

# Steinberg Nuendo

Nuendo is a high-end computer-based recording system aimed at audio recording, sound for picture, music composition (Midi) and multimedia. Konrad Skirlis checks out this new development from Steinberg.

Nuendo represents a new direction for Steinberg. Long the darlings of the project studio market (admittedly with a considerable pro crossover), Steinberg is now gunning for a different market altogether – essentially the post production market, along with the higher-end music production market. What makes Nuendo remarkable is that it's the first time a system has addressed these markets with purely a host-based solution – i.e. with no additional proprietary DSP-based hardware. Let's see

whether they've succeeded.



## An Overview

Nuendo combines a swag of professional recording, editing and automations features into a system capable of handling as many audio tracks as your computer's horsepower will allow. There's no limit on the number of Midi tracks available and its video support handles Quicktime, DirectShow and AVI video formats – locking audio tracks to picture in sample-accurate sync. A multitude of audio file types are supported, such as AIFF, AIFC, SD2, WAVE (including Broadcast WAVE), Dolby AC3, RealAudio G2, Windows Media Audio, REX and MP3. On the plug-in side of things, Nuendo handles real-time support for VST and DirectX, (as well as Nuendo-specific plug-ins) on an ASIO or ASIO2 audio interface. Nuendo happily deals with virtually all conceivable surround formats. There exists support for EDL and control surface adaptability, loop functions, infinite undo/redo, OMF import and a ProLogic-compatible encoder/decoder comes as standard. So, right off the bat, we're seeing that, on a feature-by-feature basis, Nuendo packs quite a lot of wallop.

## System Setup

Installing Nuendo is a straightforward and a fully guided process. The minimum recommended system required to run Nuendo is a Pentium III 500MHz with 128MB RAM. But, as you'd expect with a host-based system, the speedier your computer system, the better the performance you'll squeeze out of Nuendo – more audio channels, and more real-time processing power (effects, EQs, etc). However, regardless of your hardware, the performance of Nuendo is the best I've seen from a host-based system.

The Nuendo copy protection scheme requires a dongle on the parallel port (or a USB dongle on the Mac version), so loading the system onto multiple computers is no problem so long as the dongle is attached to the computer you're using at the time. As mentioned before, Nuendo supports the ASIO standard audio driver format that provides a smorgasbord of hardware choices from a number of developers. This approach offers a distinct advantage for those of us on the move. Without the worry of having to change delicate DSP cards, moving from a standard tower-based computer to a laptop is effortless. Naturally, Steinberg offers its own audio card (Nuendo 96/52) which will at least guarantee the sort of performance Steinberg are claiming.

## Nuendo 96/52 Audio Card

The Nuendo 96/52 audio card is a variation of RME's Hammerfall card [see a full review of the RME Hammerfall 9652 in AudioTechnology Issue 7] and can be run at sample rates of 32k through to 96k. It offers three ADAT Lightpipe optical I/Os and S/PDIF I/O, providing a thumping 26 in/26 out configuration as well as word clock I/O and a nine-pin ADAT sync port – ensuring sample accurate sync with ASIO 2. Up to three 96/52 cards can be used in a single PC with all outputs operational simultaneously. If your digital console supports ADAT Lightpipe, you're looking at an easy means of interfacing to the 'real world'. If not, you're looking at purchasing something along the lines of Steinberg's 8 I/O digital interface box.

## Project Window

Recording, playback and editing can all be carried out from the one Project window. This is Nuendo's primary

display which contains a number of horizontal tracks with a track list and track settings down the left hand side – standard stuff. The main Event display is on the right side of the Project window. Here's where you can edit audio, Midi, video events and tweak automation information.

Creating a new Project automatically opens up four additional folders on your hard drive for audio files, edits, fades and waveform images. File references, Midi and playback information/settings are contained in the Project file itself.

Nuendo is organised in a familiar and logical way. Raw recordings are known as Audio Clips, and instructions relating to the playing of these sounds are known as Audio Events. Audio Events provide Audio Clip details such as length times and offset values. They may be grouped together as an Audio Part – so you can apply certain functions to a number of selected events at once. This is all mostly intuitive but for anything I wasn't sure of I turned to the in-built help which was... well, helpful, while the printed manual and pdf version (located on the supplied CD-ROM) were both good resources.

## Toolbars

A toolbar is located at the top of the Project window. A selected element in the Project window can have its details (such as name, start/end time, length, fade in/out times, etc) revealed with the Show Info window (directly underneath the toolbar). The Browser window contains information on every audio and video clip contained in a project. EDL information is displayed within the Browser window as well, and lets you view every edit. You can also see tempo, marker, and time signature information in the Browser Window. Audio tracks contain both audio and automation information, while Midi tracks contain Midi parts and associated information. For every track, a channel is created in the VST Mixer window. Each audio or sub-group channel comes with eight effects sends, (up to four insert effects and four-band EQ). The Marker window lets you create markers within the project for easy cueing. The first two (left and right cursors) define a song for looping (start to finish) and the following buttons can be user defined. In fact, pressing the Insert key during playback can create additional markers on the fly.

Editing in Nuendo provides all the usual tools you would expect to find on a hard disk recorder. Single tracks can be enlarged to fill half the screen with the zoom function, which certainly makes editing easier. You can edit a track while still viewing others, simultaneously making track alignment easier. Changing start and end times is as simple as dragging the bottom pair of handles on a selected Audio Event. The top pair of handles allows for non-destructive fade ins and outs. Dragging one event across another automatically provides a crossfade – quick, intuitive stuff.

In order to open the Sample Editor, a simple double-click on the Event will do it. Once opened, you can non-destructively cut/paste, remove or draw in new data. Regions of a clip can be re-edited and dragged into the Project as new Events. Using 'lanes' from the Audio Part Editor window allows adjacent events on a single track

to be displayed as if they were on two tracks. The level meter and Event Display can be zoomed right in, to view individual samples if need be. Additional Toolbar functions offer you editing tools for Object selection or Range selection (for multiple track editing). Meanwhile, other examples of some of these extra toolbar features include: Zooming, Mute, Draw and Scrub, along with Scissors, Glue, and Eraser. The Scrub tool is limited to previewing a single track at a time but is quite responsive. Auto-scroll lets you scroll the Event Display during recording/playback, while Shuffle automatically swaps the position of two events. Detect Silence automatically removes and splits 'silent' portions of the project, making track clean up a breeze. The Nudge buttons can move the start/end points of a part as well as moving it forwards/backwards by an amount set by the snap value. The Time ruler in the Event Display can show bars and beats, seconds, samples and various fps rates (i.e. 24, 25, 29.97, 30 [with/without drop frame]). Furthermore, 16mm and 35mm are handy film options, making Nuendo a serious audio post production tool. There's a bunch of other tools here which would be difficult to cover in the space provided, but include: pitch shift, acoustic stamp, time stretch and a FFT spectral analyser.

It might be a good moment to mention the unlimited undo/redo capability of Nuendo. This is really something incredible – being able to scroll through every edit, and every move of your current session adds considerable creative clout – a real standout feature.

## Transport

The transport panel contains punch in/out and cycle functions, locator boxes, a master tempo curve, metronome click and an 'online' function for sync to other equipment. In the centre is the Position display registering your position in a variety of formats. A position slider allows you to quickly drag the project pointer anywhere in the song. Nuendo allows you to create unlimited Markers (although the transport will only display eight of these at a time) which will allow you to jump to user-defined locations in a Project. Pre- and post-roll values are also changeable. Audio and Midi track names are displayed in the track list along with solo, mute and record arm status. A tiny vertical level meter display shows tracks with active levels. By zooming in on tracks, a second level of buttons appear with FX, EQ, and insert channel settings that may be altered. It's possible to also select mono or stereo tracks in this section.

## System Performance

*Nuendo is designed to run on the Windows 98/NT/2000 platforms and Mac OS9 or OSX (due for an early 2001 release) without the need for dedicated DSP hardware. Obviously, the number of audio channels you can have running will depend on the combination of RAM and CPU power your computer is packing. So upgrading and improving system performance is as easy as upgrading to a faster CPU/computer which, in most cases, is cheaper than buying dedicated DSP cards. As mentioned in the review, it's possible to use any soundcard that has either ASIO or MME drivers, although ASIO is the preferred choice. Furthermore, ASIO 2.0-compatible cards will achieve sample accurate sync.*

## Mixing

The Mixer section (looking at it from top to bottom) comprises an input source selector, FX, EQ, insert, solo, mute, pan control, peak indicator, fader (with meter), automation controls (more of this later), channel selection and output routing. Mixer graphics are of a good size and the mixer functions are intuitive and easy to use. Stereo channels use only one fader for maintaining stereo width when making level adjustments, however, a stereo channel displays twin level meters. Any combination of mixer channels can be grouped together. In total there are 64 sub-group channels.

Pressing any of the FX, EQ, or INS buttons brings up the Channel Settings window. There are eight effects sends on rotary-style controls with the option of pre-fade functions. The four insert effects are switchable and include bypass and insert selection boxes. A total of eight separate global plug-in effects can be applied to the master outputs.

Meter characteristics are switchable between VU and peak while 'Hold' will display peak levels in each meter display – a handy feature for maintaining digital transfers under 0dBFS.

Channel equalisation is taken care of by four parametric modules with gain and frequency capabilities of 24 dB cut/boost at frequencies between 20Hz and 16kHz with Q (bandwidth) control. Minimum settings on the low and high bands transform these into low and high shelving, while turning the Q to its maximum switches these to high-pass and low-pass filters respectively. For those that prefer a graphical user interface for setting up equalisation, there's an EQ curve display beneath the knobs where you can click and drag about the four bands of EQ to your heart's content. There is a list of EQ presets to choose from and your favourite setting can be stored as well.

## Konrad Skirlis and Christopher Holder discover more about Nuendo from the Steinberg team.

*Konrad Skirlis and Christopher Holder tracked down Nuendo consultant, Mikail Graham and Steinberg's Dmitri Metzeltin to discuss Nuendo.*

**AudioTechnology:** Nuendo is a Cubase VST 'rebadge' with a few more audio features... discuss.

**Mikail Graham:** Wrong. Cubase is an entirely separate entity. Cubase is a sophisticated sequencer with a good audio section. Conversely, Nuendo is designed for extreme audio and post work, with some Midi.

Right from its inception Nuendo was going in a very different direction to Cubase. It was never intended to replace Cubase, the design team was separate from Cubase... Cubase is a great product, over a million users will attest to that, but there was a need for something fresh and with more of an emphasis on audio post applications.

**AT:** But do you agree that Steinberg are going to suffer from a perception problem with Nuendo. You've got a product which on the face of it looks really quite similar to VST, only you're saying, "but it isn't".

**MG:** Sure the aesthetics and the look of the GUI do bear a resemblance and that's probably only natural, but I think you'll find that as Nuendo evolves you'll see more of a departure from that Cubase paradigm – I think it'll become more and more apparent that they're separate programs for separate applications. You're right to the extent that people often need to come and see what Nuendo can do, and experience it for themselves, then it's more like – "that's what I'm after".

**AT:** Four years ago when Steinberg first began putting Nuendo on the drawing board, a full-blown host-based system like this would have been stuff of science fiction, surely?

**MG:** Well, yeah. True. There again, VST when it was first demonstrated was way ahead of its time. It evolved and began to take advantage of the increased computer muscle and now

you can do some very serious work with it. History will then attest to the fact that everyone jumped onto the 'Virtual Studio' concept. You've got to really take your hat off to Steinberg for that, and I think the same will apply to Nuendo. Computers are getting faster and faster and Nuendo takes advantage of that with more optimised code, better multitasking etc. Nuendo can take advantage of what's out there and adapt very quickly, so you're not locked into any particular hardware.

**Dmitri Metzeltin:** I think a few years ago it was very difficult to see a host-based system being able to cut it. It took a long time for processors to make the jump from 200MHz to 500MHz, while it's only been a matter of months for speeds to jump from 500MHz to 1GHz – that's a quick evolution. Native processing is the future which five years ago people couldn't see.

**AT:** One major drawback that a system like ProTools has is the third party plug-ins. Is that an area which Nuendo is cultivating.

**MG:** I'm not at liberty to talk too much about all the new partnerships we're establishing, but I think you'll find a number of significant announcements happening at NAMM 2001.

**AT:** The other attraction of dedicated DSP cards is the perception that host-based effects just aren't as good as hardware-based or TDM plug-ins, wouldn't you say?

**MG:** Yes, and to be honest some of the VST effects could be better. But Nuendo is a seriously professional product and that's why developers are looking at us as a serious platform. A good number of them will be Nuendo-specific plug-ins as well.

I think in the past developers, rightly or wrongly, suspected that VST users wouldn't pay the money to buy a serious plug-in such as a reverb – after all spending \$800 on a plug-in for an \$800 software program like Cubase, doesn't make much sense.

Meanwhile, pro users of Nuendo understand and are prepared to pay the money for serious host-based plug-in alternatives.

**AT:** Steinberg isn't going to say in a few years, "Nuendo's not going so well, let's go back to concentrating on our core 'cash cows' like VST and Wavelab"?

**MG:** No. It's a fair question to ask, but, for starters, there's already nearly 10,000 people using Nuendo worldwide. Not bad considering it was only released in April. But more importantly, I think Steinberg have too much to lose by doing something like that. They've put years of R&D into Nuendo and are hugely serious about making Nuendo work and making it work for professionals. I think you can be guaranteed that Steinberg will continue to put lots of weight behind Nuendo and continue to consult with the industry and regularly update it.

**AT:** Unlike the release of VST, with a pro product like Nuendo, you only really have one chance to get this release right. The professional post guys aren't going to take Nuendo on and say, "we'll I know it's not perfect but it's kinda neat and I'm sure Steinberg will make it better". It's going to be a case of 'yes or no' and they may not stop to consider it again for some time.

**MG:** I agree, and Steinberg are well aware of that. I think we've got a year to 18 months to make a positive impact on the post industry because, from then on, it'll be an uphill battle to change initial perceptions. But I believe Steinberg has got it right and will continue to get it right. The reaction has been great from the pros.

**DM:** And if you log onto nuendo.com you can see that the feedback's been incredible. Whether it's a DVD author in Sweden or a dubbing studio in Bombay, or pro users in New York or LA, people are getting incredible results.

## Automation

Most mixer parameters and enabled effects can be automated and displayed on Automation Subtracks. Cubase VST users will find the automation functions to be more sophisticated than they're used to: for example, Read and Write information can be enabled and disabled on individual channels.

Every mixer and plug-in effect can also be individually automated. Nuendo displays automation curves beneath the associated audio data and each Audio and Group Channel have their own sub-track display. This allows you to automate multiple parameters without individual data readouts cluttering the screen. Usefully, multiple automation grouped to a track can be muted individually.

Automation data can equally be adjusted via mixer control or by manually drawing a curve within the automation track. Parameters can also be automated by moving controls on the screen. 'Sel' on the mixer allows you to view your channel selection while the Common Panel can copy and paste settings between channels, including global control of Mute or Solo functions.

Nuendo certainly make viewing your automation nice and easy, while it was handy to have the variety of approaches for getting the job done.

## Surround

Nuendo supports virtually all surround sound formats – all you need is a soundcard with enough outputs and the correct complement of speakers. Up to eight channels of surround sound is offered, with presets for various formats which you can then adapt.

The Master setup window allows you to choose and name the speaker channels with adjustable angle and distance settings. The Outputs button provides output channels and format selection – Dolby 5.1, 6.1, 7.1 and LCRS are all supported. Once selected, output meters are matched with the format selected within the mixer.

With 5.1 surround, it's possible to 'hard-pan' directly to any of six outputs or, alternatively, the Surround Pan option offers full 360 degree surround on a joystick panner. With all those multi-channel panning possibilities you'll naturally be wanting to do some multi-channel processing. Steinberg offer just such a suite of these effects and processors, but at a price. Apart from the multi-channel effects and processors (up to eight channel functionality), the optional Nuendo Surround Edition provides LFE combining and splitting. So bear in mind that without the option Surround Edition there's currently no way of combining audio to the LFE channel and no divergence control is offered.

## Post Production Audio Needs

With the post production community in mind, Nuendo supports VITC, LTC, MTC, Sony nine-pin and ADAT



sync timecodes, word clock and Midi clock as well as sample-accurate sync with ASIO 2.0-compatible soundcards. The optional Timelock Pro synchroniser box generates word clock signal and can lock to video, VITC or LTC. Being able to lock to VITC and LTC simultaneously is a real luxury – one drops out, then Nuendo will immediately switch to the other. Furthermore, Nuendo also includes Matrix Encoder and Decoder plug-ins for converting to and from LCRS format for ProLogic-compatible encoding (apparently Dolby Digital encoding is in the pipeline). Steinberg also offers a list of different application templates, ranging from 'ProLogic Video Mixdown' and '24/96 DVD 5.1 Authoring', to '32-bit Stereo Master' and 'Audio/Midi Music Production'.

## Midi

Nuendo is an audio package first and foremost and Midi functionality definitely takes a back seat – which is not a bad thing for those of us working with real sounds day in, day out. Whereas your standard Midi+Audio sequencer's shortcomings have been in the audio department, Nuendo offers comprehensive audio tools and a reasonably perfunctory Midi functionality.

It's possible to import and export Midi files (including Cubase songs), as well as play back, record and edit Midi tracks. Users of Cubase will be happy to know that familiar menu commands such as Transpose, Delete Controllers, Legato, and Fixed Velocity can be applied to a Midi part. Double-clicking on a Midi part prompts the Midi Editor to rear its head. This brings up a toolbar much like the Project Window, except with a variety of

## Plug-In Effects

*Nuendo supports VST and DirectX plug-ins, which together provide more than 400 signal processing options from Steinberg and other third-party sources. Nuendo itself offers built-in effects plug-ins such as reverb, delay, chorus, flanging, phasing and dynamics (i.e. compression, gating and limiting) – all of which can be automated. The packaged reverb plug-in was useful but really nothing to write home about – there are a number of good third party VST reverbs out there for more critical spatial interpretations. I was particularly impressed with the preview of the forthcoming TC Surround Reverb – worth keeping an eye out for. But of the plug-in bundle that ships with Nuendo, I particularly liked the multi-band compression plug-in with as many as five bands offered. Nuendo also throws in Apogee's UV-22 dithering for free, which is a nice touch.*

Midi-specific options – note start and length, pitch velocity, and Midi channel parameters are all on show. The Note display and the Controller display allows editing of the likes of velocity, aftertouch, pitch bend and program change events, using pencil and line tools.

The Quantise options are fairly basic (compared to most sequencers), offering grid size, triplets or dotted notes, variable swing on the off beats, and size of the 'magnetic area' surrounding the beat (to demonstrate which notes are affected by the quantising). Unfortunately there is no score editor, no list editor to access SysEx data, and no drum editor. No doubt it's a conscious decision to omit these features, but I wonder whether a slightly more sophisticated Midi spec might be the happy (happier?) medium Steinberg are after.

## Conclusion

Working with Nuendo for the time that I did, it was easy to forget this was only v1.0. It was stable, it had the vast majority of the features I was hoping and expecting to see, and basically did what it said it would 'on the box' – say that about most first release software packages with Nuendo's sort of ambitions! The free version 1.5 upgrade will have arrived by the time you read this review and serves to continue to refine Nuendo's functionality.

But there again, Steinberg are aiming high with Nuendo and it does them no favours to say, "nice first effort boys". If Steinberg are going to give the post market a good shake they need to make sure every critical post production feature is brought on board smartly. For example, although Nuendo supports most EDL standards (like Open TL, Generic EEL for Adobe Premiere) it doesn't currently support others (e.g. CMX files). Meanwhile, many post users will be crying out for other surround sound codecs (like Dolby Digital). These may seem like a minor points, but if you're going to ask people to change allegiances or set up with Nuendo, it's got to have all the nitty gritty

## Hardware

**Nuendo 8 I/O:** This is a single rack-space breakout box with 24-bit A/D D/A's incorporating eight-channel balanced analogue I/O (-10 or +4 dB) via balanced quarter-inch connectors. This unit can also function as a digital patchbay and format converter. The quoted dynamic range is more than 110dB. The Nuendo 8 I/O can currently be used at sample rates between 32k and 48k. The built-in 24-bit digital router includes ADAT Lightpipe ports and Tascam TDIF I/O (with bit-splitting and copy modes) plus word clock I/O.

**Timelock Pro:** is an optional hardware synchroniser generating MTC from LTC, and VITC and word clock (or Digidesign Super Clock) from video sync or LTC. It supports 44.1k/48k sample rates including a 0.1% to 4% variation on these. The unit generates ultra low jitter word clock signal and can be used to lock to video, VITC or LTC.

**Hardware Control Surfaces:** Nuendo is compatible with many third party remote controllers (like those from JL Cooper, CM Automation and Radikal) for those who are better suited to physical knobs and faders. Meanwhile, Steinberg's Houston is a dedicated Midi/USB remote controller, featuring nine motorised faders, LED indicators, and a large LCD screen with a jog and wheel scrub for accurate audio positioning. Setups can be saved with marker positions, and Houston includes full access to the VST mixer. We won't see Houston till mid 2001.


**Nuendo AD8000 Converter:** Steinberg offer the AD8000 to cater for uncompromising clients requiring high-end conversion. It's essentially a rebadged Apogee AD8000 – professionally spec'ed and not cheap.

operation detail in order. Fortunately, it seems that Steinberg are taking their consultation process seriously and I'm assured these features will be added shortly.

Who's going to buy Nuendo? Well, anyone serious about working with audio. There may be some Cubase users who have outgrown the audio functionality of VST, and Nuendo offers a pretty inexpensive alternative for those people. What about the ProTools community? I can't see people dropping ProTools in a hurry. It's a fantastic system that has become a defacto standard in many ways and it is heavily supported by very sexy third party software (although, it looks like there's no shortage of those wanting to code for Nuendo). Saying that, Nuendo is less than half the price, and where budgets are tight, Nuendo offers a very serious alternative. In fact, it is cost effective enough to make many studios think about opening an extra editing suite (just bang those ProTools files in via OMF). How does it match up against the post pro heavyweights? I think it's unfair to make comparisons with systems five or 10 times the price – and that's really what we're talking about if you look at a Fairlight MFX3 or a DSP system. But again, it's reassuring for studios packing that kind of gear to have such a competent system as Nuendo available to add to their inventory.

Is a host-based system really a serious option for serious work? Yes it is. Computers seem to be getting more powerful as each day goes by, and this application really squeezes the most out of your PC (or Mac). If next year you decide you want more power, then buy a new computer – it's certainly a whole lot cheaper than a bunch of new proprietary hardware.

Nuendo's configuration options are also enticing. If you have the hardware then all you need is the Nuendo software. Meanwhile, bespoke-style packages are also on offer, (and anything in between).

So, in conclusion, Nuendo ran trouble-free for me and on other systems I witnessed – stable, bug-free operation. Sonically, Nuendo delivers the goods and has the editing and mixing tools required by professional audio users. Latency is low and the on-screen mixing is good. If you want a system with performance that moves forward with the march of technology and offers a professional approach to audio in the studio, Nuendo will have much appeal. Meanwhile, as a digital audio workstation, Nuendo successfully integrates video and surround sound. I think, above all, you really need to get hands-on and have a look yourself. Thoroughly worthy of further investigation. 

## Distributed by

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Nuendo on WWW: 'www.nuendo.com'

## Price

• Nuendo software: \$2,999; Nuendo Surround Edition: \$2,999; Nuendo Timelock Pro: \$2,499; Nuendo 96/52: \$1699; Nuendo 8 I/O: \$3,999; Nuendo Apogee AD8000: \$POA; Nuendo Studio System (software, surround edition, 96/52 and 8 I/O): \$9,999.