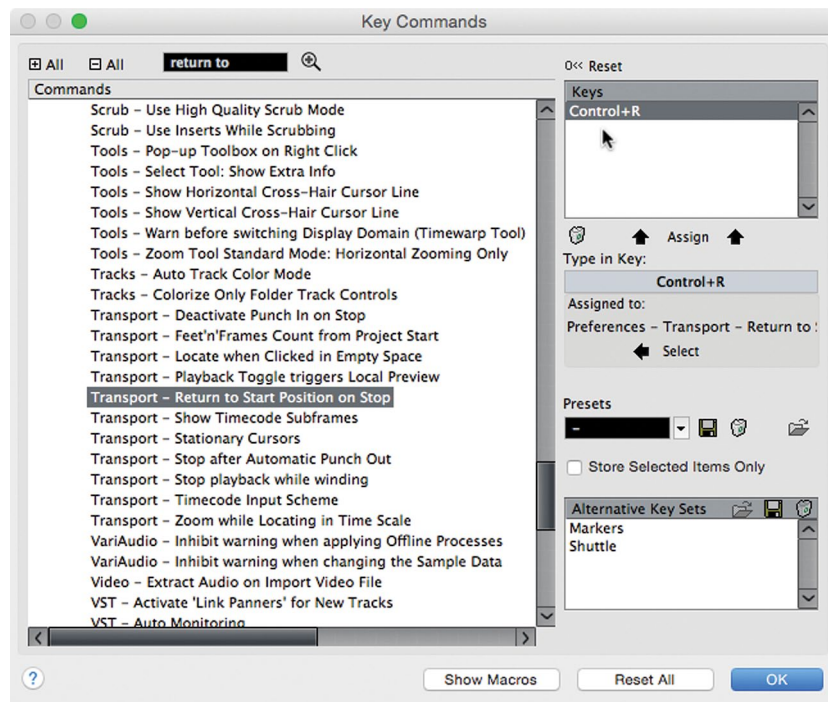


**Figure 9.8**
Key Command being assigned to "Return to Start Position on Stop"

# Click in Empty Space

Another option is the ability to locate the cursor when clicking in empty space in the project window. This option is found in Preferences>Transport>Locate when Clicked in Empty Space. When checked, clicking anywhere in the event display area that is empty will cause the cursor to snap to that position. This prevents you from moving the mouse up to the ruler to move the cursor to a nearby location. You can create a blank track just below where you are editing to provide some "empty space" to use this feature.

# Auto-Scroll

During playback, the cursor will often disappear off the right-hand side of the event display. Nuendo can automatically move the display in order to follow the cursor as it continues down the time line. This is called Auto-Scroll and is easily turned on or off using the key command "F" or by clicking the Auto-Scroll button in the project window toolbar.

> ## FOLLOW THE CURSOR
>
> I think of this key command as "F" for "[F]ollow the cursor," where the display will actually follow the playback cursor as it moves through the project. This is a simple way for me to remember key commands although this one gets used about a million times a day and is more than memorized!

Since the F key is found just to the left of the G key, its choice as the key command for Auto-Scroll is no accident. The idea is that as you are zooming in and out, you can also quickly move the event display to where the cursor is currently located without taking your fingers off the G and H zoom commands.

## Stationary Cursors

A feature that works in conjunction with Auto-Scroll is called stationary cursors. This preference is found again in the Transport pane of the preferences window. When checked, the playback cursor will remain in the center of the event display during playback while Auto-Scroll is enabled. The event display itself will then move behind the cursor smoothly, as if the audio was being drawn across the cursor. I find this display to be the most helpful.

When "stationary cursors" is not checked, Auto-Scroll causes the event display to page over as the cursor moves down the timeline. I find that the paging over of the display is more disruptive as I am less aware if Auto-Scroll is active or not.

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In conjunction, stationary cursors and Auto-Scroll provide an extremely fast and easy way to navigate a project while editing. Let's try some examples of how this can work using the imported CD track from the earlier example. First, ensure that "stationary cursors" is checked and "return to start" is checked in preferences and Auto-Scroll is off.

1. Start playback (spacebar).

2. Press H to zoom in. Notice that you will zoom in around the cursor.

3. When the cursor has left the event display, press F to start Auto-Scroll. The event display will jump to the cursor's position, keeping the cursor in the center.

4. Press G to zoom out. Notice you will zoom out while staying centered on the cursor while it is still moving.

5. Press F again to stop Auto-Scroll. The event display stops moving and the cursor continues on.

6. Hit the spacebar to stop. The cursor will return to the start position, which might not be visible right now.

7. Press F. Even in stop, Auto-Scroll will snap the display back to the cursor's location.

The above example outlines some basic navigation techniques you can start with in order to develop your own style of working in Nuendo. This style of navigating will be used throughout the book, especially in Part III: Editing.

## Suspend Auto-Scroll when Editing

For the next example, there is one more option that will come in handy: suspend Auto-Scroll when Editing. This option is enabled by clicking the tab just next to the Auto-Scroll button in the project window's toolbar, as seen in Figure 9.9.
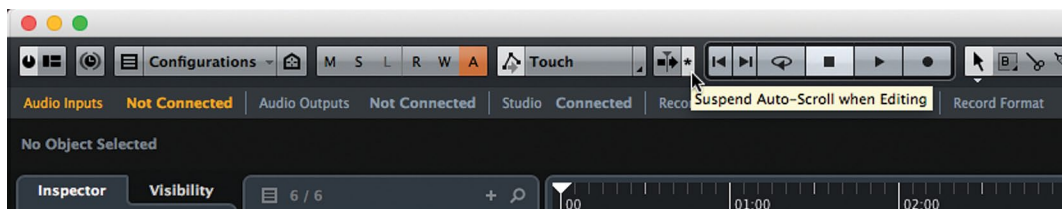


**Figure 9.9**
Suspend Auto-Scroll when Editing

If you are using Auto-Scroll and you wish to edit something in the event display, this option temporarily disables Auto-Scroll once you click on an event. Using stationary cursors, this becomes necessary, as editing an event while it is moving across the screen is quite difficult. Auto-Scroll is enabled upon the next playback.

Now let's put all these tools together into another example. We will perform an edit to the imported CD track while audio is playing.

1. Choose the selection tool in the project toolbar. (Figure 9.10)
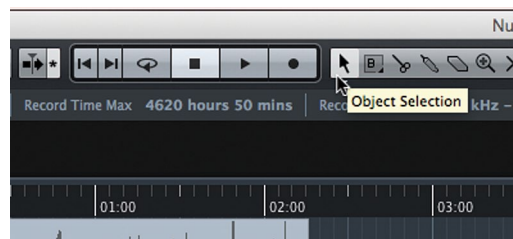


**Figure 9.10**
Object
Selection Tool

2. Start playback (spacebar).

3. Enable Auto-Scroll (F). The audio waveform will start moving behind the cursor.

4. Click the Suspend Auto-Scroll button.

5. While positioning the mouse over the audio event, hold the Alt key. The mouse pointer will change to a pair of scissors, the cutting tool, as seen in Figure 9.11.



**Figure 9.11**
Holding Alt
changes the
selection tool to
the scissors tool

6. Click anywhere on the audio event. The event will be cut at that point and Auto-Scrolling will stop since you have initiated an edit by cutting the event. Notice that playback does not have to stop.

7. Press F again to enable Auto-Scroll and the waveform will start to move again.

8.  Holding Alt, click again to create another cut and Auto-Scroll will stop.

9.  Now without stopping playback, click on the event created by the two cuts as seen in Figure 9.12.



**Figure 9.12**
New event created by two cuts

10. Press the Delete key to remove this event.

11. Now click in the empty space left by the event and the playback cursor will appear at that point and continue playing.

12. Press F to start Auto-Scroll and you are back to moving along through the project.

The interesting thing about this example is that the editing you just performed happened without stopping playback once. You can endlessly edit and move around the project without ever stopping playback, using Auto-Scroll to reposition the event display to what you are currently hearing and then hold that position while you perform various editing tasks. Of course playback must be stopped once in a while or we'd all go nuts.

It is especially nice to perform little editing bits while others in the studio are listening to playback. You do not have to disturb the listening flow while tidying up edits along the way. Also, all of this navigation is not using the mouse, so the strain of repeated mousing does not stress your mouse hand.

# The Left and Right Locators

The left and right locators are fundamental in Nuendo. They have prominent icons in the project window and are used for many editing and navigation tasks. The area in between the locators is shaded in the event display and further illustrates their location.

**Figure 9.13**
Left and right locators with shaded area in between

There are several ways to change the location of the locators. By default, they are both located at the beginning of the project. Here are some of the most common ways to change their position:

❖ Drag their tabs in the ruler display.

❖ Input values into the transport panel for each locator, as shown in Figure 9.14.

❖ Control/Command+Keypad 1 to set the left locator to the cursor's position.

❖ Control/Command+Keypad 2 to set the right locator to the cursor's position.

❖ Press P to set the locators to the start and end of the current selection.
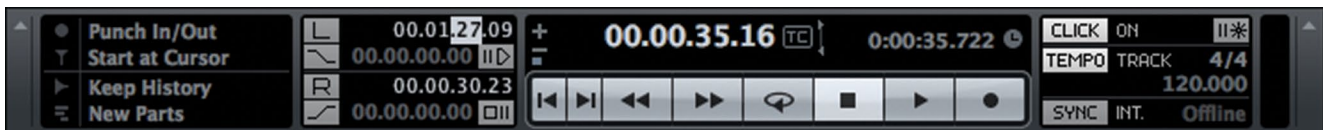


**Figure 9.14**  Entering values into the left locator position of the transport panel

Any of these commands can be performed on the fly while Nuendo is playing. Once the locators are set, it is possible to snap the cursor to either locator's position by pressing the keypad 1 or 2 to move to the left or right locator position respectively. This gives you yet another quick way to move about relevant points in the project quickly and with a minimum of keystrokes or mouse movement.

The locators are used to define an area on the timeline that will be used for exporting mixdown files, looping sections, and performing project-wide editing such as inserting or deleting time across all tracks.

> ## CYCLE PLAYBACK
>
> The left and right locators define the area that will loop during cycle playback. Enable cycle playback from the Transport panel and the project will play till it reaches the right locator and then it will jump back to the left locator and continue playing in a loop.

## Locate to Selection

By default, the L key command moves the cursor to the start of the current selection. If you have an event selected, pressing L will move the cursor to the start of that event. During editing, this becomes extremely handy as you can always get the cursor back to the spot you are working on with just one keystroke.

## Locate to Next/Previous Event

The next little gem in navigation is locating using events. When you have many events on one track, you can move the cursor back and forth to each event boundary by using the B and N keys. Notice that these are just beneath the G and H keys for zooming. Here's how it works.

Let's take the CD track example and cut up the event into several pieces and move them apart from one another so it looks something like Figure 9.15. To move an event, use the Object selection tool to click and drag it to a new position.
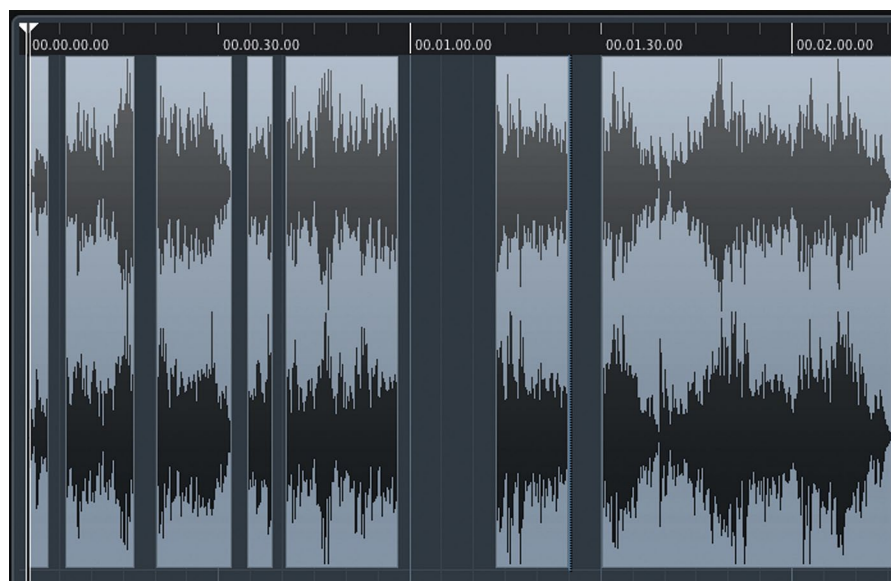


**Figure 9.15**
CD track cut up into smaller events

1. Make sure the track is selected. This only works for the selected track.

2. Select the first event.

3. Press L to locate to the start of that selection.

4. Press N to move the cursor to the next event boundary, as shown in Figure 9.16.
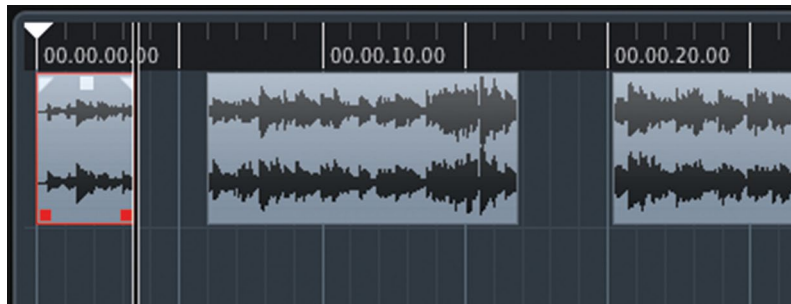


**Figure 9.16**
Cursor has moved to the end of the first event

5. Press N repeatedly to move the cursor to all the event boundaries in the track. When you come to the end, pressing N will no longer do anything.

6. Now press B to step backwards through the same points. If Auto-Scroll is on, each time you move the cursor, just the audio will move underneath.

I use this to step through the edits made to tom-tom tracks in a live drum recording. Being able to jump quickly to the edited toms makes tweaking them much faster even if they are few and far between. ADR tracks in film work might have a sparse amount of events on each track. Using B and N to step through these events can speed up locating them over long stretches of time without zooming out.

# Markers

Nuendo supports a rich set of marker tools, with multiple marker lists and meta-data for each marker. There are two types of markers:

❖ Single Markers, which only mark a point in time.

❖ Cycle Markers, which have a start point, duration and end point.

## Adding a Marker

There are several ways to add a marker. It is not necessary to have a marker track in the project in order to create a marker. Once created, markers can be used to aid in navigation.

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❖ Use a custom key command to add a marker.

❖ Add a marker track to the project and press the "Add Marker" button.

❖ Open the Markers window (Control/Command+M) and choose "Insert Marker" from the functions menu.
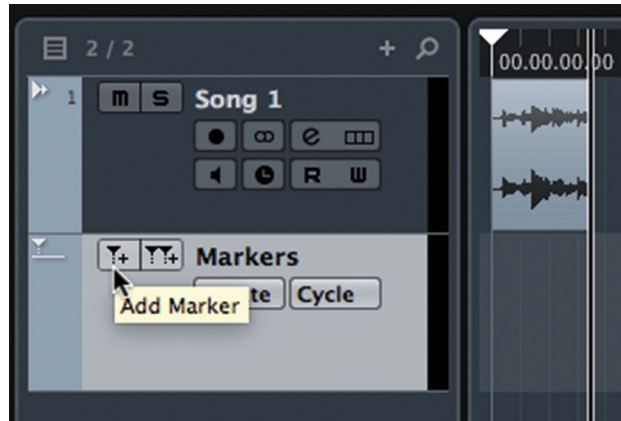


**Figure 9.17**
The Add
Marker button

## PRO TOOLS AND NUENDO MARKER CREATION

With Pro Tools, creating markers (Memory Locations in Pro Tools) during playback is done by pressing Enter, which opens the naming dialog so you can quickly enter a name for the marker. In Nuendo, this is also possible but requires the creation of a custom key.

In the Key Commands setup, there is a Marker folder that contains commands for marker functions. Create a key command for "Insert and name Marker." When you use this key command, Nuendo will create a Marker and also open the Marker window and place the cursor in the description field, ready for you to type the name. This makes Marker creation quick and easy, much like the Pro Tools workflow. Note that the Pro Tools key command preset that comes with Nuendo assigns the Enter key to create a Marker without the ability to also name it at the same time. Switch this to "Create and name Marker" to get the same functionality.

Create several markers. For songs, I usually create a marker for each section: Verse 1, Chorus 1, Solo, etc. When working, I can simply click the marker in the track and hit L to locate the cursor to that selection. There are key commands to move to the next marker (Shift+N) or move to the previous one (Shift+B). Or you can click on the "Go To" icon (>) of the marker in either the marker window or the inspector of the marker track to move the cursor to that marker, as shown in Figure 9.18.
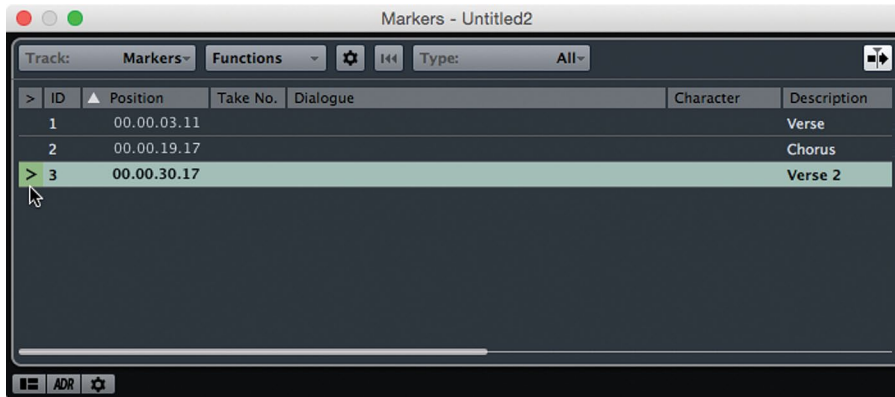
**Figure 9.18**
The go to icon
in the marker
window

# Navigation Package for Keyboard and Mouse

So let's put it all together:

- ❖ G and H to zoom out and in.

- ❖ Shift+F to zoom out to the entire project.

- ❖ [F] for "Follow the Cursor" Auto-Scroll.

- ❖ Stationary Cursors to have the waveforms scroll past the cursor.

- ❖ Return to Start after stop.

- ❖ Suspend Auto-Scroll for editing.

- ❖ [L] to locate to selection.

- ❖ [P] to set left and right locators to selection.

- ❖ Control/Command+(Keypad 1 or 2) to set left and right locators.

- ❖ Keypad 1 and 2 to move cursor to the left or right locator.

- ❖ Markers.

- ❖ [N] to move to next event boundary, [B] to move to previous.

That might seem like a bit much to start with, but after using this set of tools for a while, moving around a project will become fast, accurate, and easy, giving you a more streamlined workflow.

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There are many other tools in the bag for navigation in Nuendo that are more specific and can be integrated as you develop your own way of working. For an idea of the possibilities, open Nuendo's key command window, found under the file menu, and go to the transport section. Have a look at the 127 possible operations that can be mapped to a key command in Figure 9.19.
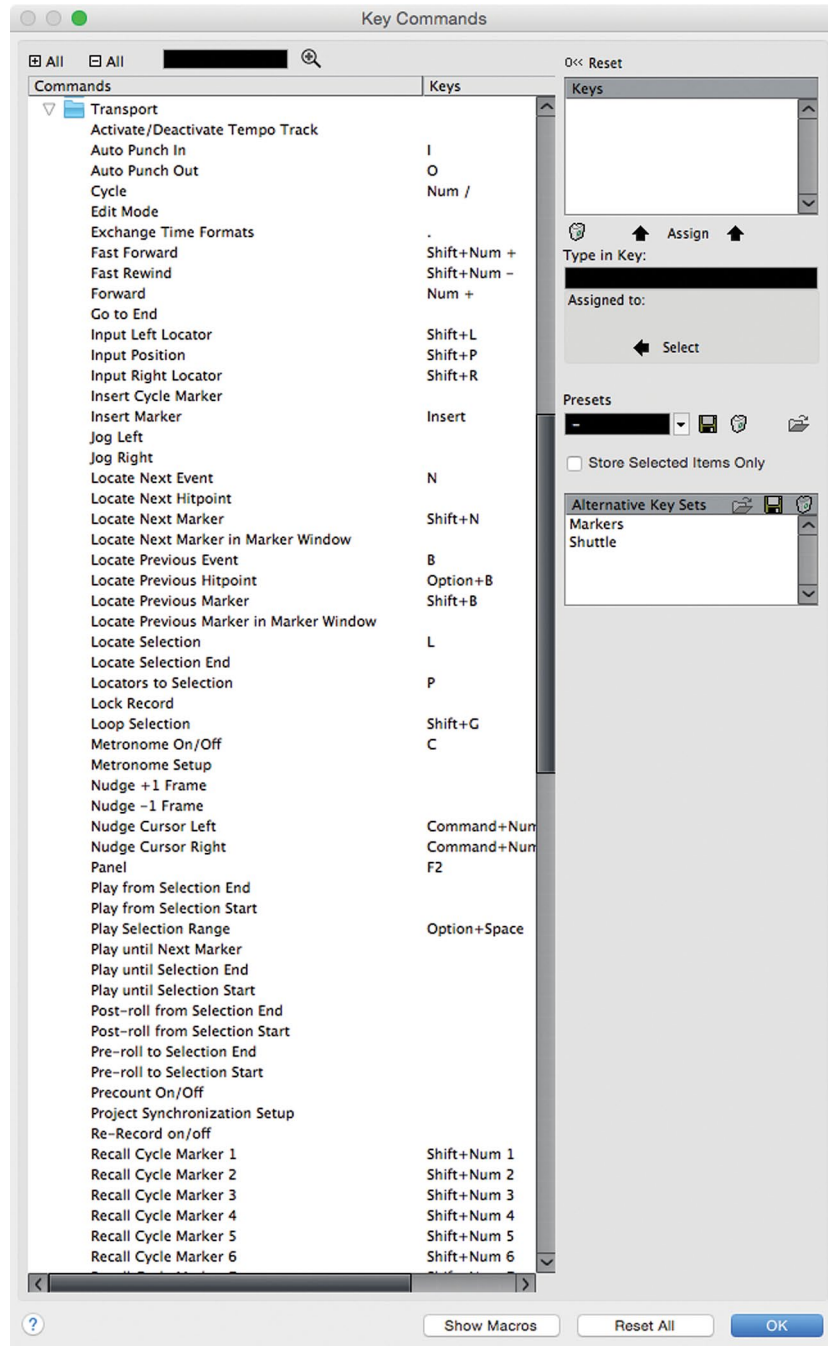


**Figure 9.19**
Transport Key Commands

# Timeline Navigating with Nuage

With the Nuage Master Unit, navigation takes on a whole new feeling of immediacy and quickness. Many of the key commands discussed previously are mapped to buttons on the control surface, making operation even faster.

## The Scroll Wheel

**(tutorial video: "Navigation Scroll Wheel")**

The scroll wheel is central to the Nuage Master unit, centered at the bottom of the controls in the best place for your hands to reach it. It is made from a solid piece of aluminum to provide a solid feel and accurate motion. The sensor has a very fine resolution so that minute movements of the scroll wheel translate to fine adjustments in Nuendo. While it is used for much more than navigation, this section is focused on using the scroll wheel to move around the timeline zooming in and out of the Project window.

### Moving the Project Cursor

The scroll wheel is tied to the Project cursor. Turning the scroll wheel will move the cursor back and forth along the timeline. This is fast and intuitive. The speed of movement is proportional to the size and zoom level of the Project window: the further out you are zoomed, the faster the cursor moves through a minute of time. If you are zoomed in close, the scroll wheel moves the cursor in smaller increments.

### Zooming Horizontally

By pressing and holding the zoom button on the Master unit while turning the scroll wheel, the Project window will zoom horizontally in and out. This is a very quick motion, going from a large view of many minutes down to the sample level in just a couple of wheel turns.

### Zooming Vertically (track height)

By holding both the Zoom and Alt buttons together on the Master unit, the scroll wheel adjusts the height of the tracks in the Project window, giving you a more detailed view of the audio or other data displayed on each track.

Zoom and Alt together increase or decrease the height of all tracks in the project together. By adding the Control button, this same function can be applied only to the selected tracks in a project. Holding Zoom+Alt+Control and turning the scroll wheel will increase or decrease the height of only the selected tracks in the project.

## Adjusting the Waveform Display

When the signal level of an audio file is rather low, the detail in the waveform display will be shorter in height. This can makes editing more difficult at times. You can increase the waveform height using the scroll wheel while holding Zoom+Alt+Shift together and turning the scroll wheel. This will increase or decrease the height of the audio waveform.

## Scrolling the Project Window

The Scroll button on the Master unit is used to look through the Project window vertically and horizontally. By holding the Scroll button, the scroll wheel will slide the contents of the project left or right within the Project window. By holding Alt+Scroll together, the wheel will move the contents up or down within the Project window.

## Momentary and Latch Modes

By default, if you press and hold any of the function keys for navigation on the Master unit, they operate in momentary mode, meaning that once you let go, the scroll wheel returns to normal operation, moving the project cursor left or right in the timeline.

If you tap either Scroll or Zoom, the function will become latched, locked in, and the button will remain lit until latch mode is disengaged, as seen in Figure 9.20.



**Figure 9.20**
The Zoom button latched on

<table>
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**WINDOW FOCUS FOR SCROLL WHEEL**

Nuendo uses a system called window focus, which allows key commands to be directed at the active or focused window. When using Nuage, window focus can sometimes cause the scroll wheel to stop functioning. If the Project window is not active (selected), then the scroll wheel will not zoom or navigate correctly. To remedy this, simply click on the Project window with the mouse to make it the active window. You can also program a user-defined key to do this in order to avoid using the mouse.

</td></tr>
</table>

# Left and Right Locators

**(tutorial video: "Navigation: Locators and Events")**

On the Master unit, the left and right locator buttons are placed just above the transport controls, as seen in Figure 9.21. These buttons are used to set each locator and also to move the playback cursor to their position.



**Figure 9.21**
Locator buttons on the Master unit

## Setting Locator Positions

To set either of the locators, follow these steps:

1. Move the playback cursor to the desired position.

2. Press the "Set" button on the Master unit keypad, as shown in Figure 9.22.

3. Press either the Left or Right locator button to set its position.

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This procedure can be performed while stopped or during playback. During playback, press the Set button to prepare, and then when the locator button is pressed, the current playback location will be used to set the locator position. This method allows you to set the locator position by sound rather than sight.

## Using Locators

Simply pressing either locator button will move the playback cursor to that position. That is the most basic use of the locators, to move the cursor position. If both are pressed at the same time, the cursor will locate to the beginning of the current object or range selection.

The locators also define a portion of the timeline for cycle playback. Enable Cycle by pressing the Cycle button on the Master unit, as shown in Figure 9.23. Start playback from any point ahead of the right locator and when the right locator position is reached, playback will jump to the left locator's position and continue looping between the two points until you stop.

The locators are also used to define Cycle Markers, as discussed later in this chapter.

# Prev Event – Next Event

The Prev Event and Next Event buttons, also shown in Figure 9.23, help you navigate by using event boundaries as location points. Pressing the Next Event button will move the project cursor to the next event boundary on the selected track.

If more than one track is selected, the cursor will move to the next event boundary on any of the selected tracks, allowing you to tab through a set of tracks, quickly seeing each and every event along the way.



**Figure 9.22** The keypad "Set" button
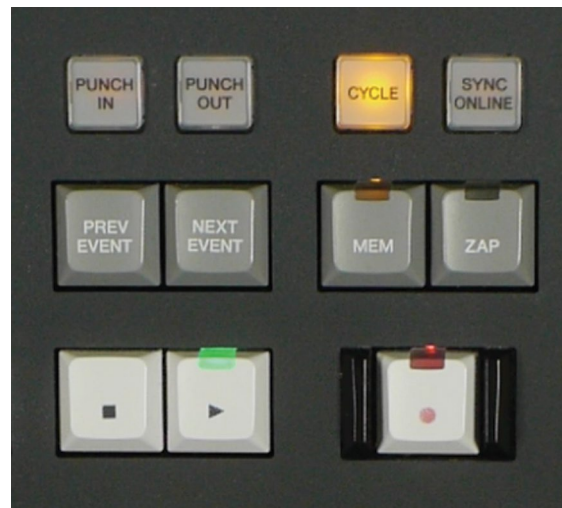


**Figure 9.23** The cycle playback button

## LOCATING WITH STATIONARY CURSORS

With the Stationary Cursors preference turned on and Auto-Scroll enabled, moving between event boundaries will bring the most important parts of each event into the center of the project window for easy editing even at high zoom levels.

# Mem Zap

**(tutorial video: "Mem Zap and Quick Zoom")**

There are two special zoom commands that work together. These also have dedicated buttons on the Nuage Master Unit, shown in Figure 9.23.

❖ MEM

❖ ZAP

As an example, let's say you are taking a raw recording of a voice-over and need to assemble the best parts into a finished take. This might require copying portions of the recording from one location in the Project and putting them together in another. Using the test project with the CD song, follow these steps to see how the Mem Zap function works.

1. Move the cursor towards the end of the song.

2. Zoom in horizontally very close so you can see details in the waveform.

3. Press and hold the MEM button. The button will light up for a moment and the ZAP button will stay lit. This indicates the current position and zoom level have been memorized.

4. Zoom back out and move the cursor to another position in the project.

5. Press the ZAP button and the project window will return to the memorized location and zoom level.

6. Press ZAP again and you will go back to the other position and zoom.

You can continue to use the ZAP button to toggle between the two positions and zoom levels instantly. This is especially helpful for editing material between two different locations or using a 4-point editing model.

# Markers with Nuage

(tutorial video: "Master Unit: Markers")

The keypad on the Master unit can be used to enter and navigate with markers. The keypad must be in marker mode in order to do this. Press the Markers button above the keypad to switch it into markers mode, as shown in Figure 9.24.

**Figure 9.24**
The keypad in Markers mode

## Setting a Marker with Nuage

1. Position the cursor at the desired marker location.

2. Press the Set button.

3. Press Enter on the keypad.

You will see the marker as it is being created on the touchscreen. This can also be done during playback. You may enter multiple markers during playback without stopping.

## Setting a Cycle Marker with Nuage

1. Set the left and right locators to their desired locations.

2. Enable the Cycle button on the keypad, as shown in Figure 9.25.

3. Press the Set button.

4. Press Enter.

You will see the cycle marker on the touchscreen as it is entered.



**Figure 9.25**
Nuage Master
Cycle Marker
button

## Locating to a Marker with Nuage

If the Nuage Master keypad is in marker mode, simply typing in a number will call up the marker list showing which numbered marker you are recalling. Pressing Enter will locate to that marker position.

If the cycle button is enabled, typing in a number will call up the list of cycle markers to choose from. Pressing enter will locate to that cycle marker.

# Nuage Keypad Locating

**(tutorial video: "Keypad Locating")**

If the keypad is in locate mode, as shown in Figure 9.26, you can enter location values directly into the transport using the keypad. Simply start typing the desired location (usually in time-code) and press Enter to locate.

**Figure 9.26**
The keypad in locate mode

There is a setup option to change the direction of the numeric entry depending on your preference. Go to the Setup page of the touchscreen, as shown in Figure 9.27.

The third tab has the option "Numeric Pad Input." It can be set to either left or right, which changes the direction in which the numbers are entered. When the direction is set to right, numbers entered will fill places starting from the right side. This makes for quicker entering of lower values on the timeline. The left entry is more useful for higher timecode values, such as those beyond 01:00:00:00.

**Figure 9.27** The third Setup tab on the touchscreen

# Channel/Track Navigation

Now that you are familiar with timeline navigation or moving around horizontally in the project, let's examine how to navigate vertically in the project in order to find and select specific tracks.

## Track List Selection

The first place to look for tracks is right in the Project window's track list.

### Scrolling in the Project Window

It is possible to scroll up and down this list if there are more tracks than can be displayed on the screen at once. You can use the scroll bar on the right side of the project window, as seen in Figure 9.28, or if your mouse has a scroll function, this will also move the track list up and down.
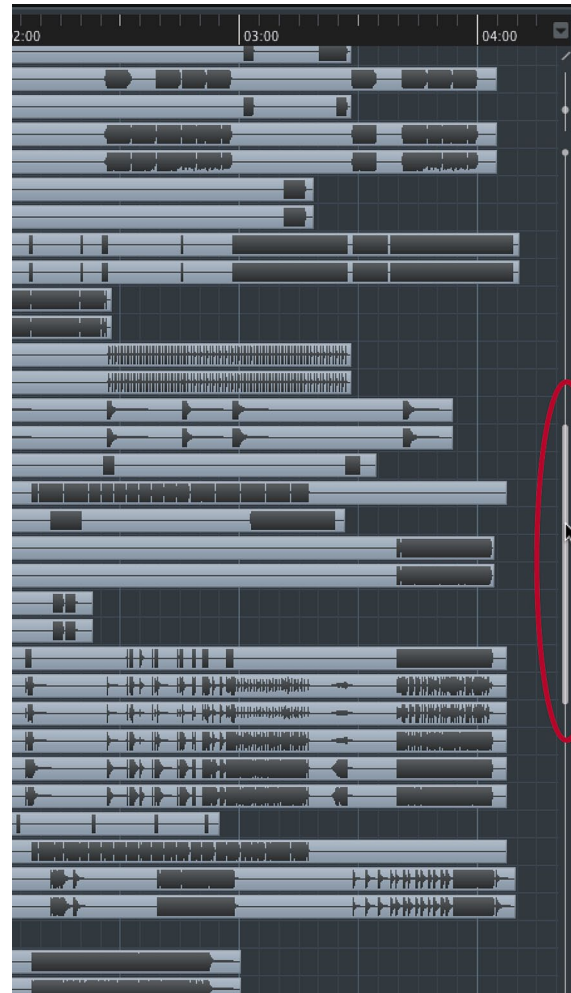
**Figure 9.28**
Scroll bar in
Project window

Scroll Bar

## Visibility Pane

Clicking on a track name in the Visibility pane of the Project window will select that track, as seen in Figure 9.29. Once you have clicked inside the Visibility pane, using the up and down arrow keys will select adjacent tracks either above or below. Using the shift modifier with the arrow keys you can select multiple tracks at once.

Of course you can use the visibility buttons to the left of the track name to hide or reveal each track in the project window. Hiding unnecessary tracks can help navigation by bringing all relevant tracks closer to each other.

**Figure 9.29**
Multiple tracks selected in the Visibility pane

# Find Track (Project window)

In a large project with perhaps hundreds of tracks, scrolling through the list might not be the fastest option for locating a specific track. The search icon at the top of the track list shown in Figure 9.30, gives you a text search for the track list. If you know the name of the track you are looking for, this makes it a snap to find it quickly.
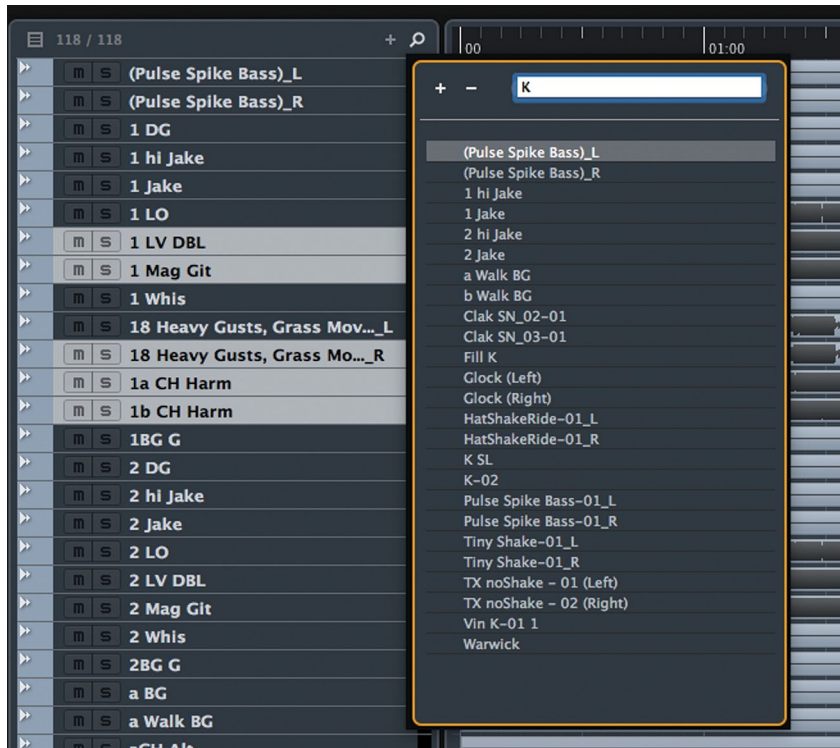


**Figure 9.30**
Find Track text search in the Track List

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Simply start typing and Nuendo will conduct a search of the track list to find matches for the string of characters you are entering while you type. Even if you only have a portion of the name, it will be easy to find this way.

# Find Track/Channel (MixConsole)

The MixConsole has a similar function to find channels in the mixer. It is found at the left side of the toolbar shown in Figure 9.31.

The main difference is that this text search will only find tracks that have a corresponding channel in the MixConsole. For example, you will not find a Marker track in this search dialog.

When you find the channel in the MixConsole and select it, the same track in the Project window will also be selected. This is the default preference: the selection is synchronized between the MixConsole and Project window, as shown in Figure 9.32.

**Figure 9.31**
MixConsole
Find Track/
Channel Button
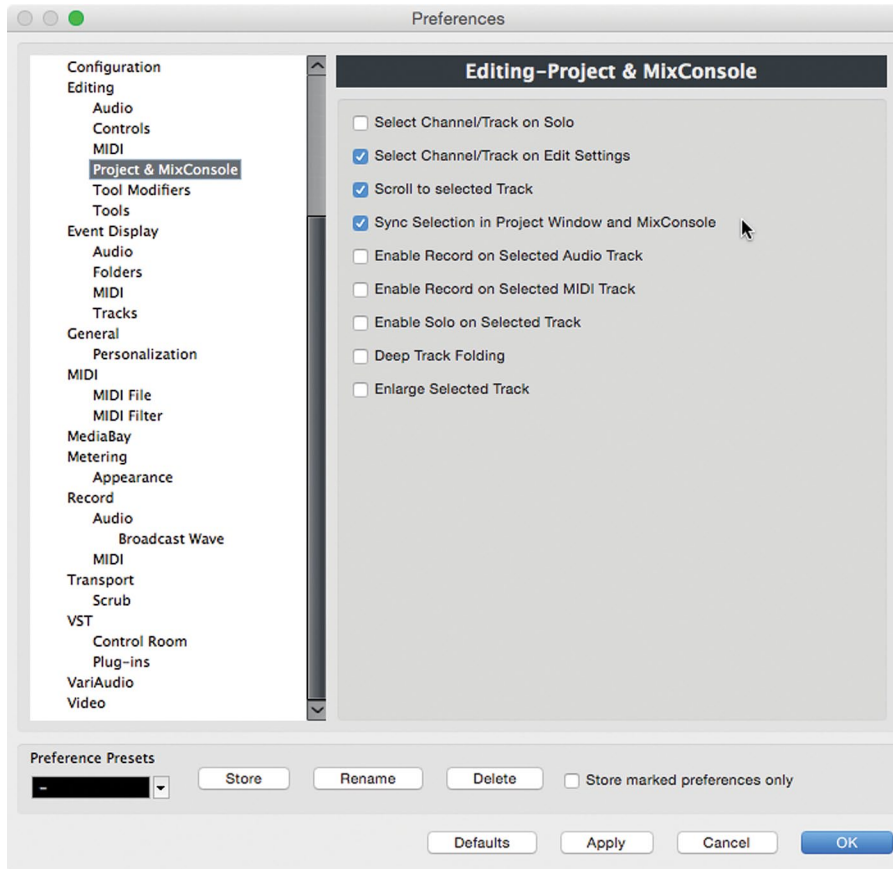
If you find a channel in the Project window and select it, that channel in the MixConsole will become selected as well and the MixConsole will automatically scroll to that channel so it is visible in the window. This is the default preference: "Scroll to selected Track."

Together, these two preferences help to coordinate track and channel selection together. Finding tracks can be done in either window for flexibility.

# Channel Visibility Agents

We can use the power of the computer to do some intelligent locating of channels through the use the Channel Visibility Agents. These are logical routines that will find certain channels and make them the only visible channels in the MixConsole. Of course, this makes them easier to select.

# Playing Channel

For example, in a feature film production there might be hundreds of tracks in the project. Many of these will contain events only during certain scenes or when certain characters are onscreen. This can make for a project that has a lot of empty space in it. A track might have only a few events on it during the entire film. Finding specific tracks in this environment can be difficult using normal means.

One Channel Agent is referred to as "Playing Channel" or "Show Channels for Tracks with Data at the Cursor Position," or in plain English, "Show me what's playing right now." Nuendo examines every track in the Project and will show only those tracks that have events where the cursor is currently located. Figure 9.33 shows the channel agent list in the MixConsole.

Now we could go from 200 tracks visible in the project to only 10 channels in the MixConsole for the tracks that are playing at one moment in the Project. This is very powerful and can be done while the Project is playing. For film work, this gives you the ability to scroll to a particular frame of video and view only the tracks that are playing at that moment, even if they are from very different locations in the Track List.



**Figure 9.33**

Channel Visibility Agents

If the Channel/Track Visibility is synchronized between the MixConsole and the Project window, there will only be ten tracks in the Project window after using this Channel Agent. Think of this as using artificial intelligence to do the searching for you. There are more Channel Agents that perform other intelligent operations that will be covered during workflow examples.

> ### TRACK AGENTS: PROJECT WINDOW
>
> This same functionality is also in the Project window in the form of Track Visibility Agents. The difference being that Track Agents can search for tracks that do not appear in the MixConsole, such as Markers, Folders, etc.

## Filter Channel Types

Another method of sorting through the MixConsole is by the type of channel. Using Channel Filters shown in Figure 9.34, the MixConsole can display only certain channel types that you choose. For example, you could choose to see only Group Channels and nothing else. No matter where in the Project the Group channels are located, if all other channel types are hidden, the Group channels will be shown all together and nothing else.



**Figure 9.34**
Filter Channel Types Menu

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For example, in a film mix, Group channels may be used to subgroup sounds in the various categories: dialog, Foley, ambience, etc. Filtering the mixer to show only Group channels will hide everything else but these stems, as seen in Figure 9.35. Now you can easily solo, mute, or otherwise mix them together.



**Figure 9.35**
MixConsole with only stem groups visible

## INVISIBLE BUT STILL WORKING

When a channel or track is made invisible in the MixConsole or Project window, it still functions and plays as usual. It is only removed visually from the interface.
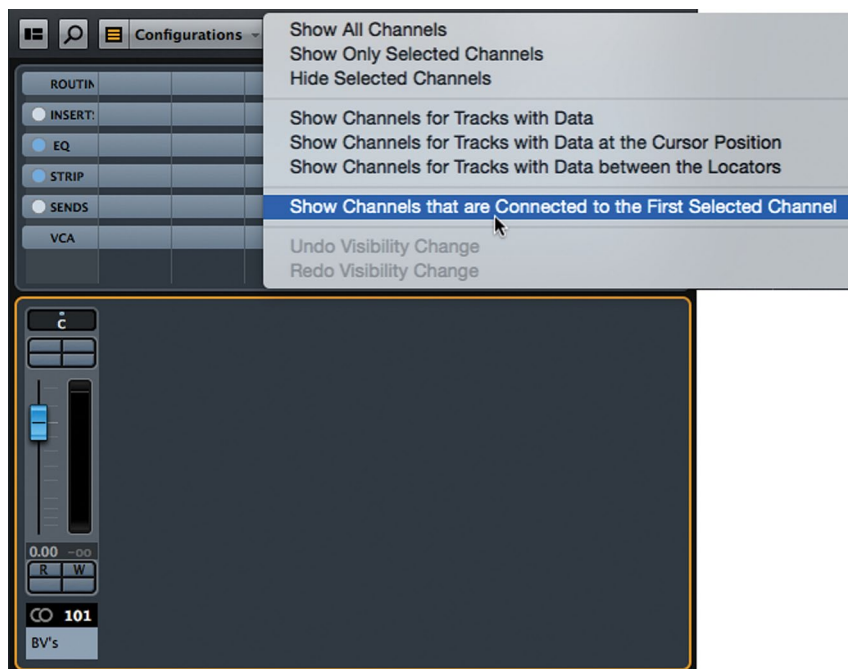
# "Expand" Channel Agent

This is where we can use one of the intelligent channel agents in an interesting way. Let's use the example of mixing a pop song. The background vocals are ten channels of various voices all singing the chorus, and they have been routed to one Group channel called "BV's." Each part is blended together into this Group channel and EQ, compression and de-essing are applied in the Group channel itself. If the Channel Filter is showing only Group channels, we can select the "BV's" group and use a Channel Agent to show all the vocal tracks that are routed to that Group in one step.

Select "Show Channels that are Connected to the First Selected Channel" from the visibility menu, as seen in Figure 9.36. This is referred to as the Expand function, since it expands the selected channel to all channels connected by routing.

Now the MixConsole displays the vocal tracks, Group channel and any channel that the Group is routed to as a destination, in this case the mix and a reverb FX channel in Figure 9.37.

This example combines two functions that perform a task that would take significant time manually. If the entire song production takes up one hundred tracks, these two commands filtered that down to thirteen channels instantly. If the MixConsole and Project window visibility are synched, then you now see only these tracks in the Project window, shown in Figure 9.38, ready for editing.



**Figure 9.36**
Channel Visibility Agents: Expand

**Figure 9.37** MixConsole Expanded BV's Group



**Figure 9.38**
Project window
with BV tracks
visible

# Locking Channels in the MixConsole (Zones)

We've shown the ability to hide channels quickly in the MixConsole. But there are times when certain channels should never be hidden. For example, the lead vocal in a song is the most important channel in a mix. It is nice to always have that channel available at your fingertips. Using MixConsole Zones, as shown in Figure 9.39, it is possible to lock channels like this to either the left or right side of the mixer.

In the MixConsole's Zones pane, there are two columns of circles on the left side. Clicking on either of these circles will lock that channel to the left or right side of the MixConsole as seen in Figure 9.39.

Once a channel has been locked to either the left or right side of the MixConsole, scrolling will not move it. Only the unlocked channels will scroll and move. Also, Channel Visibility Agents will not be able to hide locked channels. They will remain visible and in their current position. You can lock more than one channel to either side.

The only way to hide a locked channel is to filter that track/channel type. Locked channels still appear in the track list at the same position. Selecting a locked channel will scroll the Project window to its location in the track list, making it easier to get to.



**Figure 9.39** MixConsole Zones Pane

# Folder Organization

Folder Tracks are great tools for organization. Tracks can be grouped into folders based on whatever criteria you decide. For music, instrument types could be grouped together in folders.

❖ Drums

❖ Percussion

❖ Guitars

❖ Keys

❖ Vocals

❖ Strings

In film sound, folders are indispensable. They can be nested to create subcategories of sounds.

❖ Dialog

❖ Principle

❖ Supporting

❖ Walla

❖ Foley

❖ Feet

❖ Moves

❖ Specifics

❖ Ambience

❖ Interior

❖ Exterior

❖ Music

❖ Score

❖ Source

Folders help clean up the Project window. Figure 9.40 shows the same Project with the Folders open and then with them closed. Closing a Folder hides the tracks in the Project window but not the MixConsole.
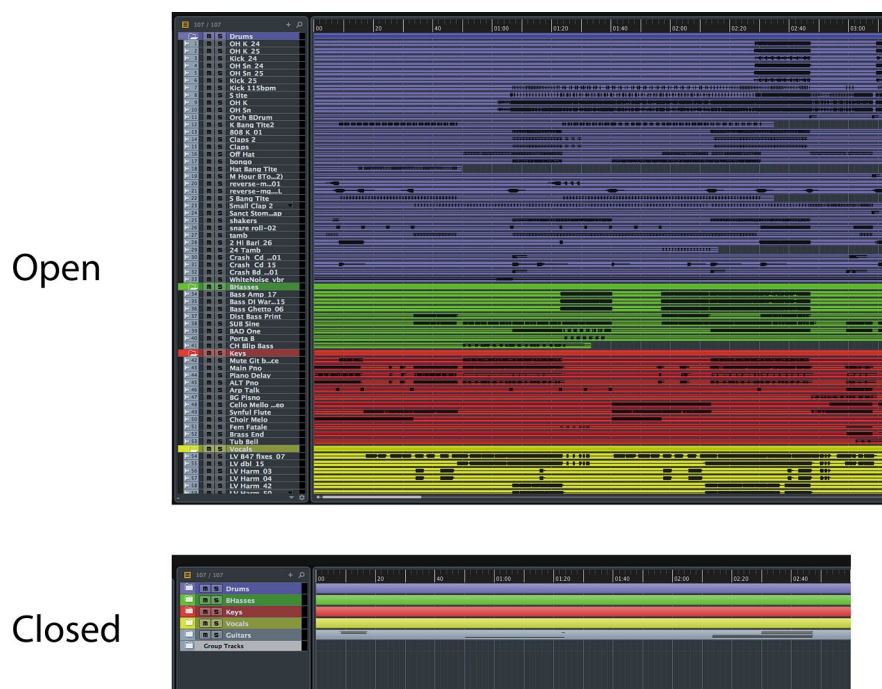
Open

Closed



**Figure 9.40**
Folders open,
Folders closed

Folders are closed and opened in several ways:

❖ Clicking on them in the Track List

❖ Clicking the tabs in the Visibility Pane (Project window)

❖ Clicking the tabs in the Zones Pane (MixConsole)

❖ Nuage commands (various)

You can create folder tracks and simply drag other tracks into them one by one or in groups. You can also select multiple tracks and use the command Move Selected Tracks to New Folder, as shown in Figure 9.41.



**Figure 9.41**
Track List
Context menu

This will create a new folder and place all the selected tracks within it in one step. Organizing large projects in this manner is quick and efficient.

# Nuage Channel/Track Navigation

All of the same features from the MixConsole are also available from the Nuage Fader Unit plus a couple unique items.

## Touch Slider

**(tutorial video: "Navigation – Touch Slider")**

The most obvious and tactile way to navigate channels using the Fader Unit is with the unique Touch Slider. Touching and sliding channels across the Fader unit is a very intuitive action, allowing you to place channels in any desired position on the Fader unit with one stroke of your finger.

### Physical Modeling

There is a certain amount of inertia built in to the action of the touch slider. If you whip the slider, channels will continue to slide across the faders , slowly coming to a stop as if coasting across a smooth surface. This has the reassuring effect of letting your eye follow the names and channel numbers on the OLEDs naturally.

### Follow Slider Scroll

When sliding channels across the Fader unit, the channel faders will update their position to reflect the channel that is currently in that position. This happens in real-time while sliding. It is possible to change this behavior in the Master unit setup screen, as seen in Figure 9.42.

On the second page of the setup screen, the "Follow Slider Scroll" option can be disabled. Now the faders will update their position only after you release your finger from the touch slider and the channels are no longer moving across the fader unit OLEDs.

**Figure 9.42**  Follow Slider Scroll option

# Locking Channels

 **(tutorial video: "Channel Position and Lock")**

As with the MixConsole, channels in the Fader unit can be locked to one side of the control surface. Simply press the left or right lock buttons to fix selected channels to either the left or right side of the control surface, as seen in Figure 9.43.



**Figure 9.43**
Channel Lock
buttons

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When more than one Fader unit is present in a Nuage system, locked channels will appear at the far left or right of all linked Fader units. When the Fader units are not linked, channel locking is independent for each Fader unit.

# Channel Position

 (tutorial video: "Channel Position and Lock")

When there are fewer than sixteen channels visible on the Fader unit, their position depends on the channel position setting. Channel position has two modes:

- ❖ Locked
- ❖ Free

In order to switch between mode, hold the Fader unit Alt button and press the left channel bank arrow key (<) to enter fixed mode. Holding Alt+Right bank arrow will switch to free mode.

The other option available is choosing the left or right side for fixed mode. Hold the Fader unit SHIFT key and press the right channel bank arrow key to place channels on the right side in fixed mode, or the left arrow key to place them on the left side.

When two or more Fader units are linked together, channels will appear at the very far left or right of all combined faders (32 or 48).

# Track Type Filters

 (tutorial video: "Channel Type Filters")

The Fader unit provides direct access to the channel type filter found in the MixConsole. Located in the Channel View control section, there are six channel type filter buttons, as seen in Figure 9.44.

Since there are more than six types of channels in the mixer, these buttons can be customized to fit your needs using the NUAGE Fader Setup window found under the Devices menu, as shown in Figure 9.45.

**Figure 9.44** Six channel type filters
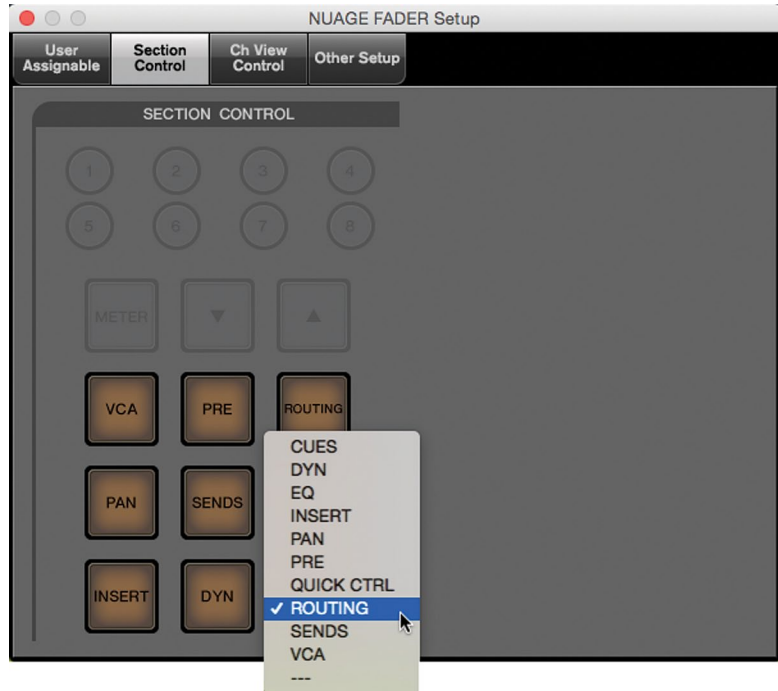


**Figure 9.45** The NUAGE Fader Setup window

You can group the various channel types into each of the six buttons using the pulldown menus for each channel type. Choose the number of the button you wish to associate with each channel type. For example, the VCA channels could be grouped together with Group channels as they both related to controlling sets of channels together. Your workflow will dictate how best to assign these filters.

# Channel View Memory

 **(tutorial video: "Channel View Memory")**

Now that you have various ways to organize how channels appear on the Fader unit, it becomes extremely useful to be able to memorize each layout and switch between them. The Fader unit provides eight memory locations to store channel layouts.

For example, you could create a layout that has all of the most important channels locked in position for mixing. A second layout could contain just the dialog channels and nothing else. A third could show just the group channels and stems. A fourth could be all channels visible and unlocked. You can switch between these four presets with one button press.

Setting a memory view is as simple as pressing and holding one of the Channel View Memory buttons until it flashes, as shown in Figure 9.46. Once it is stored, recalling the channel view takes only a single press of that button.

In order to access memory locations 5-8, hold the Shift button on the Fader unit and use the same four buttons again to set and recall the additional channel views.



**Figure 9.46**
Channel View
Memory
buttons

# NUAGE Channel View Agents

 **(tutorial video: "Channel View Agents")**

The Fader unit gives you access to six channel agents, as seen in Figure 9.47.

❖ Events on Track

❖ Events on Track within Cycle

❖ Playing Channels

❖ Selected Channels

❖ Expand

❖ All Channels



**Figure 9.47**
The Channel
View Agent
buttons

Since you have direct access to these agents right on the Fader unit, you can take advantage of their intelligent power to change the configuration of the mixer instantly like no other control surface.

For example, you can use the Playing Channel agent to filter all the channels out that do not have audio or other event data present at the current playback position. Instantly, the Fader unit(s) will only have the relevant channels for that moment in the project visible on the control surface. You could then quickly save the channel view to a memory location to recall later. The possibilities are endless.

The expand channel agent could be used to show all the dialog channels that have been routed to the dialog stem group channel in an instant, something that would take much more time to do manually.

## Sync Project and Nuage Fader

This next feature takes channel and track organization and navigation to a whole new level. You can synchronize the channel view on the Fader unit with the track view in the project window. In other words, what you see on the Fader unit will also be what you see in the Project window.

For example, if we use the channel type filter to show only the group channel on the Fader unit, and synchronize that with the Project window, then all we will see in the Project window is the group channels, and any other track type that does not have a corresponding channel in the mixer, such as markers, video, folders, etc.

This opens up a whole new way of organizing the project view: using the Fader unit. If you want to edit a particular sound effect in a scene, instead of searching through tracks and tracks of sound effects to find the right one, you can now use the Playing Channel agent to find it for you. Move the cursor to the frame of video that has the sound effect and press the Playing Channel agent button to filter both the Fader unit and project window to just the tracks that have audio data at that frame and you will be much closer to finding the exact track you are looking for.

This is possibly one of the most useful combinations of features in the Nuage system especially for film post-production where channel counts easily exceed 100-200. You can use the Fader unit's channel navigation to organize the project window and vice versa.

# Master Unit Track Navigation

**(tutorial video: "Master Unit Track Navigation")**

The Master unit can also navigate through the track list.

## Touchscreen Track List

The touchscreen's tracks list, shown in Figure 9.48, has several ways to access all the tracks in your project. There are three tabs used to view the track list in different ways.

### Overview

The Overview groups tracks in blocks of 32 shown in Figure 9.48. Tapping a block will open that group of tracks into the touchscreen for selection.



**Figure 9.48** Track List Overview

## Folder View

The Folder view maintains the hierarchy of folders in the project, allowing you to open each folder and access its contents, including nested folders, as shown in Figure 9.49.



**Figure 9.49** Track List Folder View

## Track List

The track list places all tracks together with scrolling arrows to move up or down to the rest of the tracks, as shown in Figure 9.50.

In any of these track list views, each individual track can be addressed in the following ways:

- ❖ Selected
- ❖ Muted
- ❖ Soloed
- ❖ Record-enabled
- ❖ Hidden

The touchscreen provides another method of interacting with tracks, one that might be more useful in different workflows. Again, Nuage has flexibility at its core.

**Figure 9.50** Track List View

# Master Unit Arrow Keys

 **(tutorial video: Master Unit Track Navigation)**

The arrow keys found in the lower right hand side of the Master unit, shown in Figure 9.51, can also be used to navigate through the tracks list.



**Figure 9.51**
Master Unit
Arrow Keys

## Up and Down for Selection

The up and down arrow keys will change which track is selected by moving up or down. This in conjunction with the scroll wheel forms the basis for audio editing on the Master unit, covered in Part III: Editing.

## Double Arrow Folder Actions

By pressing both the left and right arrows together, you can open and close the selected folder track. Use the up and down arrows to move to a folder track and then press both left and right arrows to open or close the folder.

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