

F O R U M N O K I A

Nokia Audio Suite 2.0 User's Guide

Version 2.0; May 1, 2005

NOKIA

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Change History

26 October 2004	1.0	NAS 1.1
1 May 2005	2.0	NAS 2.0

1 Introduction

Nokia Audio Suite 2.0 (hereafter referred to as “NAS 2.0”) is an authoring tool designed for use by audio professionals who create audio content for mobile devices. More specifically, NAS 2.0 allows its user to monitor, analyze, create, and edit the SP-MIDI, MobileDLS and MobileXMF format types of audio content.

1.1 SP-MIDI File Format

There are no set standards for mobile devices that specify how many simultaneous sounds a certain phone model has to be able to reproduce. There are a large variety of phones in the market that are able to reproduce polyphonic content, usually within a range of 4 to 64 sounds at a time. This variety causes problems from the content provider's point of view.

One of the main functions of the NAS 2.0 is to convert existing MIDI files into MIDI content that is suitable for playback in mobile phones that support the playback of polyphonic MIDI content. A scalable Polyphony MIDI (SP-MIDI) file includes priority information for the Instruments of a MIDI song, and therefore facilitates the adaptation of a given song so that it becomes suitable for playback in different devices and with differing levels of available polyphony. The SP-MIDI information of a MIDI file is stored in a MIDI Sysex event.

For mobile applications, SP-MIDI provides flexibility to address differing customer needs. For example, some phones may have only 8-polyphony, while other models might offer 32-polyphony; yet the same content will play on either phone.

1.2 MobileDLS File Format

The MIDI Manufacturers Association (MMA) ratified the first widely accepted standard for transporting complete sounds between synthesizers in 1997. The Downloadable Sounds Level 1 Specification (DLS1) defines a cross-platform synthesizer model that allows producers to target a large range of playback devices with a single set of content while maintaining consistent playback across all devices. The Downloadable Sounds Level 2 Specification (DLS2) was introduced as an extension of DLS1 in 2000. The DLS2 specification, the result of collaboration between numerous hardware and software manufacturers, defines extensions to the DLS1 file format and a new playback device architecture.

MobileDLS offers a way of allowing wavetable synthesis to be based on the samples provided. The data that describes a MobileDLS instrument is loaded to the synthesizer, and the MobileDLS instrument can be played like any other MIDI instrument.

The MobileDLS specification defines a wavetable instrument representation format for mobile applications. A MobileDLS instrument functions in a similar manner to other sampler instrument types, but is much smaller and therefore highly suitable for mobile usage.

Technically, the MobileDLS format is based on the DLS2 file format and supports both DLS1- and DLS2-related technologies by using features introduced in the DLS2 specification.

MobileDLS data is stored in a MobileDLS Instrument collection, called a MobileDLS Soundbank, from where it is loaded to the playback synthesizer. Inside the MobileDLS Soundbank, MobileDLS instruments are stored in an Instrument Pool and the waveform audio files are stored in a Waveform Pool.

MobileDLS Instruments respond to MIDI control messages just like other MIDI Instruments. A MobileDLS Instrument can contain any sound - for example, song vocals or a fully composed musical piece. It doesn't have to represent a musical instrument at all.

A MobileDLS Instrument is created from at least one waveform sample, which typically represents a single pitch that is then modified by the playback synthesizer to create other pitches. Multiple samples are used to make the MobileDLS Instrument sound natural over a wider pitch range. Each sample is assigned to a certain pitch range, which is called a "region".

MobileDLS format allows every note to occupy its own region. Moreover, the timbre for each region can be made up of multiple samples, called layers, and different layers can be triggered depending on the velocity of the note. A single MobileDLS Instrument can therefore be used to produce a large variety of different sounds.

Samples can also have a specified "articulation". Articulation includes envelopes for the volume and pitch of the sound plus a low-frequency oscillator (LFO) to add vibrato, tremolo, and other effects to the sound.

1.3 XMF File Format

XMf (eXtensible Music Format) is a family of music-related file formats created and administered by the MIDI Manufacturer's Association (and by AMEI in Japan). XMf was specified in order to create an open standard file format for gathering into a single file all media assets required to render a MIDI note-based piece in a computer-based player (or possibly an instrument) with consistent audio playback across all players and platforms. The format should and suited for interactivity, content protection, meta-data, and the Internet – and to keep it simple.

The goal is achieved by including both DLS2 format and SP-MIDI formats together in a single XMf file. The MobileDLS Instruments are controlled by the scalable polyphony MIDI information that is also included in the XMf file. With the combination of MobileDLS and SP-MIDI elements content providers can now have more control over the way the actual musical piece sounds to the end user when played back from a mobile device.

1.4 MobileXMf File Format

MobileXMf, a subset of XMf, is the wireless industry's chosen open standard rich audio file format. Both MobileXMf and MobileDLS are approved for use in 3GPP Release 6 mobile terminals for downloadable media content and MMS services.

MobileXMf allows rich audio content to be delivered to a large variety of handsets but in a standard format for playback. MobileXMf defines what a file should sound like when played on a compatible device, taking into account polyphony limitations. For music producers, it means guaranteed quality as any standard MobileXMf file will offer consistent playback on all MobileXMf-enabled devices.

Game and application developers will gain the same benefits from MobileXMf as ringtone providers because MobileXMf can also be used to provide sampled sound effects, such as gunshots and explosions for mobile games. Typically an application can use custom music containing digital samples in a single file. Regardless of the playback device, the game's music and sound effects will play as the composer intended. The ability to attach metadata to a MobileXMf file gives composers and content distributors a mechanism for publishing information about the recording and distribution rights related to a copyrighted work inside the actual file.

The MobileXMf format provides the ability to incorporate custom instruments, samples, and MIDI sequencing data in a single file. For example, a MobileXMf file can contain vocals on top of MIDI data

to provide enhanced audio content to mobile devices while keeping the file size small. This makes MobileXMF files suitable for transmitting them over narrow-bandwidth networks.

Note: NAS 2.0 includes a MobileXMF example file. Once you have become acquainted with the basic utilities of NAS 2.0, you can use the MobileXMF (and the other test files listed in section 4 of this User's Guide) to introduce yourself to the MobileXMF and MobileDLS formats.

2 Nokia Audio Suite 2.0

2.1 VSTi Plug-in

NAS 2.0 is a VST-compatible plug-in Instrument. To use NAS 2.0, you will need a VST-compatible host sequencer program such as Steinberg's Cubase SX.

Developed by Steinberg and launched in 1996, Virtual Studio Technology (VST) enables the creation of a full studio environment on your PC or Mac. The VST standard allows the integration of virtual effect processors and instruments into your digital audio host environment. For example, these can be software instruments based on hardware Instruments or new effects in your VST system. VST plug-ins are designed to provide users with access to high quality sound and versatile production tools. VST plug-ins are generally divided into two types: VST Instruments (VSTi) and VST effects (VSTe).

VSTi plug-in architecture offers many benefits when using NAS 2.0 together with a host application. For example, when previewing a musical piece with NAS 2.0, you can revert back to the host environment if you need to make changes to your composition. You can also periodically check how the composition works in different handsets. The functionality of your host program is also available even when you start working from scratch with NAS 2.0.

In a typical NAS 2.0 usage scenario, MIDI songs are produced in Cubase and later imported into NAS 2.0 for adding SP-MIDI and MIDI Lights data and MobileDLS content if MobileXMF files are being produced. As an exception, MIDI Vibra parameters are inserted into MIDI files in Cubase.

2.2 Getting Started

This section describes the start-up process of NAS 2.0 after the software is installed on your PC. Installation instructions for NAS 2.0 are available at [Nokia_Audio_Suite_2_0_Installation_Guide.pdf](#).

The NAS 2.0 start-up process is described as from within Steinberg's Cubase SX 3 host application. If you are using a VST host application other than Cubase SX 3, please refer to its User's Guide for instructions on how to use VST plug-ins. NAS 2.0 supports a sampling rate of 44100 only.

- 1) Launch Cubase SX3.
- 2) From the Cubase file menu, choose "New Project".

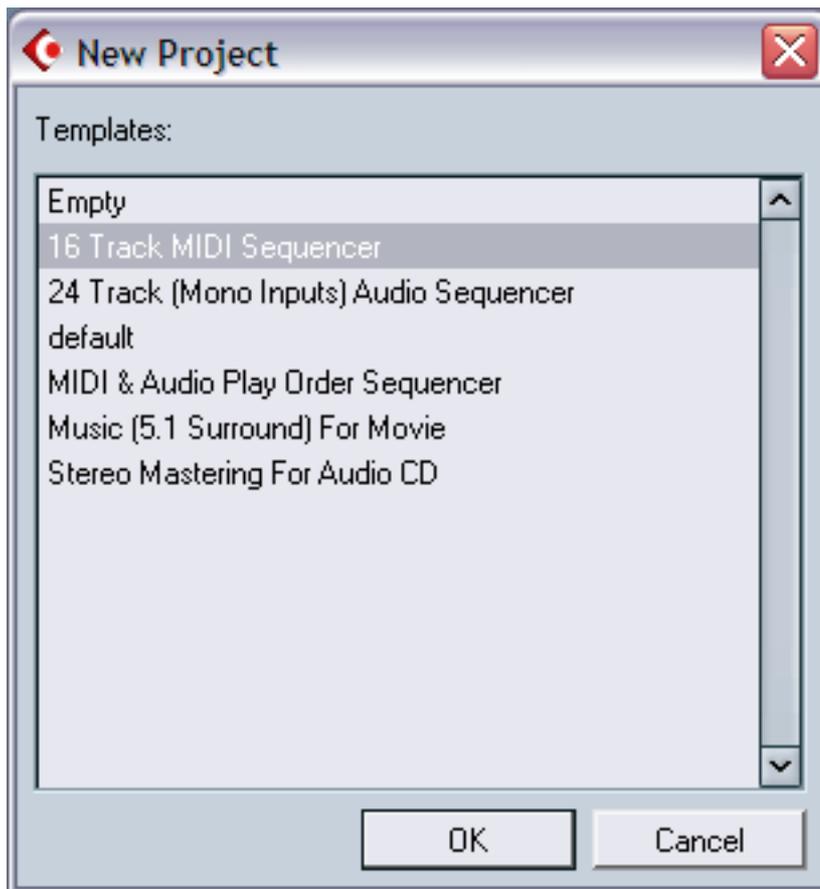


Figure 1: Cubase New Project

- 3) From New projects, choose a template, for example, "16 Track MIDI sequencer".
- 4) Select a working directory for the Cubase project from your hard drive.
- 5) Set sampling rate into 44100 from Project menu -> Project setup

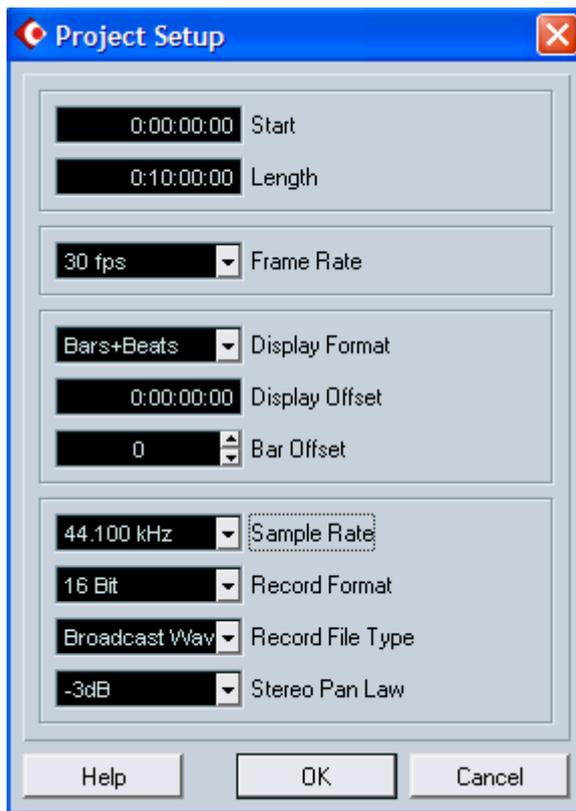


Figure 2: Project setup

6) Select VST Instruments from the Devices menu and select Nokia_Audio_Suite_2_0 from the drop-down menu.



Figure 3: VST Instruments dialog

7) When the NAS 2.0 plug-in is active, you can route MIDI messages from sequencer MIDI tracks to the NAS 2.0 plug-in.

Note: You can route all MIDI tracks to the NAS 2.0 plug-in by pressing the Ctrl-key while selecting Nokia_Audio_Suite_2_0 as a MIDI output.



Figure 4: MIDI track routing

8) You can set NAS 2.0 into Always on Top mode in Cubase from File/Preferences -> VST. From VST section, check Plug-in Editors “Always on Top” box.

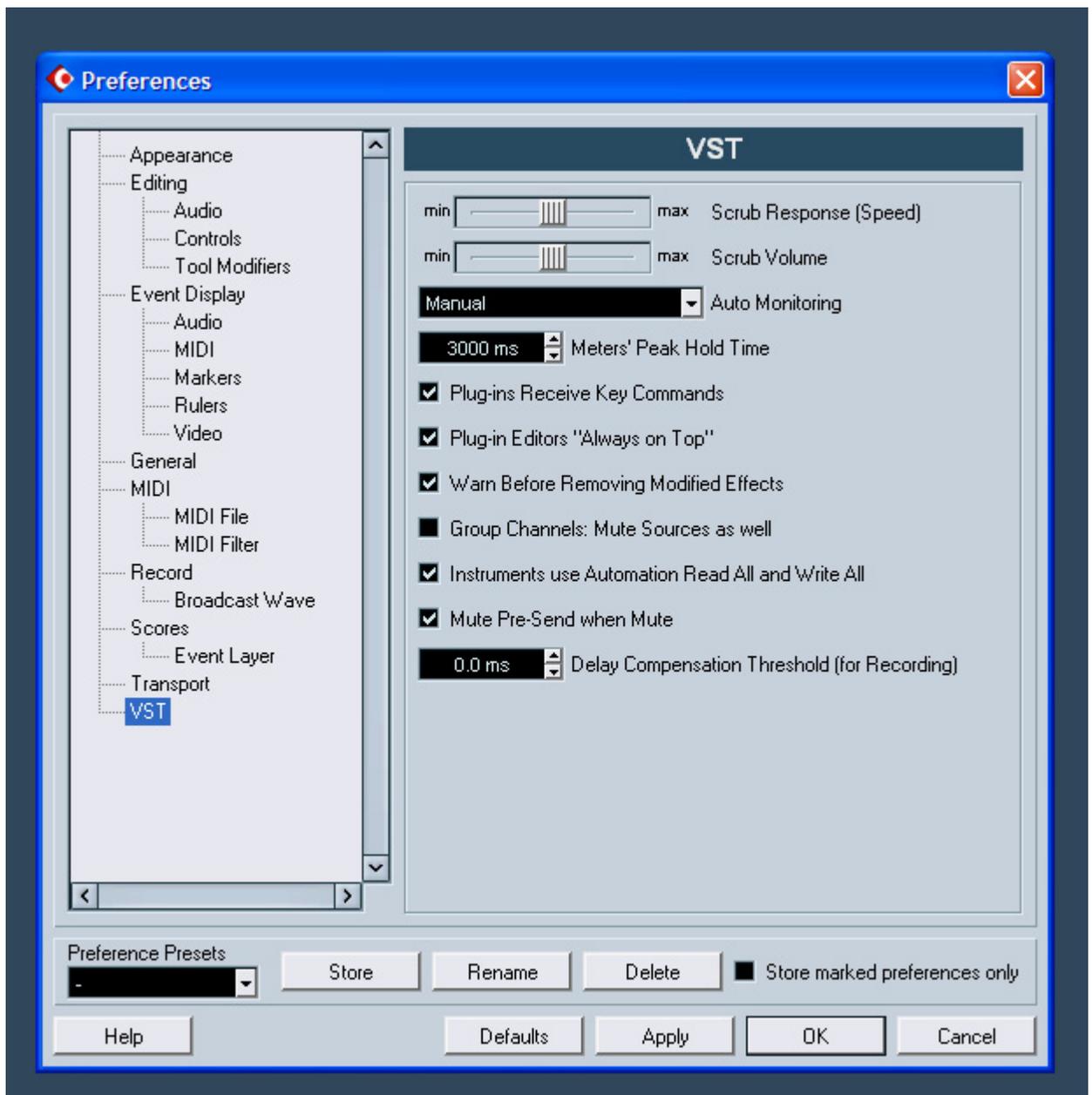


Figure 5: Setting Always on Top mode.

2.3 Project and Project file

When you open the NAS 2.0 plug-in, a new NAS 2.0 “Project” is automatically created and a tree structure with a MIDI node automatically appears in the Project Tree.

Everything that is visible in the Project Tree (MIDI data, DLS data, and metadata) belongs to a single Project (see Picture 5 below). The entire NAS 2.0 Project can be saved as a single file containing all data used in a single Project. This file is called a “Project file”. The Project file is a XMF (.xmf) file.

Note: In this context, *XMF*, the format of the Project file, should not be confused with *MobileXMF*. Nokia phones will offer playback of *MobileXMF* files and NAS 2.0 has been designed for production of *MobileXMF* content. *MobileXMF* files are created from Project files by using *MobileXMF* export functions of NAS 2.0. However, because the Project file itself is an XMF format file, NAS 2.0 can also be used for producing XMF format files. You can also use XMF and *MobileXMF* files as Project files.

With NAS 2.0, you can only operate with one Project at a time. However, this does not restrict the usage of certain files as components in a given pProject to a single Project. You can move all data (MobileDLS Instruments, audio files, SP-MIDI files and MobileDLS Soundbanks) between different Projects. Transferring data between different Projects is done by using the import/export functions of NAS 2.0 that are available for each file format.

Note: If you are closing a Cubase Project and you have not saved your NAS 2.0 Project, you will be prompted to save the NAS 2.0 Project.

2.4 Navigation

The graphical user interface of NAS 2.0 is divided into four main sections: **1) Toolbar**, **2) Navigation Buttons**, **3) Project Tree**, and **4) Main Editor Window**.

The functionality that provides you with the capability to monitor, analyze, edit, and create SP-MIDI, MobileDLS, and MobileXMF content is divided into separate Editors (and in the case of MobileDLS Editor, sub-Editors). Each of these Editors corresponds to a content type and a specific node in the Project Tree. Each Editor, when accessed, will open in the NAS 2.0 Main Editor window.

Editors and their utilities are described in detail in section 3 of this User's Guide.

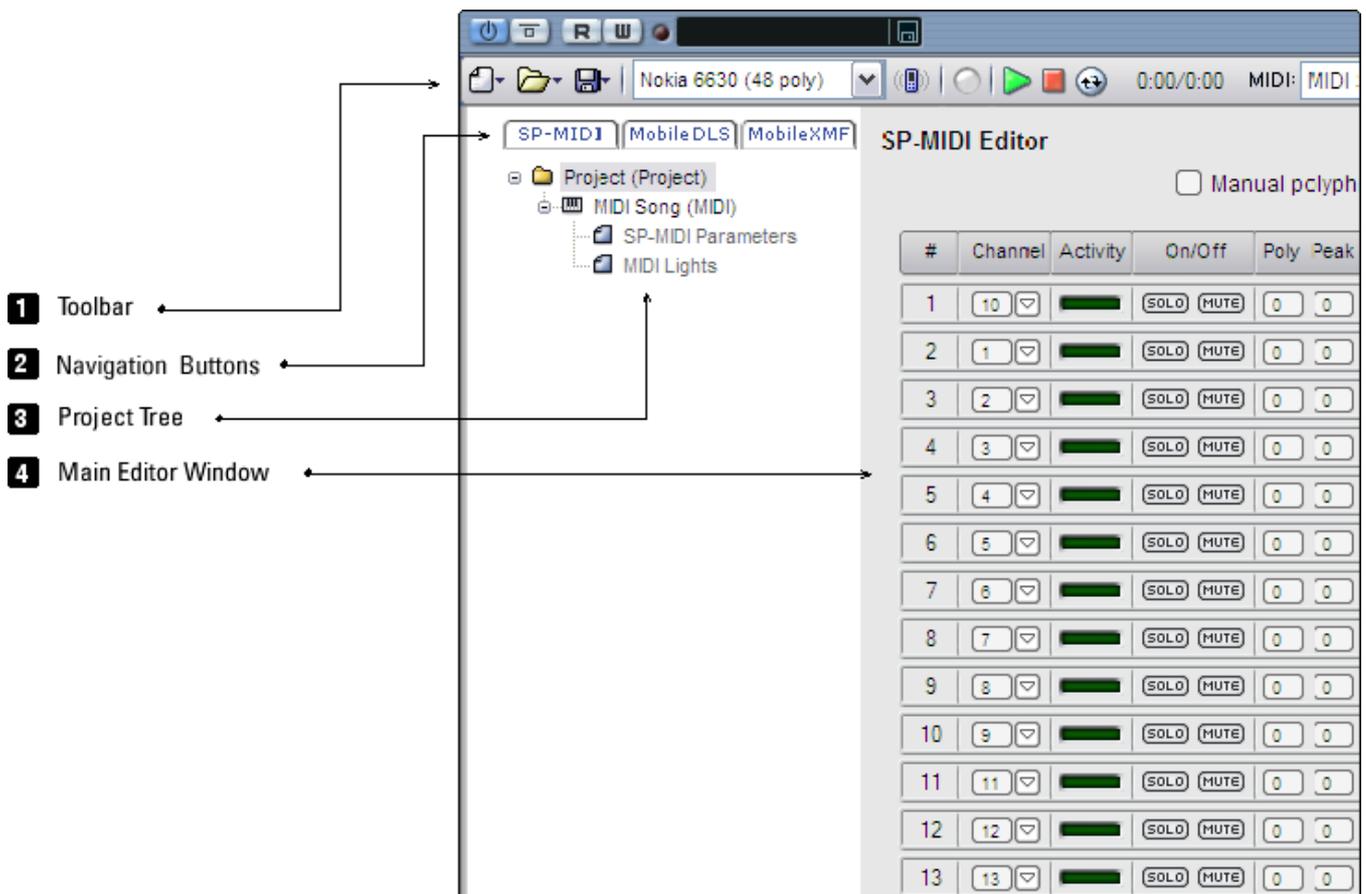


Figure 6: Main sections of NAS 2.0

1) The Toolbar provides you with universal access and management functionality within NAS 2.0. It also has a File Player for global playback of Project files.

2) Navigation Buttons provide an alternative navigation method to using the Project Tree by offering direct access to the main Editors of NAS 2.0.

3) **The Project Tree** is a hierarchical menu on the left side of the Main Editor window. All the data of a Project will be visible, structured hierarchically, in the Project tree. Project Tree can be used to access each Editor of NAS 2.0 by clicking a corresponding node in the Project Tree.

4) **Main Editor Window** displays the Editor that is currently active. At start-up, SP-MIDI Editor will be displayed in the Main Editor view by default (and a corresponding, new MIDI node is automatically created and displayed in the Project Tree).

2.5 Project Tree

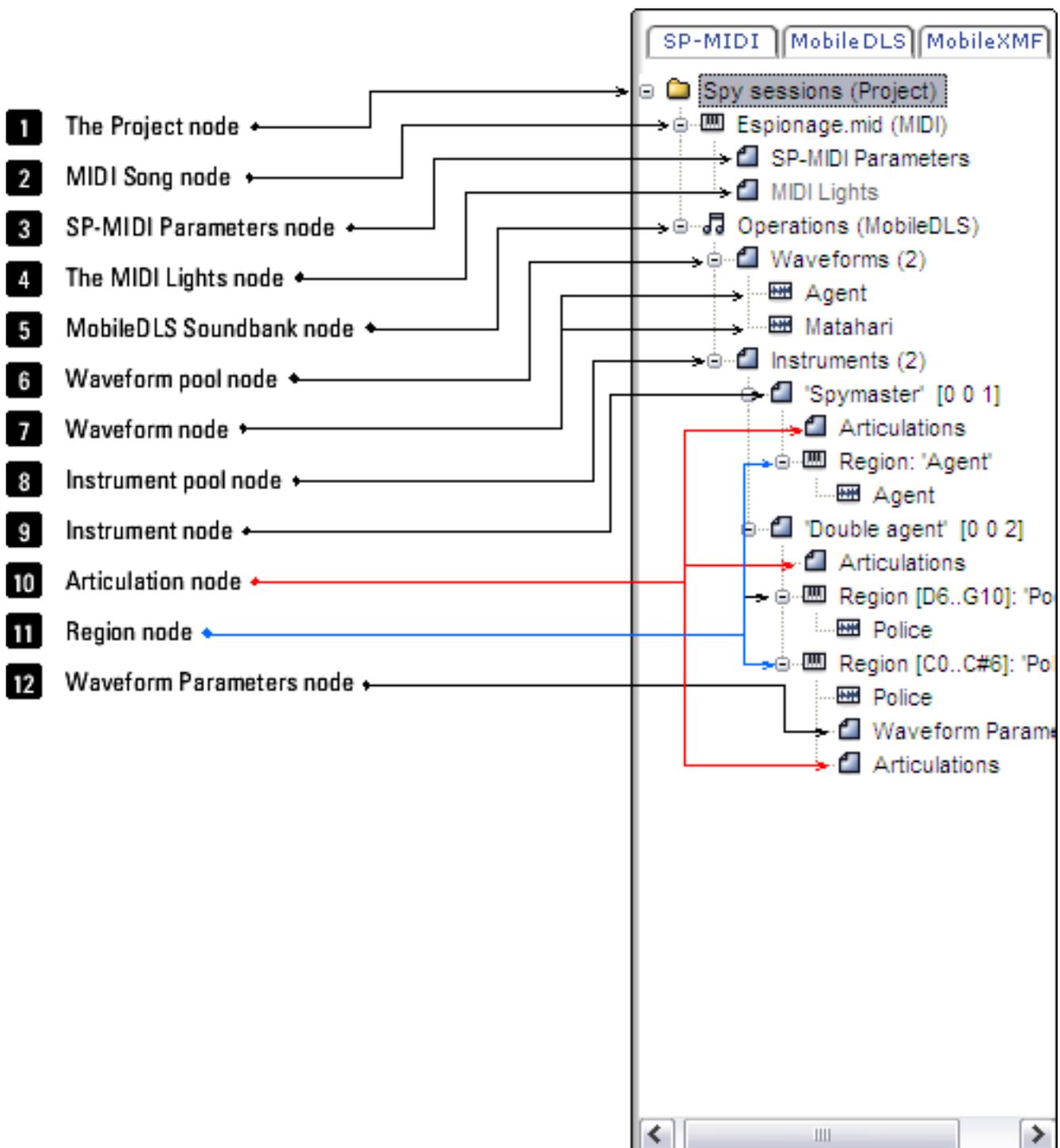


Figure 7: NAS 2.0 Project Tree with node types named and numbered

The Project Tree is a hierarchically structured, tree-type menu detailing the Project file, its internal structure, and its stored data. The Project Tree is the main navigation utility in NAS 2.0, and it provides access to the different types of Editors.

Folders and icons visible in the Project Tree are called “nodes”. In the Project tree, all the resources of a specific Project (MIDI files, Mobile DLS files, XMF folders) and their sub-resources are organized inside a single, overall Project node.

Each node represents a corresponding resource of a Project. For example, if you load a MobileDLS Soundbank into a Project, a new MobileDLS Soundbank node, containing all the related data, will appear in the Project Tree.

Clicking a specific node in the Project Tree will open a corresponding Editor, Properties Editor, or a Pool in the Main Editor window of NAS 2.0, with the exception of Waveform Pool and Instrument Pool, which have no corresponding utilities.

Editors are a set of utilities for manipulating different types of data. Properties Editors are a set of utilities for manipulating information regarding different types of files. Pools are container nodes that are only used for data storage.

The table below lists all node types and their corresponding Editors, Properties Editors, or Pools. The numbering of nodes corresponds with the numbering of nodes in Figure 5.

Node name	Corresponding Editor/Properties Editor/Pool
Project node (1)	Project Properties Editor
MIDI Song node (2)	MIDI Properties Editor
SP-MIDI Parameters node (3)	SP-MIDI Editor
MIDI Lights node (4)	Lights Editor
MobileDLS Soundbank node (5)	MobileDLS Properties Editor
Waveform pool node (6)	None
Waveform node (7)	Waveform Editor
Instrument pool node (8)	None
Instrument node (9)	Instrument Editor
Articulation node (10)	Instrument Editor
Region node (11)	Instrument Editor
Waveform Parameters node (12)	Waveform Editor

Next to each node icon in the Project Tree there are also a plus (+) and a minus (-) sign. A plus sign indicates that there are additional contents in that node that are currently not visible in the Project Tree. The plus sign can be used to expand the tree view to show underlying sub-nodes. Clicking the minus retracts the sub-node displayed for that node.

Right-clicking a specific node will open a menu with a list of node-related functions. Some of these functions are standard type (such as “save as”) and are not explained in this User’s Guide. Other functions appear in the menus of multiple nodes and are only explained once.

Note: Some of the menus contain functions that will only become visible in the menu when a certain action is taken.

Note: You can also use the jog-wheel of your mouse to adjust values in all spin-controlled fields and meters.

2.5.1 The Project Node

A Project node, the topmost node in the Project Tree hierarchy, represents the whole Project file that is currently open in NAS 2.0. A typical Project node will contain at least one MIDI Song node.

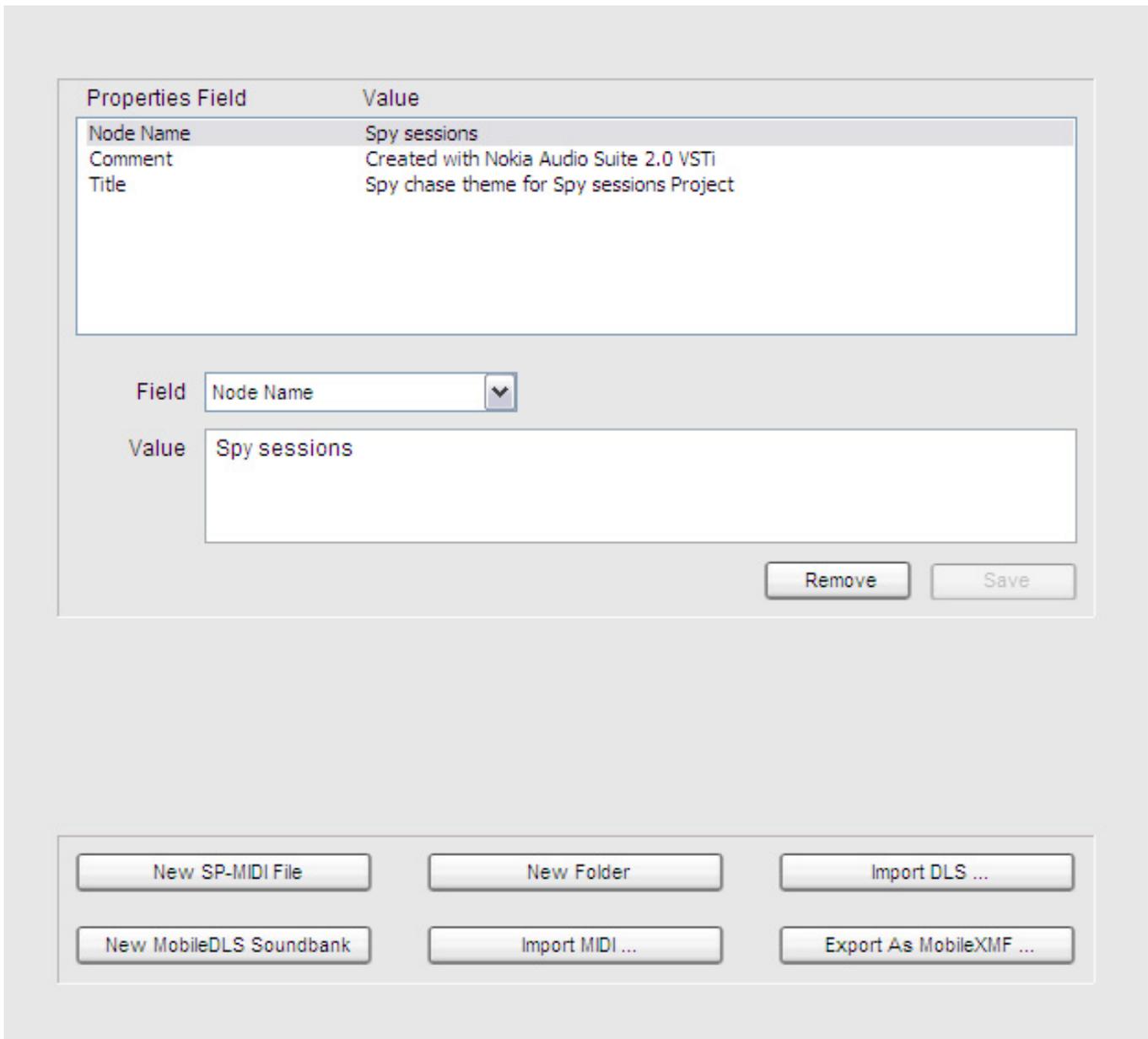


Figure 8: Project Properties Editor

Project Properties Editor

The Project Properties Editor contains general information regarding the Project file. You can also add the title of the Project and copyright notice for the Project by choosing the information type from the

Field box, entering the information text into the Value field and clicking Add. Using the Remove button deletes the information you have selected.

The Project Properties field also contains buttons for the New SP-MIDI file, New folder, Import DLS, New MobileDLS Soundbank, Import MIDI, and Export as MobileXMF functions. These functions can also be accessed by right-clicking the Project node and are listed and explained below.

Right-clicking the Project node:



/Open Project

/Save Project

/Save Project as

/New Project:

New Project creates a new Project file with an empty MIDI Song node. When using this function, a dialog box will ask you if you want to discard the current Project and create a new one. If you want to keep your current Project, you should save it before opening a new one.

/New SP-MIDI file:

Creates a new empty MIDI Song node in the Project Tree.

/New MobileDLS Soundbank:

Creates a new empty MobileDLS Soundbank node in the Project Tree and opens the Instrument Editor in the Main Editor window.

/Import MIDI / SP-MIDI

Imports a MIDI file into the Project and creates a corresponding MIDI Song node, SP-MIDI Parameters node, and MIDI Lights in the Project Tree. If the imported MIDI file has no SP-MIDI or MIDI Lights data, the SP-MIDI Parameters node and MIDI Lights will be empty.

/Import DLS / MobileDLS

Imports a DLS or a MobileDLS Soundbank into the Project and creates a corresponding MobileDLS Soundbank node into the Project Tree.

If the MobileDLS Soundbank in question has Instruments that are comprised of the waveform audio files inside it (as is usually the case), Import DLS also creates corresponding Waveform Pool nodes, Waveform nodes, Instrument Pool nodes, Instrument nodes and Region nodes.

If the MobileDLS Soundbank also contains articulation data, a corresponding Articulation node is also created in the Project Tree.

/Export as MobileXMF:

Export as MobileXMF opens the MobileXMF Editor in the Main Editor Window for creating MobileXMF files from Project components by using the MobileXMF export utilities of the MobileXMF.

/Rename

2.5.2 MIDI Song Node

A MIDI Song node represents a single MIDI file inside the Project. A MIDI Song node contains the MIDI data of the file. By default a MIDI song node also contains SP-MIDI Properties and MIDI Lights nodes, which contain the corresponding data, if the MIDI file in question contains any.

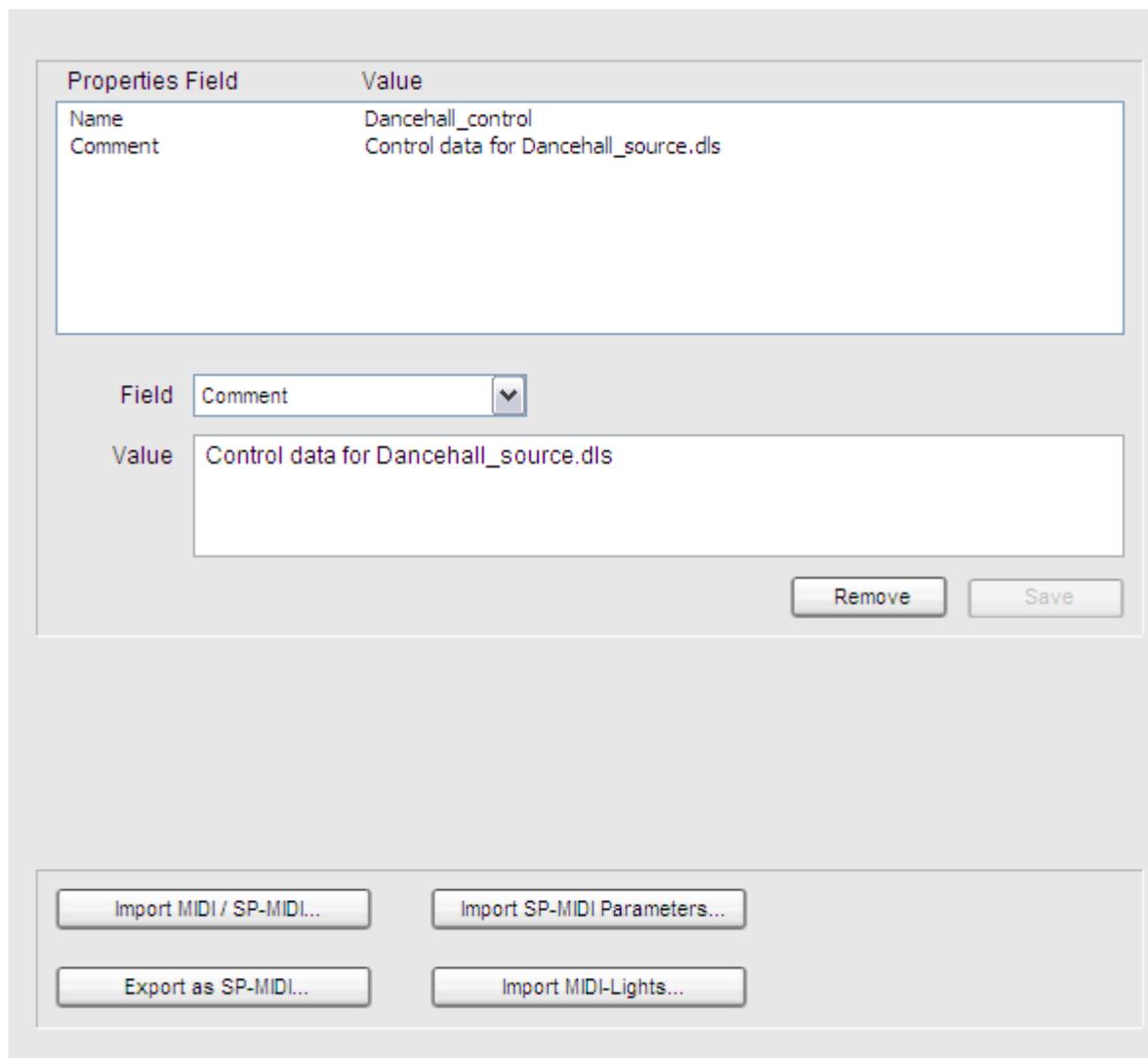


Figure 9: MIDI Properties Editor

The MIDI Properties Editor contains general information about the MIDI file. You can also add Title of the Project and Copyright notice information regarding the Project by choosing the information type from the Field box, entering the information text to the “Value” field and clicking Add. Using the Remove button deletes the information you have selected.

The MIDI Properties Editor also contains the following functions:

/Import MIDI /SP-MIDI

Imports a MIDI file, with its SP-MIDI and MIDI Lights data (if any) into the MIDI Song node.

/Import SP-MIDI Parameters

Imports the SP-MIDI Sysex data of a MIDI file into the SP-MIDI Parameters node. You can use this function to utilize SP-MIDI Sysex data that has been previously created with a new MIDI file (for example, if you have created a SP-MIDI profile that is suitable for (a) certain Nokia phone model(s) and you want to use the same profile for new MIDI files that you are producing).

/Export SP-MIDI

Exports the contents of the MIDI Song node (and SP-MIDI Parameters node and MIDI Lights node, if any) as a SP-MIDI file into the hard drive.

/Import MIDI Lights

Imports the MIDI Lights data of a MIDI file into the MIDI Lights node.

Right-clicking the MIDI Song node icon:



/Play

Starts the playback of the MIDI file inside the MIDI Song node, if any.

/Import MIDI / SP-MIDI

/Export as SP-MIDI

/Copy/Paste

/Delete

/Duplicate

Duplicates the active MIDI Song node by creating a duplicate of the node in the Project Tree.

/Rename

2.5.3 SP-MIDI Parameters Node

SP-MIDI Parameters node is a sub-node of MIDI Song node and it represents the Scalable Polyphony information of a MIDI file.

Right-clicking the SP-MIDI Parameters node icon:



/Import SP-MIDI Sysex message

/Copy/Paste

2.5.4 The MIDI Lights Node

MIDI Lights is a sub-node of MIDI Song node and it represents the MIDI Lights information of a MIDI file.

Right-clicking the MIDI Lights node icon:



/Import MIDI Lights:

Imports MIDI Lights data from another MIDI file into the active MIDI file.

/Copy/Paste

2.5.5 MobileDLS Soundbank Node

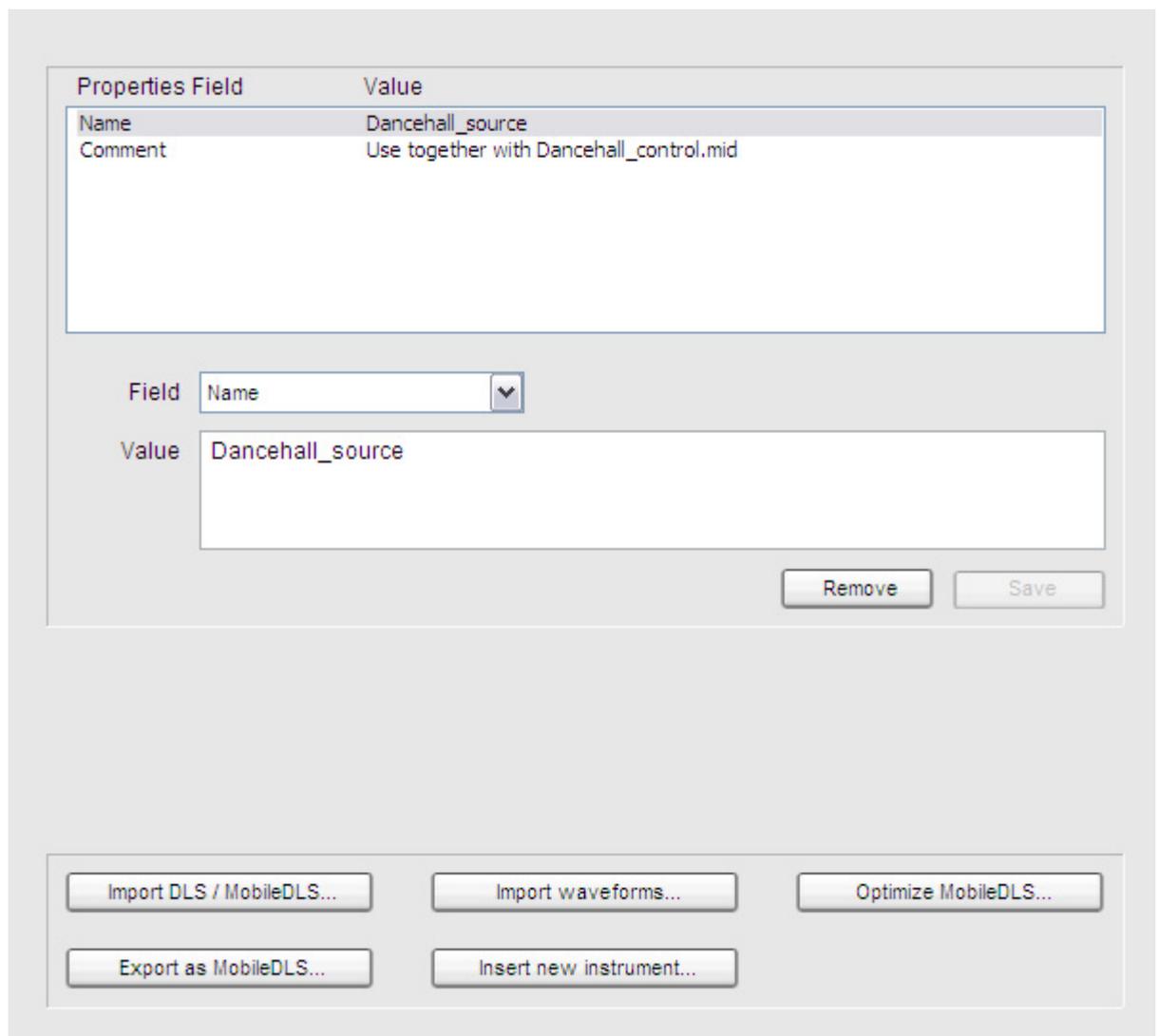


Figure 10: MobileDLS Properties Editor

The MobileDLS Soundbank node represents a mobileDLS file inside the Project. If the MobileDLS Soundbank in question contains MobileDLS Instruments that are comprised of waveform audio files inside it (as is usually the case), MobileDLS Soundbank node also has corresponding Waveform Pool nodes, Waveform nodes, Instrument Pool nodes, Instrument nodes, and Region nodes as its sub-nodes.

If the MobileDLS Soundbank also contains articulation data, a corresponding Articulation node is also created in the Project Tree.

The MobileDLS Soundbank Properties Editor contains general information regarding the MobileDLS Soundbank file as it is shown in the Project Tree. You can also add Resource Format, File name on disk, File name extension on disk, MIME Type, Title, Copyright notice, and Comment copyright notice information regarding the Project by choosing the information type from the field box, entering the information text into the field and clicking Add. Using the Remove button deletes the information you have selected.

The MobileDLS Soundbank Properties Editor also contains the following functions:

/Import DLS / MobileDLS

/Import waveforms

Import waveforms imports waveform audio files from the hard drive into the Waveform Pool of the active MobileDLS Soundbank.

/Optimize MobileDLS

Optimizes the active MobileDLS Soundbank by deleting waveform audio files that are not used (that is, files that have not been assigned to a region) by any Instrument from the Waveform Pool.

/Export as MobileDLS

/Insert New Instrument

Insert New Instrument creates a new, empty Instrument node in the Instrument Pool of the active MobileDLS Soundbank.

Right-clicking the MobileDLS Soundbank node icon:



/Import WAV:

Imports the waveform audio files from the hard drive into Waveform Pool of the active MobileDLS Soundbank.

/Export as MobileDLS:

/Copy /Paste**/Delete:**

Deletes the MobileDLS Soundbank and all its contents from the Project.

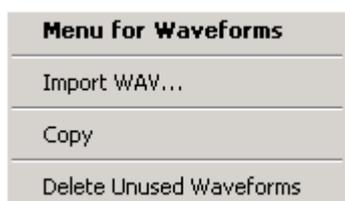
/Rename**/Duplicate****/Edit MobileDLS Bank Properties**

Opens a MobileDLS Properties dialog box for viewing and editing Soundbank-specific metadata.

2.5.6 Waveform Pool

Waveform Pool is a sub-node of the MobileDLS Soundbank node. It is a container type node that contains all the audio data of the MobileDLS Soundbank it is assigned to. Each MobileDLS Soundbank has only one Waveform Pool and if you import waveform audio files into a MobileDLS Soundbank, they are all stored in the same Waveform pool.

NAS 2.0 supports mono audio data in WAVE format, in 8- and 16-bit resolution and with any sample rate. When a stereo waveform audio file is imported, it is automatically converted into a mono file.

Right-clicking the Waveform pool icon:**/Import WAV:****/Copy/ Paste:****/Delete Unused Waveforms:**

Deletes waveform audio files that not used by a MobileDLS Instrument from the Waveform Pool. Unused audio files are displayed as grayed out in the Waveform Pool.

2.5.7 Waveform Node

A Waveform node represents each single waveform audio file and is automatically created for each waveform audio file that is imported into the Project. A Waveform node is a sub-node of a MobileSound Soundbank node and its Waveform Pool.

Note: In the Project Tree, waveform audio files that are used by a certain Instrument are also displayed as Waveform nodes under that Instrument's region.

Right-clicking the Waveform node icon:

Menu for rimefxA#5
Enable Waveform Parameters New Instrument
Export as WAV...
Copy Duplicate Rename
Select Waveform Select View Range
Show Selection Show All
Make Loop from Selection Find Loop from Selection
Copy Waveform Cut Waveform Trim Waveform
Normalize Fade In Fade Out

/Enable Waveform Parameters:

Enable Waveform Parameters sets on the Enable Waveform Parameter function of the Waveform Editor (see section 3.2.1). Enable Waveform Parameters function is only available in the menu if the Waveform Parameters node does not exist.

/New Instrument:

New Instrument creates a new Instrument from the selected Waveform node with the same name than the waveform audio file it was created from. The new Instrument has a single region covering the full octave range (from C-2 to G8) of an Instrument and it uses the selected waveform audio file as its sound source.

/Export as WAV

Export as WAV exports the waveform audio file contained in the Waveform node into the hard drive.

Note: NAS 2.0 saves optional data chunks into the waveform audio file to contain loop and tuning parameters etc. These data chunks may not be recognized at all or properly ignored by some music players or audio editing software that otherwise support the playback of WAV files.

/Copy

/Duplicate

/Rename

/Select Waveform

Selects a complete waveform audio file as selected range.

/Select View Range:

Select View Range sets the start and end position of a selection. When using Select View Range, start and end points are positioned to cover the whole current view of the waveform audio file (that is, the whole range of the waveform audio file that is visible in the Waveform Editor).

Note: You can use the Zoom In/Out functionality to adjust the selection range covered by the Select View Range function. The closer you zoom, the shorter the selected View Range is.

/Show selection

Displays a selected range.

/Show all:

Show all displays the full length of the selected waveform audio file in the Waveform Editor (that is, the Waveform Editor displays the file as fully zoomed out).

/Make Loop from Selection:

Make Loop from Selection sets Enable Waveform Parameters on and adjust loop length according to the selected range. If no Loop Type has been chosen from the Waveform Editor, Make Loop from Selection also sets the Loop Type on Normal Loop. If the Loop Type has already been set on Loop and Release, Make Loop from Selection does not affect the Loop Type.

/Find Loop from Selection:

Find Loop from Selection is similar to Make Loop from Selection, but it automatically finds the optimal Loop start and end positions for a selected range of the waveform audio file. Find Loop from Selection searches and chooses the zero crossings nearest to the start and end positions of the selected range.

/Copy Waveform

Copy Waveform copies a selected range out of the selected waveform audio file into the Internal Clipboard of NAS 2.0.

/Cut Waveform

Cut Waveform cuts a selected range out of the selected waveform audio file into the Internal Clipboard of NAS 2.0. You can copy the cut range of the waveform audio file into another waveform audio file. Clipboard contents are inserted into the start of the selection range of the selected waveform audio file

/Trim Waveform

Trim Waveform cuts off all audio data from outside the selected range of the waveform audio file. Trim can only be used if you have selected the range from a waveform audio file in the Waveform Editor.

/Normalize:

Normalize maximizes the gain of the selected waveform audio file without having any effect on relative volume within the waveform audio file.

/Fade in/Fade Out:

Fade in/Fade out creates a fade in or fade out effect on the selected range of the waveform audio file.

2.5.8 Instrument Pool

The Instrument pool is container-type sub-node of the MobileDLS Soundbank node. The Instrument pool always contains one Instrument node for each Instrument of the MobileDLS Soundbank.

If the Instrument Pool contains a region or regions that have waveform audio files allocated for them, the Instrument Pool displays region sub-node(s) and the waveform audio files under each region.

If the regions have articulation data, an articulation sub-node will be visible.

If the region has specified waveform audio file parameters (specified in the region section of the Waveform Editor), a Waveform Parameters node will be visible.

Right-clicking the Instrument pool icon:



/New Instrument:

New Instrument creates a new Instrument node with one region using the lower-most waveform audio file in the Waveform Pool.

/Copy/ Paste

2.5.9 Instrument Node

Instrument node represents separate MobileDLS Instruments that are stored in the Instrument pool of the MobileDLS Soundbank; each Instrument will have its own respective Instrument node.

The Instrument node contains a Region node for each region specified for an Instrument. The Instrument node will always contain an Articulation node, even if no Instrument-specific Articulation data has been set. This Articulation node will contain the articulation data that applies to all regions of an Instrument.

If region-specific articulation data has been set with the Articulation Editor section of the Instrument Editor (by using the Region Specific radio button), the region will also have its own Articulation node.

Right-clicking the Instrument node icon:



/New Region:

New Region creates a new region inside the selected MobileDLS Instrument and copies the lower-most waveform audio file into the new region. The new region will cover the whole octave range (from c0 to g10) and velocity range (from 0 to 127) possible for an Instrument.

/Copy/Paste

/Delete

/Duplicate

/Rename

2.5.10 Articulation Node

Articulation node represents either (i) the articulation data of a MobileDLS Instrument or (ii) the articulation data of a region inside the MobileDLS Soundbank. A MobileDLS Instrument will always have an Articulation node, even if no articulation data has been specified for that Instrument.

A region will only have its own Articulation node, if region-specific articulation data has been set with the with Articulation Editor section of the Instrument Editor (by using the Region Specific radio button). If all the regions of an Instrument contain their own region-specific articulation data, the Articulation node of that Instrument is greyed out in the Project Tree.

Right-clicking the Articulation node icon:



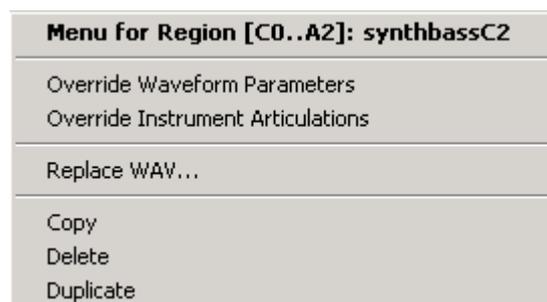
/Copy/Paste

2.5.11 Region Node

Region node represents a region of a MobileDLS Instrument. A single Instrument can contain one or more region nodes, depending on the amount of regions that have been set for the Instrument.

A region specifies the pitch range and velocity layers of a waveform audio file assigned to a MobileDLS Instrument. If region-specific articulation data has been set, the region will also contain that data.

Right-clicking the Region node icon:



/Override Waveform Parameters:

Override Waveform Parameters will override the waveform parameters set for a waveform audio file with the Waveform Editor. With this function, you can set region-specific parameters for a waveform audio file. Override Waveform Parameters will create a Waveform Parameters node under the active region for the new waveform parameter data.

Note: If you want to disable your current overriding waveform parameters, you can use the delete function to remove the Waveform Parameters node from the region node.

/Override Instrument Articulations:

Override Instrument Articulations enables you to set region-specific articulation data for the selected region. A new Articulation node is created under the selected Region node and Articulation is set to Region Specific in the Instrument Editor.

Note: This function is identical to using the modifying the Articulation mode directly from the Instrument Editor (by setting the Articulation radio button to Region Specific).

/Replace WAV:

Opens a dialog box for importing a waveform audio file and replaces the existing file with the imported file.

/Copy/Paste**/Delete****/Duplicate**

2.5.12 Waveform Parameters Node

A Waveform Parameters node represents the waveform parameters settings of a waveform audio file. A Waveform Parameters node can be present either under (i) Waveform node, or (ii) Region node.

A Waveform Parameters node will only be present if Enable Waveform Parameters has been enabled in the Waveform Editor (by ticking the Enable Waveform Parameters check box) or if Override Waveform Parameters has been activated for a region.

Right-clicking the Waveform Parameters node icon:

Menu for Waveform Parameters
Copy
Delete
Select View Range
Show Selection
Make Loop from Selection
Find Loop from Selection
Copy Waveform
Cut Waveform
Trim Waveform
Normalize
Fade In
Fade Out

/Copy/Paste**/Delete**

2.5.13 Copy, Paste, and Drag and Drop functions in the Project Tree

If you use copy and paste functions for any node in the Project Tree environment during the copy phase of the copy-paste action, the node(s) in question are only marked as copied, and they are actually copied during the paste phase of the action. Copied items are marked **in bold** until they are pasted.

Therefore, if you make changes to the data contained in a node after using the copy function for such data, (but before pasting it), the altered data is copied when paste is used. The copy and paste of NAS 2.0 do not utilize the Windows Clipboard; NAS 2.0 Internal Clipboard is used instead.

NAS 2.0 has two types of drag and drop functionality: 1) External drag and drop from outside NAS 2.0, and 2) Internal drag and drop within a Project.

With External drag and drop, you can drag files from outside NAS 2.0 and drop them to a compatible node in the Project Tree. Internal drag and drop allows you to copy node contents within different nodes inside a Project and works in the same way as Copy/Paste.

2.5.13.1 Copy/Paste and Drag and drop operations between nodes

Internal Copy/Paste and drag and drop operations:

Source	Destination(s)	Operation
MIDI Song node	Project node	MIDI Song node is duplicated into the destination
MIDI Song node	MIDI Song node	MIDI Song contents are copied into the destination
MIDI Lights node	MIDI Song node/ MIDI Lights node	MIDI Lights data is copied into the destination
MIDI Lights node	MIDI Song node/ MIDI Lights node	MIDI Lights data is copied into the destination
SP-MIDI Parameters node	MIDI Song node/ SP-MIDI Parameters node	SP-MIDI Parameters are copied into the destination
SP-MIDI Parameters node	MIDI Song node/ SP-MIDI Parameters node	SP-MIDI Parameters are copied into the destination
MobileDLS Soundbank node	Project node	MobileDLS Soundbank node is duplicated into the destination
Waveform pool	Waveform pool	Waveform audio file from the source pool are copied into the destination pool
Waveform node	Instrument pool	A new Instrument node is created into the destination and the contents of the Waveform node are copied into the Waveform pool of the MobileDLS Soundbank
Waveform node	MobileDLS Soundbank node/ Waveform pool	Waveform audio node is copied into the Waveform pool of the MobileDLS Soundbank

Waveform node	Instrument node	Waveform node is copied into the Waveform pool and a new region is created into the MobileDLS Instrument assigned to the waveform audio file
Waveform node	Region node	Region is assigned to the waveform audio file Note: When copying a waveform audio file from another MobileDLS Soundbank into the destination Soundbank, which does not contain the same waveform audio file already, region is assigned to the copied file
Instrument pool	Instrument pool	MobileDLS Instruments from the source pool are copied into the destination pool
Instrument node	MobileDLS Soundbank node Instrument pool	Instrument node is copied into the Instrument pool of the MobileDLS Soundbank node
Articulation node	Instrument node	Articulation data is copied into the MobileDLS Instrument
Articulation node	Region node	Articulation data is copied into the region and if no Articulation node already exists, a new Articulation node is created for the copied data
Region node	Instrument node	Region is copied into the destination
Waveform Parameters node	Waveform node	Waveform Parameters are copied into the destination and if no Waveform Parameters node exists in the destination, a new Waveform Parameters node is created for the copied data.

External drag and drop operations:

File type	Destination	Operation
MIDI / SP-MIDI file	Project node	MIDI Song node(s) are created under the Project node for each file
DLS / MobileDLS file	Project node	MobileDLS Soundbank node(s) are created under the Project node for each file
WAV file	Waveform pool	WAV files are copied into the Waveform pool

2.6 Navigation Buttons



Figure 11: Navigation Buttons

Navigation Buttons provide you with an alternative navigation method for the Project Tree within NAS 2.0.

- 1) SP-MIDI Button provides direct access to the SP-MIDI Editor that has been most recently active, regardless of whether or not parameters have been modified with the Editor.

Note: At the start-up of NAS 2.0, clicking the SP-MIDI Button has no effect, because no action has been taken yet, and the SP-MIDI Editor is available in the Main Editor Window by default.

- 2) MobileDLS Button provides direct access to the MobileDLS Editor (either MobileDLS Properties Editor, Instrument Editor, or Waveform Editor) that has been most recently active, regardless of whether or not parameters have been modified with the Editor.

At the start-up of NAS 2.0, or if no DLS Soundbank node exists in the Project Tree yet, clicking the MobileDLS Button will create a new, empty MobileDLS Soundbank node with an empty Waveform Pool and Instrument Pool with an empty Instrument node.

- 3) MobileXMF Button opens the MobileXMF Export Editor into the Main Editor Window.

Note: If you have created a new node of any type into the Project by using the Project Tree or Toolbar utilities, this node is considered to be the most recently active and a corresponding Editor will open.

2.7 The Toolbar

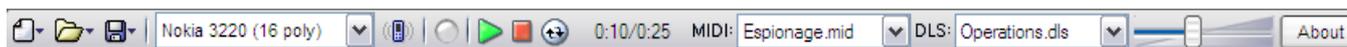


Figure 12: Toolbar

The Toolbar contains a set of general Project management and preview playback utilities.

Toolbar functions:

New Project:

New Project creates a new and empty Project file that contains an empty MIDI Song node, SP-MIDI Parameters node and MIDI Lights node. When opening a New Project from the Toolbar, NAS 2.0 will ask for confirmation for discarding the previous Project, if an existing Project is open in the Project Tree.

Note: Since you can only have one Project open at a time in NAS 2.0, so if you want to create a new Project via the Toolbar, you should save all changes made to the previous Project before creating a new one.

/New SP-MIDI File

New SP-MIDI File will create a new, empty MIDI Song node, SP-MIDI Parameters node and MIDI Lights node under the Project node.

/New MobileDLS Soundbank:

New MobileDLS Soundbank will create a new, empty MobileDLSoundbank node with an empty Waveform Pool and an Instrument Pool with an empty Instrument node under the Project node.

Note: You can store more than one MobileDLS Soundbank in a single Project.

Open

/Open Project:

Open Project opens a dialog box for browsing and opening Project files in NAS 2.0.

Note: All XMF and MobileXMF files can be used as Project files.

/Import DLS:

Import DLS opens a dialog box for browsing and opening DLS and MobileDLS Instruments in NAS 2.0. An imported DLS Soundbank is automatically transformed into the MobileDLS Soundbank when importing.

/Import MIDI:

Import MIDI opens a dialog box for browsing and opening MIDI and SP-MIDI files into NAS 2.0. A new MIDI Song node is created for the imported MIDI/SP-MIDI file in the Project Tree.

Note: Upon importing, NAS 2.0 automatically converts an imported MIDI file into a SP-MIDI file by adding a default SP-MIDI Sysex message into it.



Save

/Save Project

/Save Project as

/Export as MIDI:

You can export a selected MIDI song data and events from the Project to a MIDI file.

If you have modified the SP-MIDI parameters of that particular MIDI file in the SP-MIDI Editor, you can copy and paste or drag and drop the SP-MIDI node into another SP-MIDI node.

/Export as MobileXMF



Device menu

The Device drop-down menu has a selection of Nokia phone models. By choosing a specific model from the menu you can select the polyphony of a Nokia phone model for preview playback with the MIDI File Player of the Toolbar.

If you have enabled the auralization mode the, selected model's aural properties are used by the NAS 2.0 when previewing a Project with the MIDI File Player.

Note: Nokia 6230i has two profiles that have different polyphone amounts. Select a suitable profile that corresponds either to an XMF or SP-MIDI type.



Auralization:

This function allows you to enable/disable the Auralization mode. Auralization provides a function for auralizing input to simulate the acoustic and digital signal processing capabilities of Nokia mobile devices. In other words, it allows you to estimate what certain Nokia models will sound like when playing back a certain file.

If the auralization mode is disabled, the preview playback utilizes the default synthesizer sound settings of NAS 2.0.

**MIDI activity indicator:**

MIDI activity indicator indicates the MIDI in/out activity of the NAS 2.0.

**/Play/Stop button:**

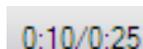
Starts and stops MIDI File Player's preview playback.

**/Pause**

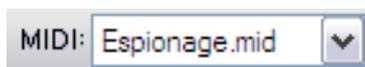
Pauses the playback.

**/Repeat**

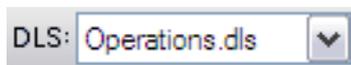
Repeats the playback.

**/Position indicator:**

Position indicator shows the MIDI File Player's playback song position in seconds.

**/MIDI Song menu:**

You can select any MIDI/SP-MIDI file from inside a Project from this menu for preview playback with MIDI File Player. If no MIDI or SP-MIDI files are available inside the Project, the menu will be grayed out.

**/DLS Soundbank menu:**

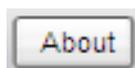
You can select a MobileDLS Soundbank inside a Project from this menu.

The selected Soundbank will be used as an additional sound source of the MIDI File Player's preview playback. If no Soundbanks are available inside the Project, the menu will be grayed out. If the Project has an empty MobileDLS Soundbank node, the menu will display "DLS Soundbank" and the NAS 2.0 General MIDI Soundbank will be used for MIDI File Player playback.

Note: If you choose a MobileDLS Soundbank from the DLS Soundbank menu, NAS 2.0 will automatically choose a MobileDLS-enabled phone model from the Device menu.

**/Volume slider:**

Volume slider controls the Master volume of NAS 2.0.

**/About**

About box contains copyright information about NAS 2.0.

3 Nokia Audio Suite 2.0 in detail

3.1 SP-MIDI Editor

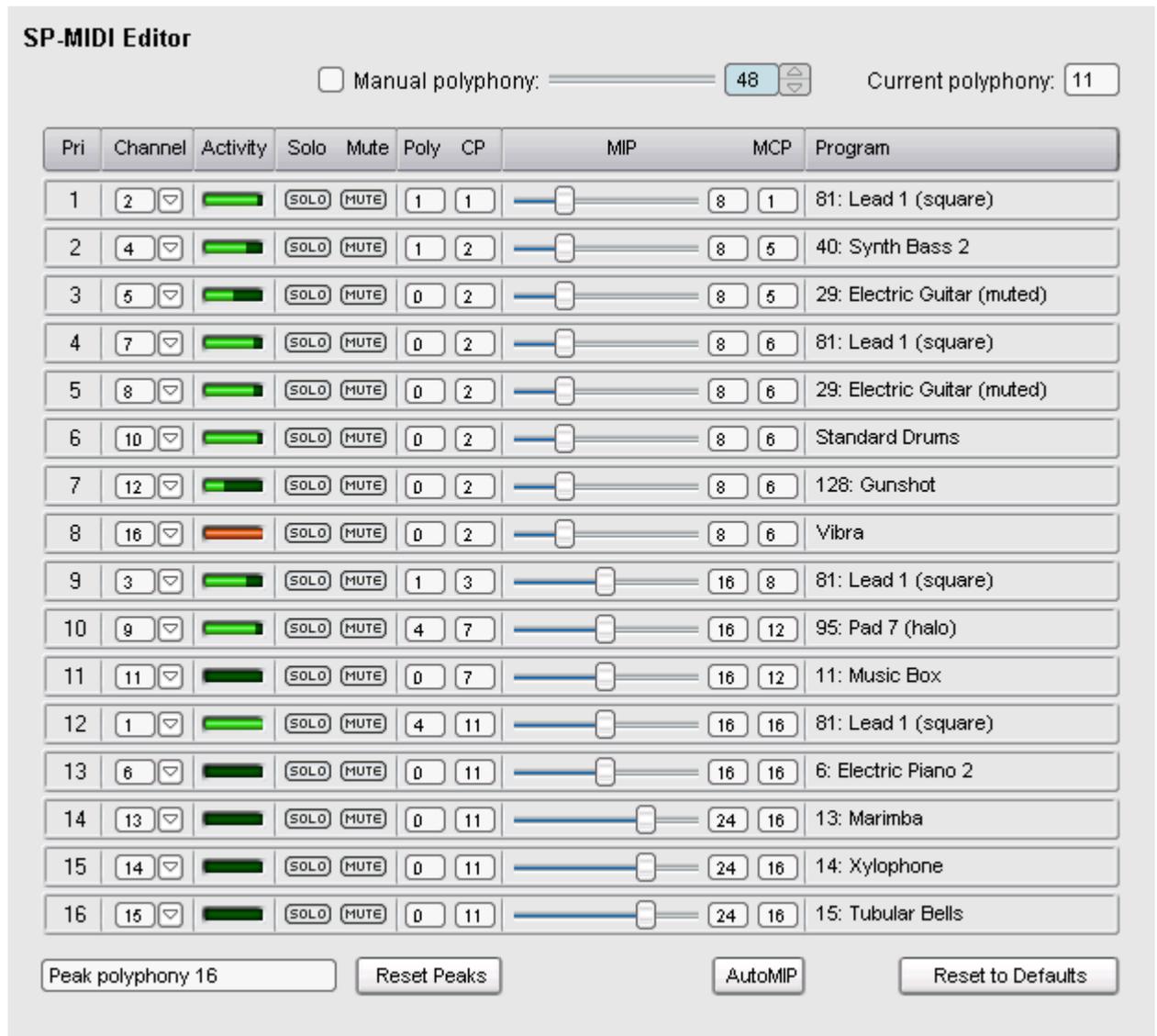


Figure 13: SP-MIDI Editor

SP-MIDI Editor offers functionality for monitoring, analyzing, and editing the SP-MIDI parameters of a MIDI file. At the start-up, SP-MIDI Editor opens as the default Editor in the Main Editor Window of NAS 2.0. You can also access the SP-MIDI Editor from the Project Tree and Navigation Buttons.

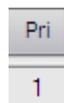
You can also import existing SP-MIDI Parameters from another MIDI file. First click the SP-MIDI Parameters node of a MIDI file in the Project Tree, choose Import SP-MIDI Parameters and select the MIDI file that contains the SP-MIDI Parameters you want to import. The chosen SP-MIDI Parameters are imported to the selected MIDI file.

Note: When saving a MIDI file, SP-MIDI Parameters are stored in the MIDI file as a MIDI Sysex message. SP-MIDI Sysex message contains the MIDI channel numbers in order of priority and the corresponding MIP values. These data types tell the SP-MIDI playback device how many of the highest priority

channels it can play without exceeding its maximum polyphony. The device will only play the MIDI channels that have a MIP value that does not exceed the maximum polyphony of the device. If you are targeting the SP-MIDI file for a device with, for example, 4-note polyphony, some of the higher priority channels must have a MIP value of 4 or less in order for you to hear anything.

When a MIDI song is played back, NAS 2.0 continuously monitors and displays both the current polyphony and the maximum polyphony levels of the song.

From left to right, the main field of SP-MIDI Editor has the following fields:



Channel priority numbers (1 through 16, displayed from top to bottom in hierarchical order).

Each of the numbers 1-16 specifies the priority of a MIDI channel. Channel priority defines the order of importance for MIDI Channels; if a playback device does not have sufficient polyphony to play back all voices of a MIDI song, the channel priority determines in which order Channels are scaled out.

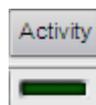


MIDI Channel numbers corresponding to their Channel priority.

This field is used for setting the Channel Priority. Use the drop-down menu of the Channel to arrange the priority order (from 1 to 16) of the MIDI Channels. For example, if you want to set MIDI channel 4 as the highest priority, click the Channel field of priority 1 and select number 4 from the drop-down list. The other channels are adjusted automatically to reflect the change.

Note: MIDI Channel 10 is normally assigned to the MIDI Drumkit (as specified in the General MIDI Specification).

Note: If you change the Channel Priority order, all analyzed polyphony values are reset.



Track activity meters that display the MIDI activity by channel; if the MIDI Channel has activity, the green indicator bar will be active. If MIDI Vibra is used, the activity indicator bar is red and the program name field displays "Vibra".

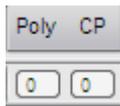


Solo and Mute buttons for each Channel.

When the Solo button of a Channel is activated, only that Channel is played back and all other Channels will be automatically muted. By playing back Channels in the Solo mode, you can listen to which individual MIDI Instruments are actually played Back from that Channel.

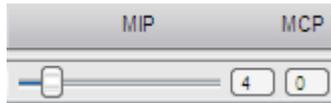
When a channel Mute button is activated, the selected Channel is not played back. By muting a channel, you can check how the muted Channel affects the Maximum cumulative polyphony value.

Note: Solo and Mute are functions that only affect the playback monitoring of the MIDI song. Their usage will not have any effect on the SP-MIDI Parameters of a SP-MIDI that you save.



Polyphony meters displaying the polyphony amount of the incoming MIDI activity per Channel. The meters display both the current and peak polyphony values of the Channel.

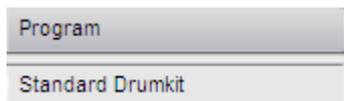
You can use these values as a reference for your User-MIP values. However, in many cases, songs sound better with smaller User- MIP values than the Channel polyphony values would indicate; for Channel polyphony values, two simultaneous voices are always considered to have polyphony of two voices, even if they play simultaneously only for a brief period, whereas Channel polyphony values are real-time values that are updated continuously during playback.



MIP slider for adjusting the User-MIP values, numerical value for User-MIP per Channel and the numerical value for Maximum cumulative polyphony per Channel.

To change a MIP value of a Channel, use the MIP slider. The MIP value you set for a Channel must be higher than the combined values of the Channels that have a higher Priority than the Channel you are working with.

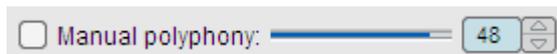
If the set MIP value is higher than the value of a Channel with a lower priority, the User- MIP of all lower Priority channels are also adjusted to equal that higher value.



Program name that displays the name of the MIDI Program of the Channel. If the MIDI Program of the Channel is General MIDI Instrument, the name of the Instrument is displayed (for example, Distort Guitar). If you are using a custom Instrument that is specified, the name of the Instrument is displayed (for example, Gunshot). If the Program has no name, the field displays Channel Bank (MSB/LSB) and Program numbers.

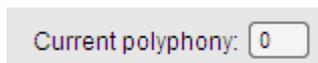
Note: If MIDI vibra is enabled in the MIDI file, it will be displayed on channel 16.

On top of the main field:



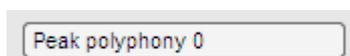
Manual Polyphony check box and slider for choosing (i) either a polyphony level set you set manually by using either the Polyphony slider or the numerical polyphony field or, if (ii) the check box is not checked, the polyphony of a device that has been selected from the Device menu in the Toolbar.

You can adjust the maximum overall polyphony available for MIDI song playback by ticking the Manual polyphony check box and adjusting the polyphony value with the slider or with the incremental spin controller next to the numeric polyphony value field.



Current polyphony meter displays the total amount of polyphony usage by the synthesizer of NAS 2.0 when playing back the MIDI song with current settings.

Below the main field:



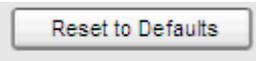
Peak Polyphony meter displays the peak polyphony of the MIDI song (the peak level of Current polyphony when a MIDI Song is played from start to finish)



Reset Peaks button resets the Channel polyphony, Cumulative channel polyphony and Peak polyphony value to zero.



Auto MIP sets the User-MIP value according to the Cumulative channel polyphony for each Channel. Auto MIP offers an easy way of setting User-MIP values.



Reset to default value sets User-MIP value to the default value of the SP-MIDI Editor (that is, the polyphony values of SP-MIDI Editor as they are at start-up).

3.1.1 MIDI Vibra

SP-MIDI standard defines an optional method for MIDI Vibra alert control using MIDI Messages. SP-MIDI content can be composed by combining synchronized audio and vibra performance in the playback device.

MIDI Vibra control is defined as a melodic Instrument. MIDI Vibra is enabled by inserting Bank and Program change (MSB 121, LSB 6 Program 125) events into the start of the MIDI sequence. In supported Nokia devices, the MIDI Note On Message turns Vibra on and Note Off Message turns Vibra off. Producers should use the following values for MIDI Note On Messages: Note# 50 and Velocity =100. For more information on MIDI Vibra, please refer to the Forum Nokia MIDI and True Tones in Nokia Devices (v 2.2, 21.12.2004).

3.2 Lights Editor

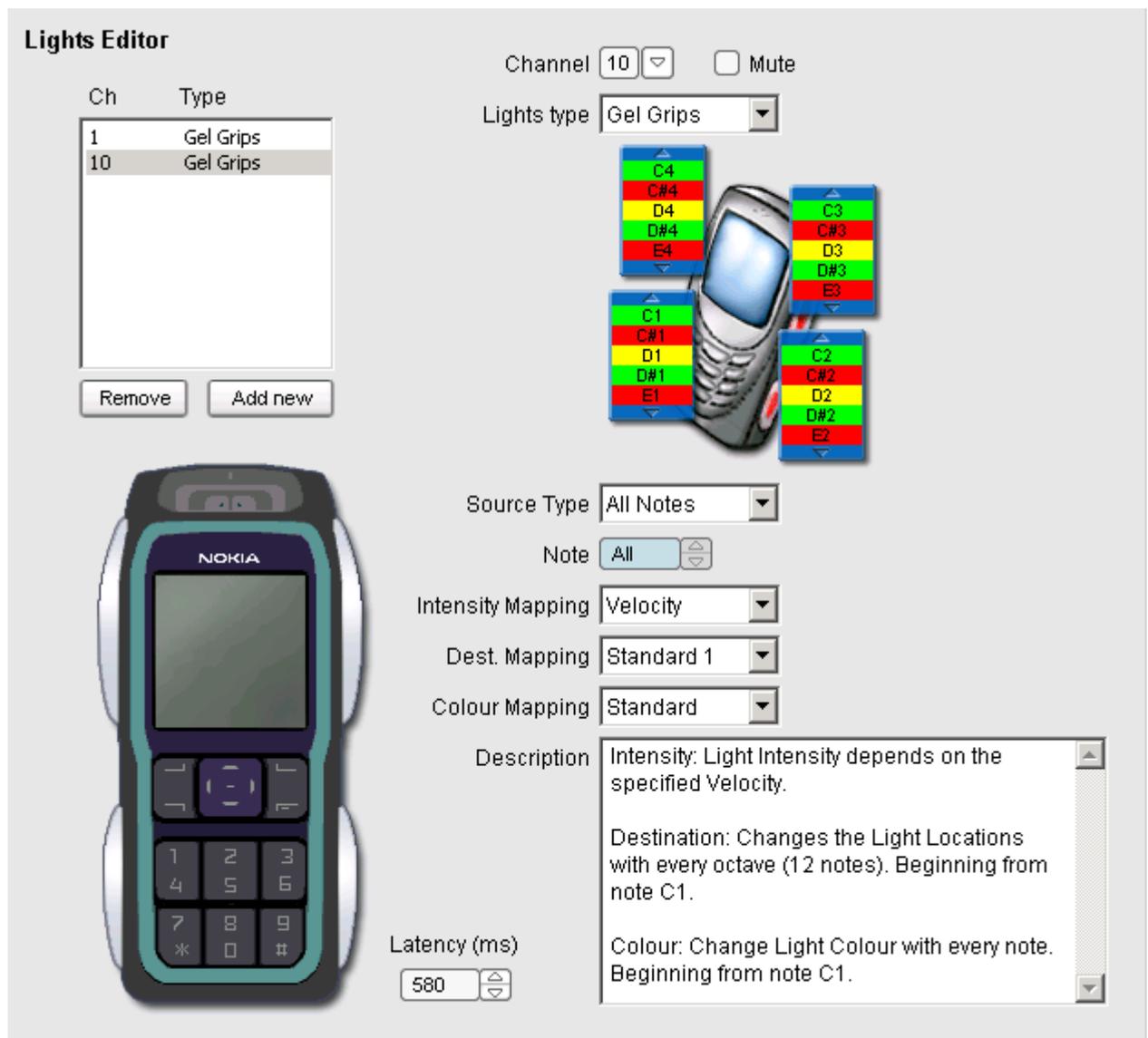


Figure 14: MIDI Lights Editor

MIDI Lights Editor allows you to add MIDI Sysex data to a MIDI file. This allows you to determine how lights are “blinked” in devices that support the MIDI Lights feature (that is, the capacity to interpret musical notes of MIDI files as lighting of either certain or random lights). With MIDI Lights, you can sync the handset’s flashing lights with musical data from a ringing tone. At present, the only device that supports MIDI Lights is Nokia 3220.

When creating MIDI Lights data, the Lights Editor attaches MIDI Lights data to the MIDI file automatically. MIDI Lights data is divided into Lights Configuration(s). A Lights Configuration, or LC, defines how MIDI Note messages control the lights locations (hardware components in the target device that have the blinking lights) of a mobile device. A single MIDI file can contain multiple Lights Configurations, each of them controlling a corresponding light location. The maximum amount of Lights Configurations is 12.

Besides providing control on the sequence of blinking lights, MIDI Lights provides control for: (i) the color of light in light locations and (ii) light intensity in light locations.

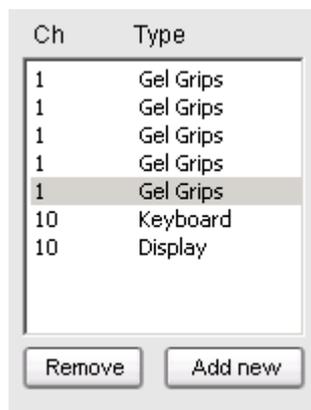
For further information on MIDI Lights, please refer to Forum Nokia's MIDI Lights: MIDI Sysex Specification (version 1.0, 31.05.2004).

Note: MIDI Lights Sysex is expandable and if NAS 2.0 encounters MIDI Lights Sysex events that it does not support (that is, events that are not supported in current Nokia phone models), they will be left in the MIDI as they are.

Note: If MIDI Lights Editor is opened, the previous MIDI Lights-enabled profile is automatically enabled in the device menu of the Toolbar.

Note: The NAS 2.0 package includes an example MIDI song (Light_Simulation_demo.MID) with MIDI Lights data attached into it. You can use it to see how Lights Data is used.

Lights Editor utilities:



Channel and type:

Channel and type function is used for creating Lights Configurations.

/Add new:

Clicking add new creates a default Lights Configuration. Following this, you can edit the Lights Configuration.

/Remove:

Clicking Remove deletes the selected Lights Configuration.



Channel and Mute:

Channel field defines which MIDI Channel of the MIDI file is used for controlling the Lights Configuration. You can select a MIDI Channel from the dropdown menu.

The Mute check box indicates the mute status of the channel. Ticking the Mute check box mutes the volume of the MIDI Channel. This function can be used for creating silent Lights Configuration (Lights Configurations that have no corresponding musical events).



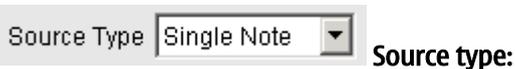
Lights type:

The Lights type field indicates the type of lights location controlled by the Lights Configuration. There are three types of lights locations: Gelp Grips (four destinations at the side of the phone), Display Light, and Keypad Light.



Note display

Note display shows the positioning of light locations that playback the MIDI Lights data. In the picture, the fields next to light locations display the MIDI Note(s) that cause the lights to blink in the selected light locations. For GelGrips locations, the background color of the note indicates the GelGrips color.



The Source type field displays the selected Source type of MIDI Lights data. Two Source types are available and can be changed from the dropdown menu.

With Single Note type only one selected MIDI Note of a MIDI Channel is used for controlling the blinking light in the light location. With All Notes type, any MIDI Note of the selected MIDI Channel from c-2 to g8 will trigger a blink of light. All note Source type is recommended for the quick configuration of the channels used by lead Instruments.



Note field displays the MIDI Note that is selected for triggering a blink of light. You can select the desired MIDI Note by using the spin control next to the field. The note can only be selected if the Source type is set at Single Note. If All Note is set as the Source type, the note field will display “all notes”.



Intensity mapping defines how the MIDI Note On velocity message affects the light intensity of the light location. The different modes are available for Intensity mapping:

/Velocity:

Light intensity depends on the MIDI Note On velocity.

/100%:

Light intensity is set as fully independent of the MIDI Note On velocity.

/Random:

Random light intensity is used.

Note: Intensity Mapping is provided for all types of light locations. In addition, Destination Mapping and color Mapping options are available for Gel Grips type locations.

Dest. Mapping

Destination Mapping:

Destination Mapping controls the destination lights location. The available Destination mapping options depend on the selected Source type mode.

For All Notes Source type mode, the following Destination Mapping modes are available:

/All Lights:

A MIDI note affects all lights.

/Standard 1:

The Light Locations change with every octave (12 notes). The first location is in the Lower Left corner. This assignment begins from note C1 and goes counter clockwise with each note ascending. This means that all notes from C-2 to C1 (excluding C1) are ignored by the algorithm and can be used for other assignments.

/Standard 2:

This mapping is similar to Standard 1, but the Light Locations alternate between the Lower and Upper Rows with every note. This starts from note C1 and the Lower Row.

/Standard 3:

This mapping is similar to Standard 2, but the Light Locations alternate between the Left and Right Columns with every note. This starts from note C1 and the Left Column.

/Random:

The locations are randomly chosen by the hardware. No preview is available.

For Single Notes Source type mode, the following Destination Mapping modes are available:

/All Lights:

A MIDI note affects all lights.

/Lower Row:

The selected note or drum affects the Lower Row Lights.

/Upper Row:

The selected note or drum affects the Upper Row Lights.

/Left Column:

The selected note or drum affects the Left Column Lights.

/Right Column:

The selected note or drum affects the Right Column Lights.

/Lower Left:

The selected note or drum affects the Lower Left Light.

/Lower Right:

The selected note or drum affects the Lower Right Light.

/Upper Right:

The selected note or drum affects the Upper Right Light.

/Upper Left:

The selected note or drum affects the Upper Left Light.

Color Mapping:

Color Mapping controls the color of lights of the destination lights location. The available Color Mapping options depend on the selected Source type mode.

For All Notes Source type mode, the following Color Mapping modes are available:

/Standard:

Light colors change with every note. Starting from C1, the colors change repeatedly from green to red to yellow with every note. This means all notes from C-2 to C1 (excluding C1) are ignored by the algorithm and can be used for another assignments.

For Single Note source type mode, the following Color Mapping modes are available:

/Random 2:

Light colors are randomly chosen by the hardware without matching patterns. Every light has an independent, randomly chosen color. No preview is available.

The following Color Mapping options available in both Source type modes:

/Random 1

Light colors are randomly chosen by the hardware with matching selected patterns if any are selected, for example, rows or columns. No preview is available.

/All Green

All lights are shown in green.

/All Red

All lights are shown in red.

/All Yellow

All lights are shown in yellow.



Phone Simulation

Phone Simulation simulates the playback of created Lights Configuration in the target device. Phone Simulation operates in real-time; when you are creating and editing a Lights Configuration, the selected features are simulated.



Latency parameter

The latency parameter enables the synchronization of MIDI Lights and audio playback in the Phone Simulation of NAS 2.0. Latency control adjusts the audio-to-MIDI Lights delay in milliseconds.

Note: Adjusting the Latency parameter does not affect the audio playback in NAS 2.0 or the MIDI Lights or audio playback in the actual mobile device- it is just for simulation purposes within NAS 2.0.

3.2.1 Waveform Editor

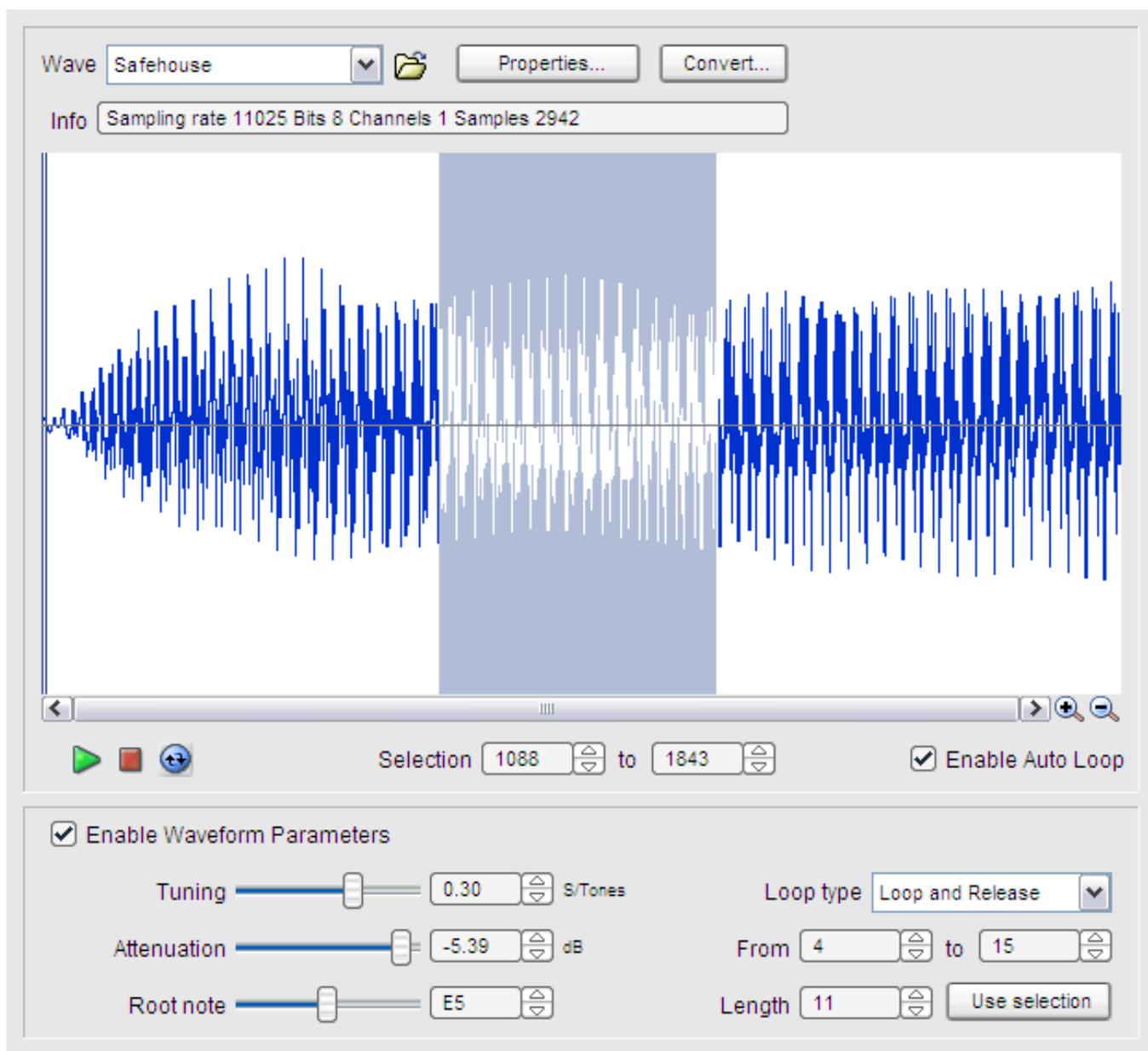


Figure 15: Waveform Editor

The Waveform Editor is a utility for editing the properties of waveform audio files contained in a Mobile DLS Soundbank. You can also use the Waveform Editor for a playback preview of single waveform audio files with which you are working.

Waveform Editor utilities and fields (from top to bottom):

Wave **Waveform menu**

You can browse and select audio files of the active MobileDLS Soundbank from this menu for analyzing, editing, and previewing with the Waveform Editor.

 **Import WAV**

You can browse and import waveform audio files into the active MobileDLS Soundbank from the hard drive.



Properties button

The Properties button displays a dialog box that contains general information about the active waveform audio file.



Convert button

The Convert button opens a dialog that contains options for converting the sample rate and bitdepth of the active waveform audio file.

Available conversion:

Convert bitdepth from 16-bit to 8-bit.

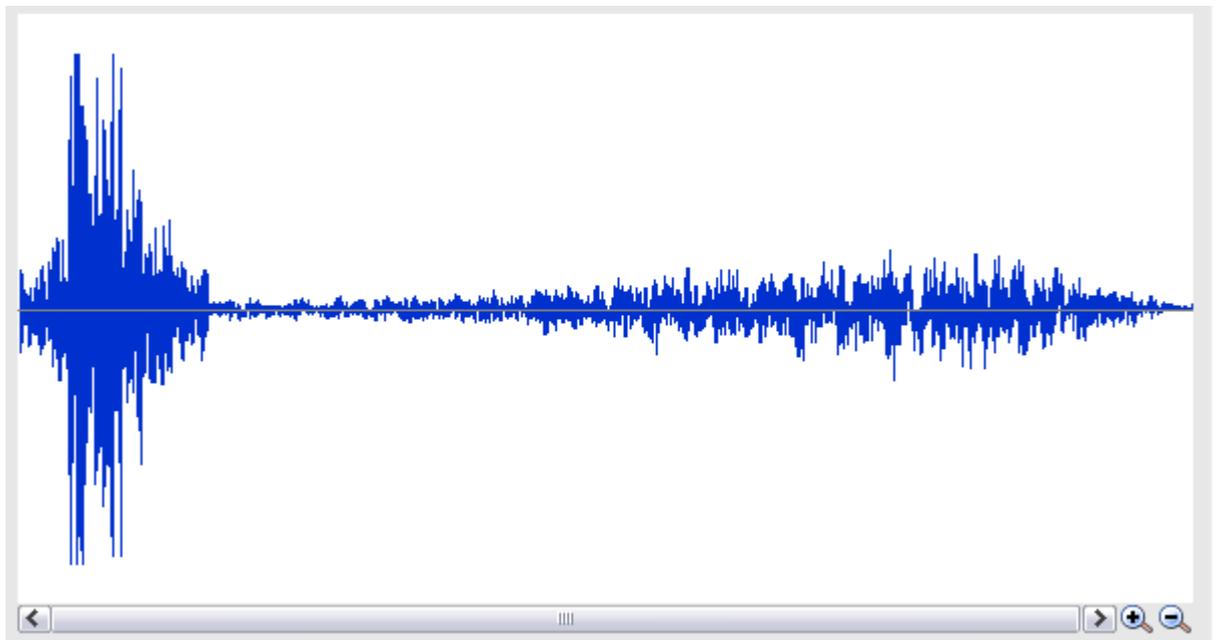
Downsample from original sampling rate of the waveform audio file to 2000 Hz.

Note: When halving the bitdepth, the size of the waveform audio file is respectively also reduced by 50 percent. 8-bit waveform audio file are generally adequate for use in mobile devices because of the characteristics of mobile phone loudspeakers. Because of the memory restrictions on mobile devices, it is recommended that you keep the file size to a minimum.



Info field

Info field displays general information (for example, sampling rate, ditdepth, number of channels, amount of samples) about the active waveform audio file.



Waveform view

Waveform view displays (i) a graphical representation of the active waveform audio file, (ii) the selection range, if you have selected a range, and (iii) loop positions, if you have set the start and end points for a loop.

You can zoom the view from the whole length of the waveform audio down the level of a single sample by using the Zoom buttons (+/-). If the whole length of the waveform audio file does not fit into the Waveform view, you can use the scrollbar to scroll left and right along the length of the waveform audio file.



Selection fields contain sample accurate numeric information about the start point (left field) and the end point (right field) of the selection range. The points are measures in samples, counted from the beginning of the waveform audio file.



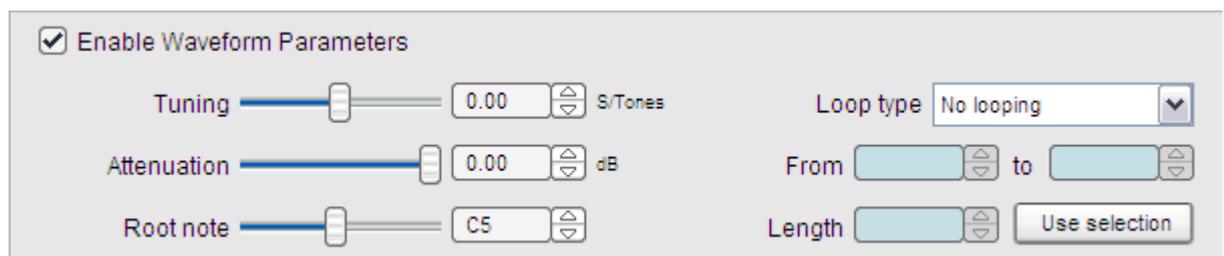
If you set Enable auto loop on by ticking the check box, the Waveform Editor automatically finds the optimal loop start and end positions for a selected range of the waveform audio file by searching and choosing the nearest zero crossings near the start and end positions of the selected range.

Note: This function does not create the loop itself and only takes effect if a loop is created.



Waveform Player has Play/Stop and Repeat functions for playback of active waveform audio file. If the Play button is set on, you can browse waveform audio files from the Project Tree and the waveform audio files of activated (clicked) Waveform nodes are automatically played back without clicking the Play button again.

Note: If a loop (see below) has been created, it will affect the preview playback.

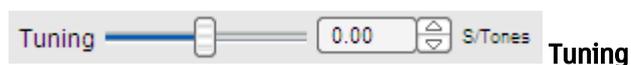


Waveform Parameters Editor

Waveform Parameter Editor field of the Waveform Editor offers utilities for tuning and looping waveform audio files. The set parameters will only be effective if you have ticked the Enable Waveform Parameters check box.

Note: If the Enable Waveform Parameters is off, the parameters you have set will not affect the waveform audio file (the waveform audio file is used in its original form).

The editable waveform parameters are:



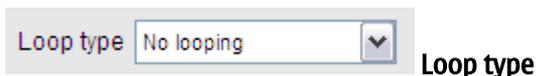
Tuning shifts the pitch of the waveform audio file. Tuning can be used at the accuracy of a cent (a one hundredth of a semitone). Tuning range is two semitones. For example, if you have a waveform audio file that contains a piece of music that is “out of tune” you can use Tuning to correct its pitch.



Attenuation provides gain correction for waveform audio files. Attenuation range is from – 96 dB up to 0 dB (with zero attenuation meaning there is no effect on the waveform audio file). For example, if you have a guitar MobileDLS Instrument and you notice that one of waveform audio files of which the Instrument consists of is too loud you can use Attenuation to correct the sound level to that of the other waveform audio files.



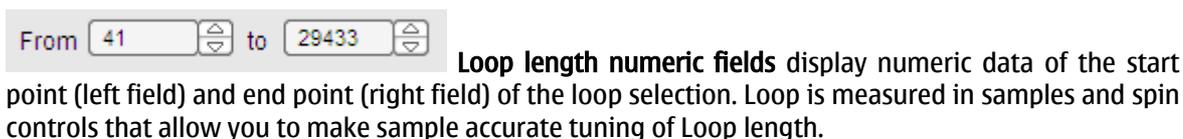
Root note is the MIDI note number value of the original pitch level of a waveform audio file. The range is from C-2 to G8. The root note defines the playback pitch of a waveform audio file when the waveform audio file is played back as a part of a MobileDLS Instrument. For example, if the root note of a waveform audio file note is set to c4 and the Instrument region is set from c3 to c5, the playback synthesizer transposes the pitch of the waveform audio file up a tone when it is played at d4.



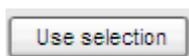
Loop type is off by default (that is, no looping). From the dropdown menu, you can create two types of loops: a normal loop or a loop with release.

When normal loop is set, the waveform audio file will be played back from the beginning until the loop end point and when the end point is reached, playback will loop continuously from the loop start point to end point.

When a loop with release is set, the only difference when compared to a normal loop is that when the loop is released, playback will continue to play until the end of waveform audio file instead of stopping immediately when the loop is released.



Loop length field displays the loop length in samples. If you use the spin control next to this field to adjust the Loop lengths, the end position of the Loop is adjusted accordingly.



Use selection button is used to create a loop from a selected range in the Waveform view.

3.2.2 Instrument Editor

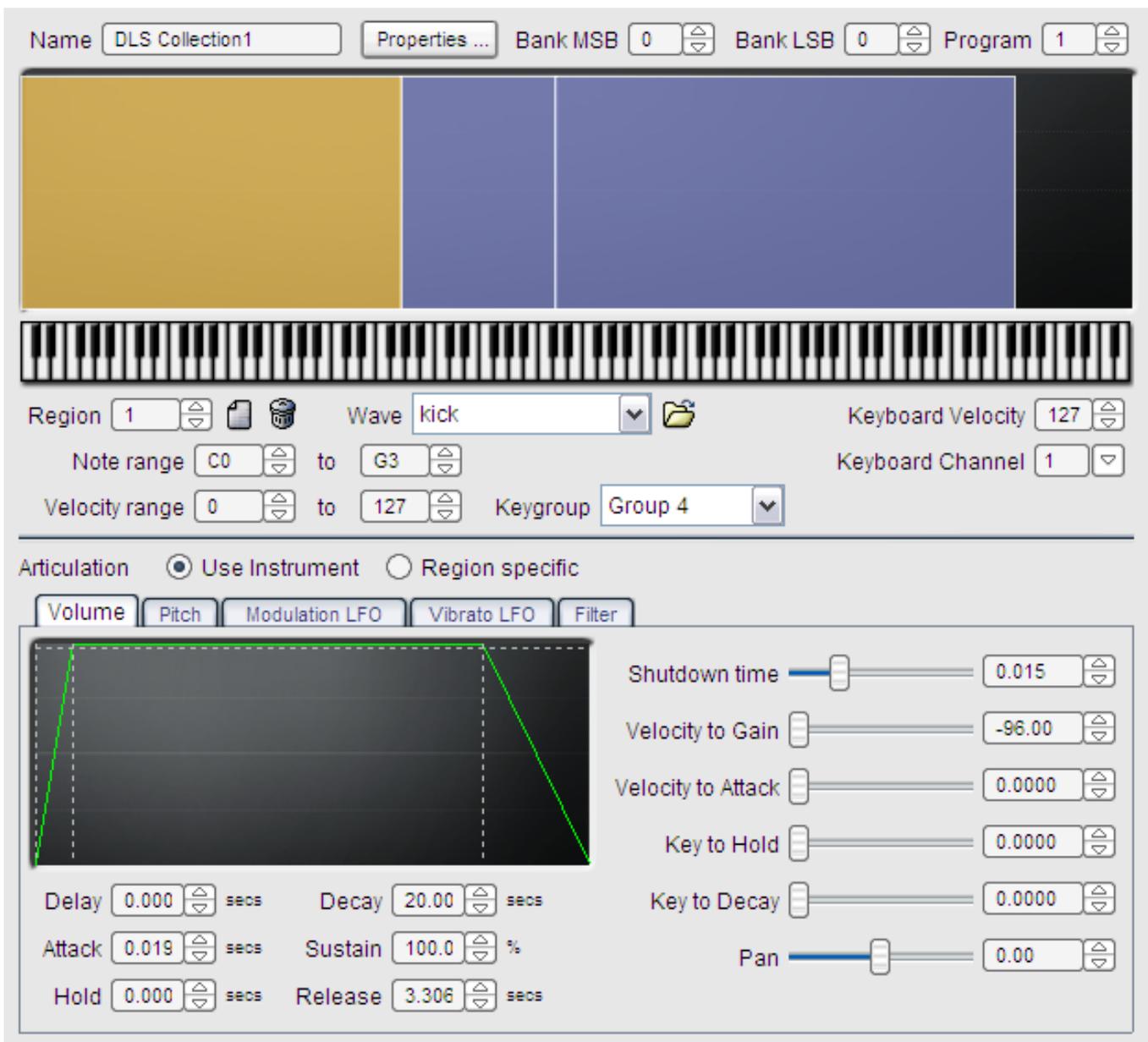


Figure 16: Instrument Editor

The Instrument Editor contains utilities for creating and editing MobileDLS Instruments. It has functions for mapping and layering regions and editing multiple articulation parameters, which are divided into envelope, oscillator, and filter sections.

Note: When you are working the Instrument Editor, all operations take place within one MobileDLS Instrument.

3.2.2.1 Region Editor

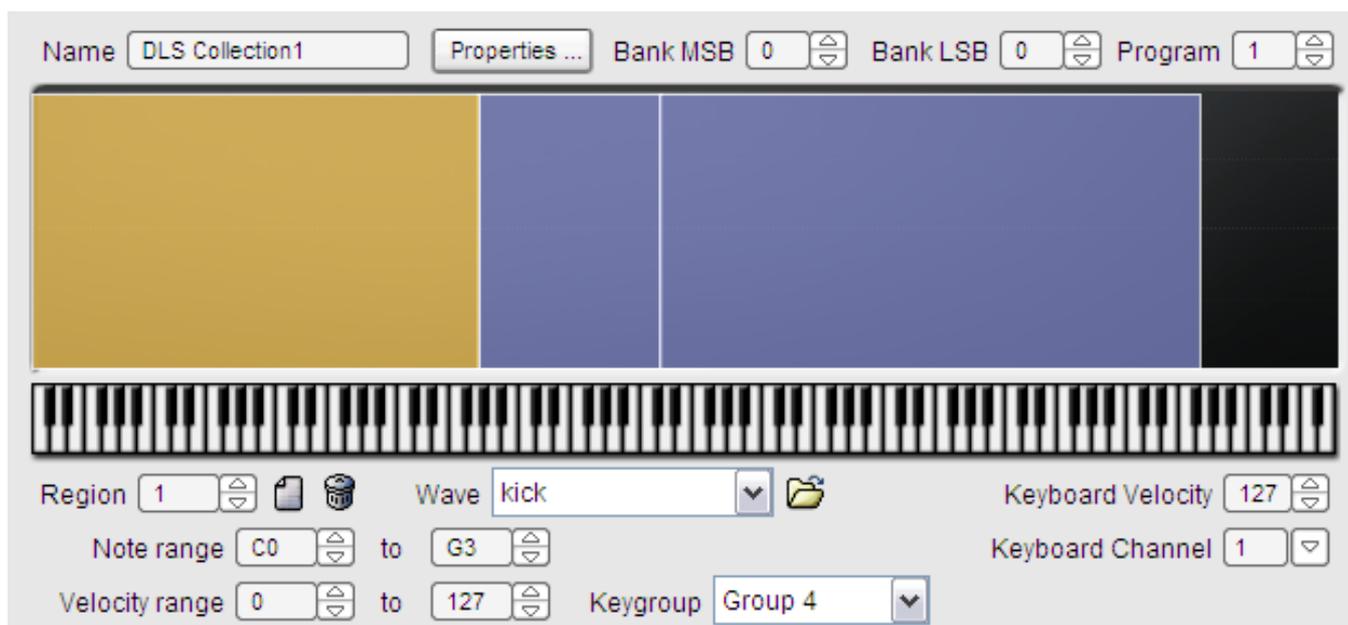
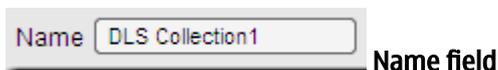


Figure 17: Region Editor

Region Editor is a section of the Instrument Editor, which contains tools needed for creating and defining regions for MobileDLS Instruments. Once you have an existing MobileDLS Instrument in the Project and you open the Instrument Editor, it you can use it display and access all regions of the MobileDLS Instrument. You can also use the Region Editor to create new regions for a MobileDLS Instrument.

Properties of the Region Editor:



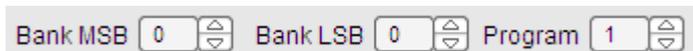
Name field

Name field displays the name of the active MobileDLS Instrument. You can also edit the name from the field.



Properties button

Clicking the Properties button opens a dialog box that contains general information regarding the active MobileDLS Instrument. You can also edit the displayed information from the field.



Bank MSB, Bank LSB and Program fields

MobileDLS-enabled devices must support MIDI Bank Select (MSB/LSB) and Program Change messages as the method of selecting the Instrument to be played on a MIDI Channel. MSB and LSB messages represent the MIDI Bank Select address space. Content authors must assign MSB, LSB, and Program Change messages to an Instrument to ensure that the playback device selects the correct Instrument.

Any custom MobileDLS Instrument may use the same bank and program number(s) as any of the MobileDLS-enables playback device's General MIDI Soundbanks- if same values are used, the custom MobileDLS Instrument will temporarily override the embedded Soundbank with the same values.

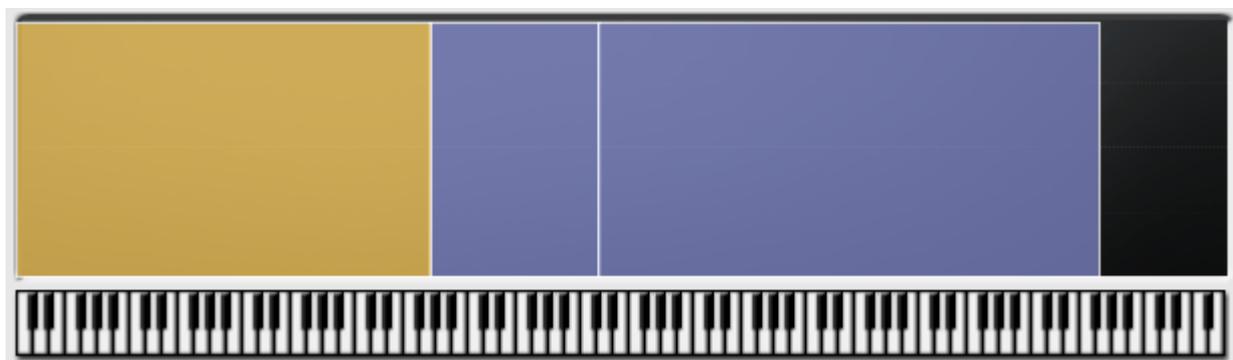
If no Bank MSB or LSB numbers has been specified, NAS 2.0 automatically sets Bank MSB to 121 and Bank LSB to 0, which are the default settings used in Nokia mobile phones.

Note: In order to use a custom MobileDLS Soundbank you have created as the sound source for a MIDI file, the MIDI file must use the same Bank and Program values as the MobileDLS Soundbank that is used as a sound source.

Assigning Bank and Program Change messages to MIDI files is done in the VST host application; please refer to its User's Guide for further instructions.

If the MobileDLS Instrument has a locale with Bank MSB value X, Bank LSB value Y, and Program number Z, you must insert the following MIDI event to the start of the MIDI file: Control Change 0 X, Control Change 32 Y, and Program Change Z. It is important to insert the MIDI to the beginning of the MIDI in order to ensure the desired playback.

Note: Some MIDI sequencers enumerate programs numbers from 0 to 127, and some from 1 to 128. NAS 2.0 uses the range of 1 to 128.



Region View

Region View is a utility for editing the note and velocity range parameters of regions. If you have an active MobileDLS Instrument that has regions assigned to it, they are displayed in the Region View as graphical region fields. If you are working with a MobileDLS Instrument that is under production and has no region, regions will be displayed in the Region View once you have created them.

In the Region View, you can edit region's note and velocity range by dragging the borders of the active region's graphical field. To select a region for editing, click the region's graphical field. The horizontal range reflects the MIDI Note Number of the region and the vertical range reflects its velocity.

The region graphical "squares" in the Region View reflect the positioning of the region in the Note Number/velocity space (Note Number C-2 to G8 and velocity 0 to 127). In the Region View, active regions are colored orange and passive regions are blue.

Keyboard

The lower part of the Region View has a keyboard showing all available MIDI Note Numbers. You can divide the available Note Number range into any number of regions. You can also add extra layers of regions, so that a note on the keyboard belongs to regions in multiple velocity layers.

The keyboard can also be used to "play" the MobileDLS Instrument. This is useful for previewing the allocation of regions and seeing how the regions work together as whole Instrument.

Note: You can also use an external MIDI Keyboard through a VST host application.


Keyboard Velocity field

Keyboard Velocity field displays the MIDI Velocity value assigned to the keyboard. The value (0-127) is changed with the spin control. You can use this function to monitor the velocity values of Instrument regions.


Keyboard Channel field

Keyboard Channel field displays the MIDI Channel number (1-16). By default, the Keyboard Channel is set to Channel 1. You can change the Channel from the dropdown menu of the field.

Keyboard Channels are used for selecting the MIDI keyboard channel used for playing a MobileDLS Instrument with an external MIDI keyboard.


Region field

Region field displays the number of the active region. In the Project Tree, the regions are numbered from top to bottom (uppermost region in the Instrument node is assigned number 1, the next is number 2, and so on). You can use the spin control of the Region field to change the active region.


New region

New region creates a new region in the MobileDLS Instrument. By default, the region is the full MIDI Note Number range and velocity range of the Instrument.


Delete region

Delete region removes an active region.

Note: Only the region, not the underlying waveform audio file, is deleted.


Wave field

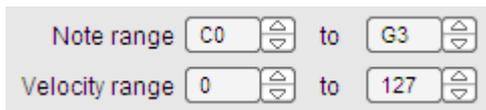
Wave field displays the waveform audio file assigned to the active region. Clicking the field opens a drop-down menu for selecting a waveform audio file for the active region. Menu displays all waveform audio files in the Waveform Pool of the MobileDLS Soundbank.


Import WAV

Import WAV opens a dialog box for browsing and importing one or more waveform audio files from the hard drive. If you use this function, a new Waveform Node is created into the Waveform Node of the active MobileDLS Soundbank and active region is set to the imported waveform audio file.

If there are no existing regions in the Instrument node, a new region will be created for the imported waveform audio file.

Note: If you import a single waveform audio file, the new region will cover to the MIDI Note Number and Velocity range. If you import two or more files at the same time, MIDI Note Number range will be split evenly between the new regions created for the imported waveform audio files. Importing multiple waveform files at the same time offers a quick way for creating an Instrument with a MIDI Note Number Range divided evenly between multiple regions.



Note range and Velocity range fields

The Note range field displays the MIDI Note Number values of the active region from the lowest note (left field) to the highest (right field).

The Velocity range field displays Velocity range values of the active region from the lowest value (left field) to the highest (right field).

You can use the spin control to adjust the Note range and Velocity range values.



Keygroup field

If a region has been assigned to a Keygroup, the Keygroup number is displayed in this field. By default, no Keygroup is assigned (the value is <none>).

A Keygroup defines a group of regions. Only one of the regions in a defined Keygroup can play at a time. You can create a Keygroup by assigning an active region with a Keygroup number, activating another region and assigning it with same the Keygroup, and so on, until the Keygroup is ready.

Note: You can use Keygroups to create instruments with special playback properties. For example, you might create a monosynth Instrument by (i) importing multiple waveform audio files to an empty MobileDLS instrument, (ii) setting the MIDI Note Number range values, and (iii) assigning all the regions to a Keygroup.

3.2.2.2 Articulation Editor

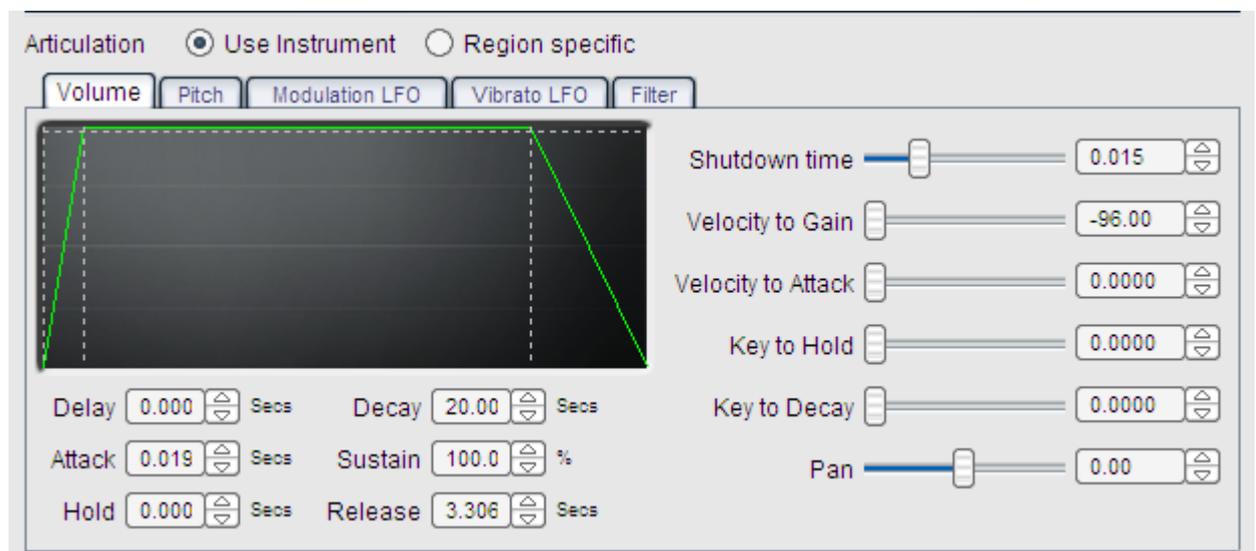
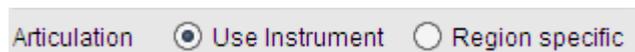
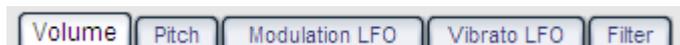


Figure 18: Articulation Editor

The Articulation Editor offers a set of utilities for editing the sound quality settings of a MobileDLS Instrument. The Articulation settings can be applied to either (i) a single region (Region Specific) of a MobileDLS Instrument or (ii) to all regions (Use Instrument) of a MobileDLS Instrument.



NAS 2.0 uses the Use Instrument articulation settings by default. If you want to use Region Specific articulation settings, you must set articulation to the Region Specific mode by using the Articulation radio button.



Articulation editing utilities are divided into five categories: Volume envelope, Pitch envelope, Modulation LFO, Vibrato LFO, and Filter. You can switch between categories by clicking the category tabulators of the Instrument Editor. Volume envelope category is displayed by default in the Instrument Editor.

Note: Region Specific or Use Instrument articulation settings apply to all articulation data categories; you cannot, for example, set only the Pitch envelope to Region Specific.

3.2.2.3 Envelopes

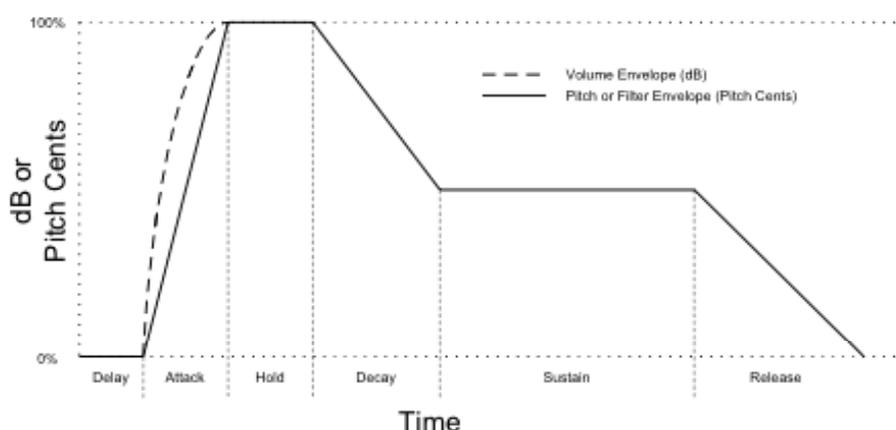


Figure 19: Structure of a Volume or Pitch DAHDSR envelope

There are two different DAHDSR (Delay-Attack-Hold-Decay-Sustain-Release) envelope types: (i) a Volume envelope that is applied to the volume of a waveform audio file and (ii) a Pitch envelope that is applied to the pitch of a waveform audio file.

An envelope determines a chronological sequence for changes that can affect the pitch, timbre, or volume level of an audio signal. An envelope (its chronological sequence) is triggered when a MobileDLS Instrument receives a MIDI Note Number message. Since an envelope is a chronological sequence, it is measured in seconds (and parts of a second) counted from the time when the MIDI Note On event is received.

Note: When envelopes are used, the time sequence does not affect the chronological position of the actual waveform audio file in a song, but rather the Volume or Pitch parameters within the file.

The common parameters for both Volume and Pitch envelopes are:

Delay:

Delay controls the time it takes for the envelope to take effect when a MIDI Note in an event has triggered the region.

Attack:

Attack controls the time it takes for the audio signal controlled by an envelope to reach its highest (Volume or Pitch) level.

Hold:

Hold controls the time the audio signal controlled by an envelope is played back at the highest (Volume or Pitch) level.

Decay:

Decay controls the time it takes for an audio signal controlled by an envelope to decrease to its (Volume or Pitch) Sustain level. The Decay segment of an envelope ends when the Sustain level is reached.

Sustain:

Sustain controls the audio signal (Volume or Pitch) level when the Decay phase has ended. The audio signal sustains its set the Sustain level until the MIDI Note Off message is received.

Release:

Release controls the audio signal when a MIDI Note Off message has been received. Release control the time it takes for the audio signal to fade out from the Sustain level.

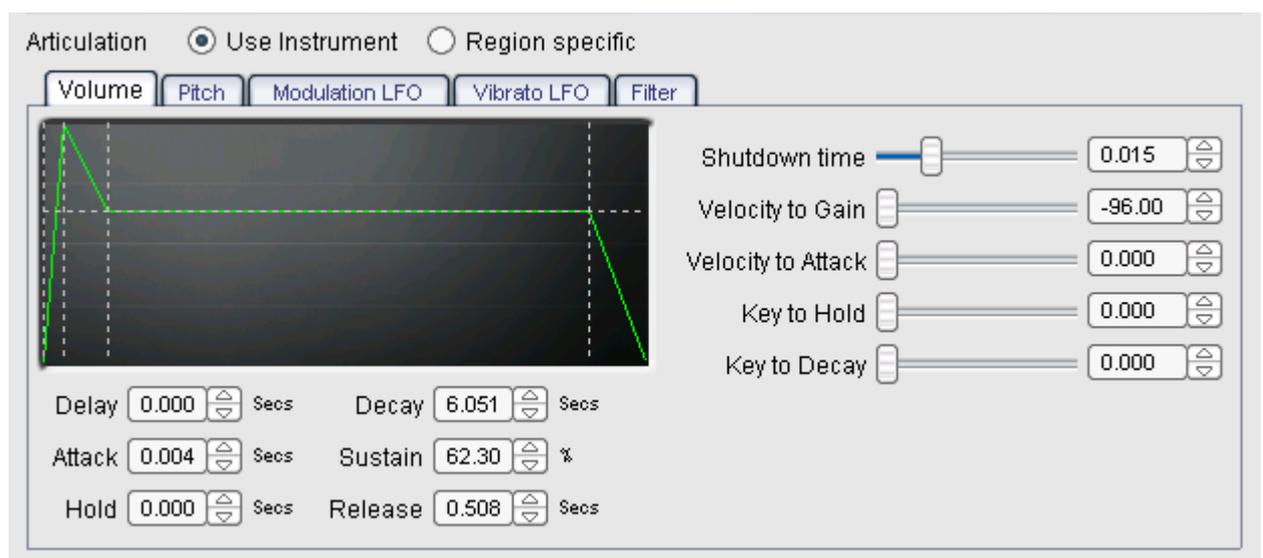
3.2.2.4 The volume envelope

Figure 20: Volume envelope

Volume envelope controls the volume characteristics of a MobileDLS Instrument or a region of a MobileDLS Instrument (if Region Specific articulation settings are used for all articulation data).

You can adjust all Volume envelope parameters by using the parameter-specific slider or spin controls next to parameter value meters.

Volume envelope-specific parameters:

Shutdown time:

Shutdown time defines the amount of time it takes for the region to stop playing when the MIDI Note Off message is received. Shutdown time is measured in seconds. The range is from 0 to 40 seconds.

Note: Shutdown time offers an alternative for the Release time parameter of the Volume envelope. When a Keygroup has been created, the Shutdown time overrides the release parameter of a region that belongs to such Keygroup.

Velocity to Gain:

Velocity to Gain defines how much effect the MIDI Note On Velocity has on the actual playback volume of a region or a MobileDLS Instrument. Velocity to Gain ratio is measured in decibels. The range is from -96 to 0 decibels.

For example, if the Velocity to Gain ratio is set at -12 dB, the MIDI Note On event with a Velocity value of one unit would be played back at volume of -12 dB.

Note: On MobileDLS Instruments that consist of multiple regions in a melodic Instrument, the Velocity to Gain ratio should be equal for all regions. With equal ratio for all regions, all notes on the Instrument will be played with the same Velocity response.

Velocity to Attack:

Velocity to Attack defines how much effect the MIDI Note On Velocity has on the Attack value of an envelope. Velocity to Attack is measured in time cents and the range is from 0 to 32 time cents.

Velocity to Attack editing is typically used for percussive Instruments.

Key to Hold:

Key to Hold defines how much effect the MIDI Note Number message has on the Hold value of an envelope. Key to Hold is measured in time cents and the range is from 0 to 32 time cents.

Key to Decay:

Key to Decay defines how much effect the MIDI Note Number message has on the Decays value of an envelope. Key to Hold is measured in time cents and the range is from 0 to 32 time cents.

3.2.2.5 The pitch envelope

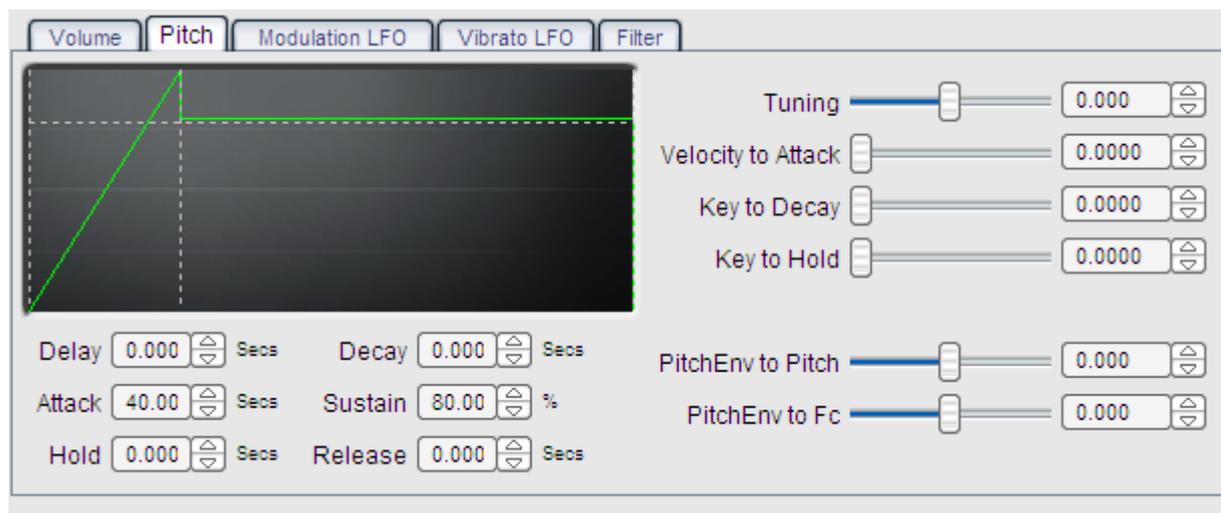


Figure 21: Pitch envelope

Pitch envelope controls the Pitch characteristics of a MobileDLS Instrument or a region of a MobileDLS Instrument (if Region Specific articulation settings are used for all articulation data). You can use a Pitch envelope if you want to create an effect on an audio signal that adds a one-way Pitch bend (rise or fall of Pitch in the audio signal) in its timbre.

You can adjust all Pitch envelope parameters by using the parameter-specific slider or spin controls next to parameter value meters.

Pitch envelope-specific parameters:

Tuning

Tuning shifts the pitch of a MobileDLS Instrument or a region. Tuning is measured in semitones and the range is two octaves (-12 to 12 semitones).

For example, if you have a MobileDLS Instrument that has region that is “out of tune” you can use Tuning to correct its pitch.

Key to Pitch

Key to Pitch measures how much a MIDI Note number affects the Pitch value. You can use Key to Pitch to create non-melodic Instruments, such as drumkits or special effects. The range is 0 to 128 semitones

Velocity to Attack:

Velocity to Attack defines how much effect the MIDI Note On Velocity has on the Attack value of an envelope. Velocity to Attack is measured in time cents and the range is from 0 to 32 time cents.

Velocity to Attack editing is typically used for percussive Instruments.

Key to Hold:

Key to Hold defines how much effect the MIDI Note Number message has on the Hold value of an envelope. Key to Hold is measured in time cents and the range is from 0 to 32 time cents.

Key to Decay:

Key to Decay defines how much effect the MIDI Note Number message has on the Decay value of an envelope. Key to Hold is measured in time cents and the range is from 0 to 32 time cents.

Pitch envelope to Pitch:

Pitch envelope to Pitch defines the Hold level of the Pitch Envelope. The default value is zero and with this default value the Pitch envelope has no audible effect on the audio signal. Pitch envelope to Pitch is measured in semitones and the range is two octaves (-12 to 12 semitones).

Pitch Envelope to Filter Cutoff:

Pitch Envelope to Filter Cutoff defines how much the Pitch envelope will affect the tone of the Filter cutoff. The initial Filter Cutoff value can be adjusted under the Filter category utilities of the Articulation Editor. Pitch envelope to Filter Cutoff is measured in semitones and the range is 21 and one third of an octave (-128 to 128 semitones).

3.2.2.6 LFO's

Low frequency Oscillator is generally used for adding vibrato or tremolo or otherwise controlling audio signal. "Low frequency" implies frequencies below the audio range audible to human ears. An oscillator is a signal source that produces a periodic signal such as a sine, a triangle or a square waveform. The Oscillators of NAS 2.0 produce triangle waveforms.

Modern synthesizers utilize oscillators to create different types of special effects on the sound signals they produce.

NAS 2.0 includes two LFO's, (i) a Modulation LFO and (ii) a Vibrato LFO. These oscillators are used to modulate the sound properties of a MobileDLS Instrument or a region.

3.2.2.7 Modulation LFO

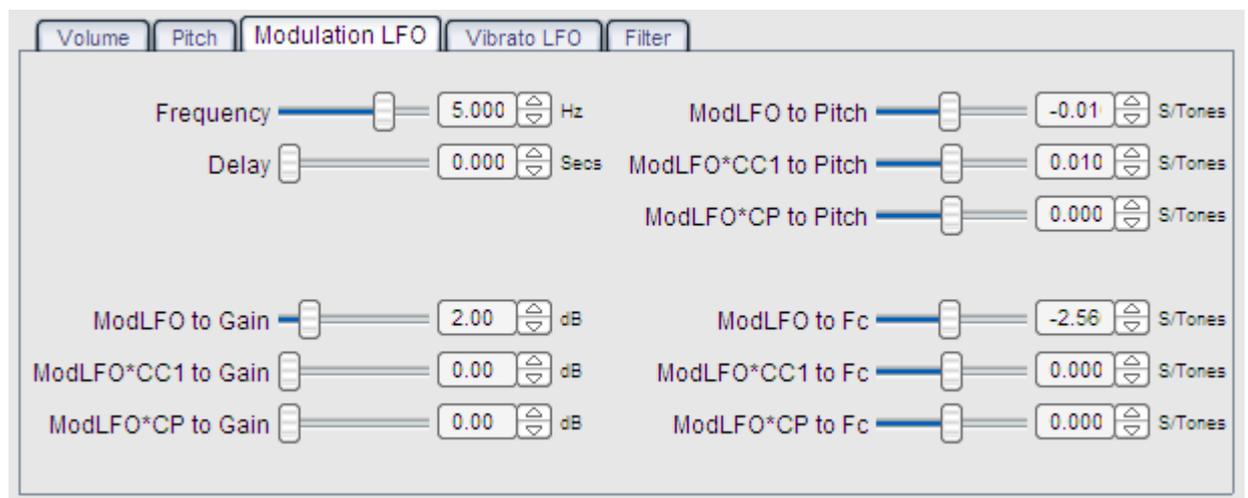


Figure 22: Modulation LFO

Modulation LFO is a multi-purpose Low Frequency Oscillator for modulating the Gain, Pitch, or Filter Cutoff of a MobileDLS Instrument or a region. The result is an effect on the timbre of the MobileDLS Instrument or region that is dependant on whether the Modulation LFO is used on Gain, Pitch, or Filter cutoff.

If the Modulation LFO is used on Gain, the effect on the timbre will be similar to that of a tremolo effect. If the Modulation LFO is used on Pitch, the resulting sound will contain a vibrato effect. If the

Modulation LFO is used on Filter Cutoff, the result is an artificial effect (a “wah wah”guitar effect) that is suitable for electrically amplified modern rock instruments.

You can adjust all Modulation LFO parameters by using the parameter-specific slider or spin controls next to parameter value meters.

Modulation LFO parameters:

Frequency:

Frequency controls the “speed” of the modulation of the LFO. It is measured in frequency and the range is 0.1 to 20 Hz.

Delay:

Delay controls the time it takes for the Modulation LFO to take effect. Range is 0-10 seconds.

Modulation LFO to Gain:

Modulation LFO to Gain defines how much effect the Modulation LFO has on the Volume of the MobileDLS Instrument or region. It is measured in decibels and the range is 0-12 dB.

Modulation LFO * CC1 to Gain:

Modulation LFO * CC1 to Gain defines how much effect the Modulation LFO and the position of the modulation wheel together have on the Volume of the MobileDLS Instrument or region.

Modulation wheel (CC1) is a standard control available in most external MIDI keyboards.

Modulation LFO * CP to Gain:

Modulation LFO * CP to Gain defines how much the Modulation LFO and the MIDI Channel Pressure together have on the Volume of the MobileDLS Instrument or region.

MIDI Channel Pressure (CP) is a MIDI Message that controls the pressure applied to MIDI keys of external MIDI keyboard while they keys are pressed down.

Modulation LFO to Pitch:

Modulation LFO to Pitch defines how much effect Modulation LFO has on the Pitch of the MobileDLS Instrument or region. It is measured in semitones and the range is -12 to 12 (two octaves).

Modulation LFO * CC1 to Pitch:

Modulation LFO * CC1 to Pitch defines how much effect the Modulation LFO and the position of the modulation wheel together have on the Pitch of the MobileDLS Instrument or region.

Modulation wheel (CC1) is a standard control available in most external MIDI keyboards.

Modulation LFO * CP to Pitch:

Modulation LFO * CP to Pitch defines how much the Modulation LFO and the MIDI Channel Pressure together have on the Pitch of the MobileDLS Instrument or region.

MIDI Channel Pressure (CP) is a MIDI Message that controls pressure applied to MIDI keys of external MIDI keyboard, while they keys are pressed down.

Modulation LFO to Filter Cutoff:

Modulation LFO to Filter Cutoff defines how much effect the Modulation LFO has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value. The range is from -128 to 128 semitones.

Modulation LFO * CC1 to Filter Cutoff:

Modulation LFO * CC1 to Filter Cutoff defines how much effect the Modulation LFO and the position of the (external) modulation wheel has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO * CC1 to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value, except that the modulation wheel provides real-time hardware control on the Filter Cutoff.

Modulation LFO * CP to Filter Cutoff:

Modulation LFO * CP to Filter Cutoff defines how much effect the Modulation LFO and the position of the Channel Pressure has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO * CP to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value, except that Channel Pressure of the (external) keyboard provides real-time hardware control on the Filter Cutoff.

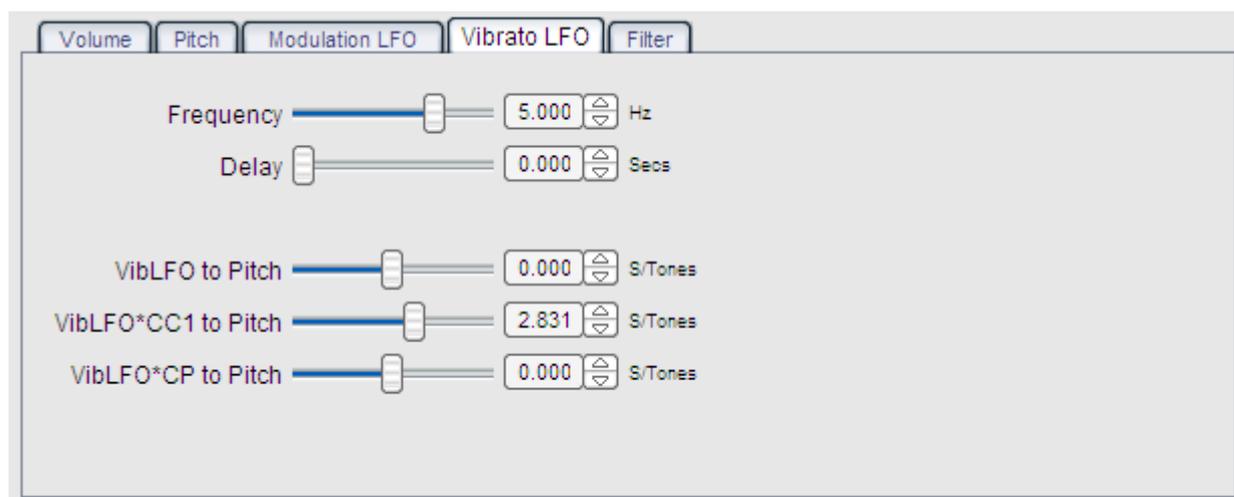
3.2.2.8 Vibrato LFO

Figure 23: Vibrato LFO

Vibrato LFO is a single purpose Low Frequency Oscillator for modulating the Pitch of a MobileDLS Instrument or a region. The result is an effect on the timbre of the MobileDLS Instrument or region that alternates the Pitch level periodically according to the Vibrato LFO parameters.

You can adjust all Vibrato LFO parameters by using the parameter-specific slider or spin controls next to parameter value meters.

Vibrato LFO parameters:

Frequency:

Frequency controls the “speed” of the modulation of the Vibrato LFO. It is measured in frequency and the range is 0.1 to 20 Hz.

Delay:

Delay controls the time it takes for the Vibrato LFO to take effect. Range is 0-10 seconds.

Vibrato LFO to Pitch:

Vibrato LFO to Pitch defines how much effect Vibrato LFO has on the Pitch of the MobileDLS Instrument or region. It is measured in semitones and the range is -12 to 12 (two octaves).

Vibrator LFO * CC1 to Pitch:

Vibrato LFO * CC1 to Pitch defines how much effect the Vibrato LFO and the position of the modulation wheel together have on the Pitch of the MobileDLS Instrument or region.

Modulation wheel (CC1) is a standard control available in most external MIDI keyboards.

Vibrato LFO * CP to Pitch:

Vibrato LFO * CP to Pitch defines how much the Vibrato LFO and the MIDI Channel Pressure together have on the Pitch of the MobileDLS Instrument or region.

MIDI Channel Pressure (CP) is a MIDI Message that controls pressure applied to MIDI keys of external MIDI keyboard, while they keys are pressed down.

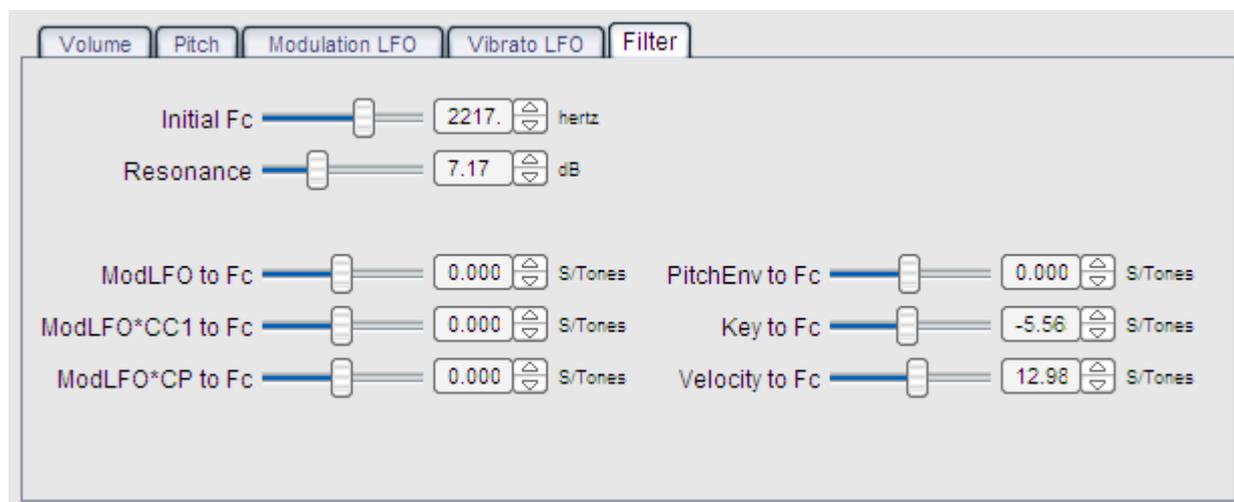
3.2.2.9 Filter

Figure 24: Filter

The Instrument Editor of NAS 2.0 contains a low pass filter. A low-pass filter lets the relatively low frequencies of an audio signal pass through but stops the high frequencies according to its Filter Cutoff value. The Filter is always off by default, but when the Initial Filter Cutoff value is set lower, the Filter becomes active.

Filtering can be applied to a MobileDLS Instrument or a region. It is generally used for removing unwanted high frequency noise or as a special filter-sweep effect.

You can adjust all Filter parameters by using the parameter-specific slider or spin controls next to parameter value meters.

Filter parameters:

Initial Filter Cutoff:

Initial Filter Cutoff value defines the dividing frequency, which is the point where the audio signal is split into pass band (frequency below the Cutoff value) and stop band (frequency above the Cutoff value). Initial Filter Cutoff is measured in Hertz and the range is from 200 to 7998 Hz.

Resonance:

Resonance creates a resonating effect to audio signal by emphasizing a frequency range around the Filter Cutoff frequency. Initial Cutoff frequency is the center frequency of the specified Resonance. The higher the Resonance value, the more resonant the sound becomes until it becomes only a ringing sound. Resonance is measured in decibels and the range is from 0 to 22.5 dB.

Modulation LFO to Filter Cutoff:

Modulation LFO to Filter Cutoff defines how much effect the Modulation LFO has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value. The range is from -128 to 128 semitones

Modulation LFO * CC1 to Filter Cutoff:

Modulation LFO * CC1 to Filter Cutoff defines how much effect the Modulation LFO and the position of the (external) modulation wheel has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO * CC1 to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value, except that the modulation wheel provides real-time hardware control on the Filter Cutoff.

Modulation LFO * CP to Filter Cutoff:

Modulation LFO * CP to Filter Cutoff defines how much effect the Modulation LFO and the position of the Channel Pressure has on the Filter Cutoff frequency of a MobileDLS Instrument or region. You can use Modulation LFO * CP to Filter Cutoff to create a Filter Cutoff that varies in frequency instead having a static value, except that Channel Pressure of the (external) keyboard provides real-time hardware control on the Filter Cutoff.

Pitch Envelope to Filter Cutoff:

Pitch Envelope to Filter Cutoff defines how much the Pitch envelope will affect the tone of the Filter cutoff. The initial Filter Cutoff value can be adjusted under the Filter category utilities of the Articulation Editor.

You can set Pitch envelope to Filter Cutoff value with the slider or by using the spin control next to the Pitch envelope to Filter Cutoff value meter. Pitch envelope to Filter Cutoff is measured in semitones and the range is 21 and one third of an octave (-128 to 128 semitones).

Key to Filter Cutoff:

Key to Filter Cutoff defines how much effect the MIDI Note Number message has on the Initial Filter Cutoff value of the Filter. It adjusts the Filter Cutoff frequency relative to the height of the MIDI Note number controlling the audio signal; the higher you play on the external MIDI keyboard, the higher the Filter Cutoff frequency.

Key to Filter Cutoff is measured in semitones and the range is from -128 to 128 semitones.

Velocity to Filter Cutoff:

Velocity to Filter Cutoff defines how much effect the MIDI Note On Velocity has on the Initial Filter Cutoff frequency of the Filter.

It adjusts the Filter Cutoff frequency relative to the MIDI On Velocity message controlling the audio signal; the harder you press a MIDI key, the higher the Filter Cutoff frequency.

Velocity to Filter Cutoff is measured in time cents and the range is from -128 to 128 semitones.

3.3 MobileXMF Editor

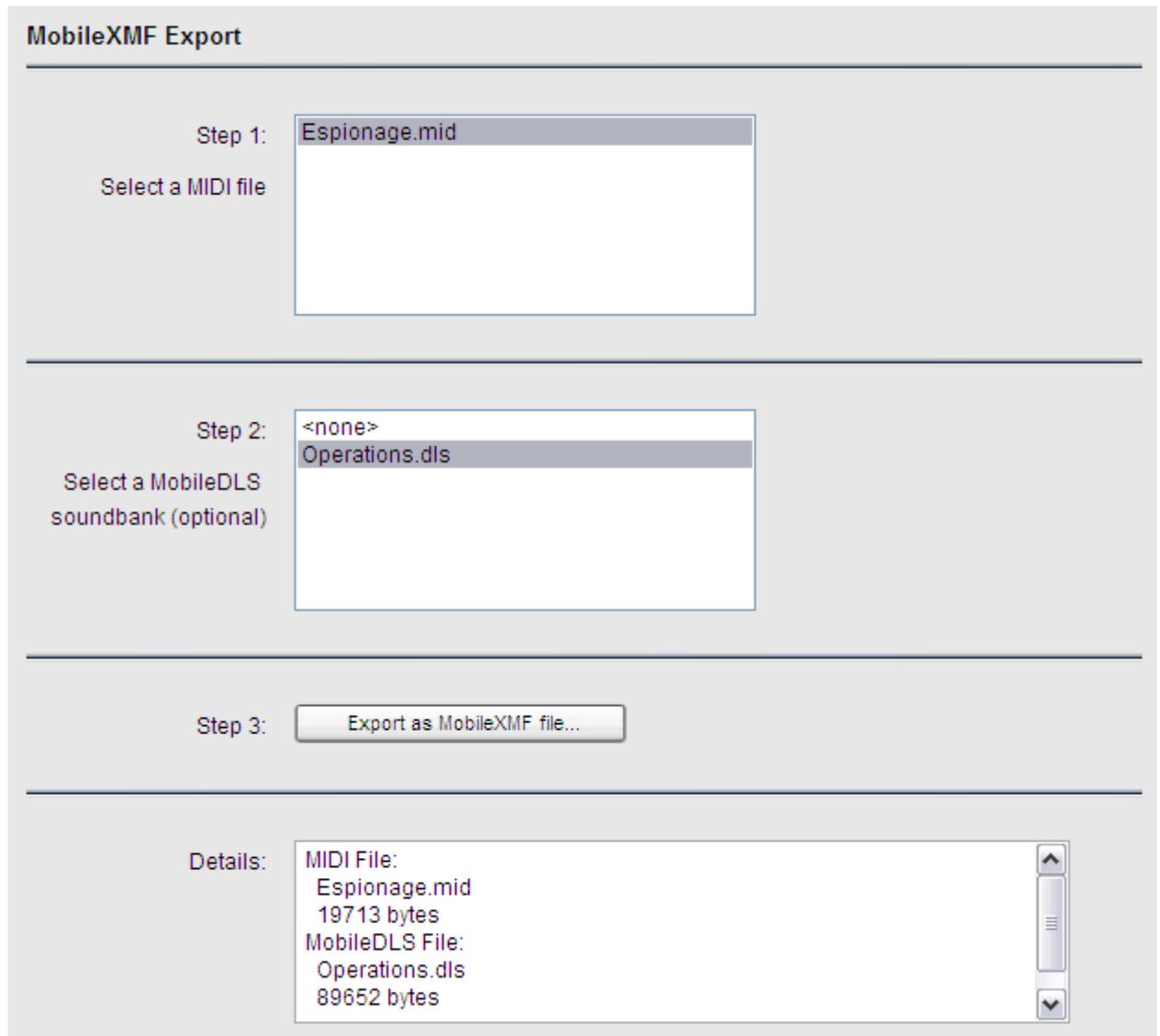


Figure 25: MobileXMF Editor

MobileXMF Editor provides you with the functionality for creating (“exporting”) MobileXMF files from Project components by combining MIDI and MobileDLS files in a Project a single MobileXMF file.

The process of exporting Project files into a MobileXMF file is divided into three steps:

Step 1:

Select one of the SP-MIDI files in the Project as the source of the compositional playback information for the MobileDLS Soundbank. The menu displays all the SP-MIDI files of the active Project.

Step 2:

Select one of MobileDLS Soundbank as the Soundbank included in the MobileXMF file. The menu displays all the SP-MIDI files of the active Project.

Step 3:

After the components of the MobileXMF file have been selected, clicking the Export as MobileXMF button creates a new Mobile XMF file and opens a dialog box for saving the file in your hard drive.

Details field

Details field displays the name and size of the SP-MIDI and MobileDLS files you have chosen to include in the MobileXMF file.

Note: if a MobileDLS Soundbank is included in the MobileXMF file, NAS 2.0 adds a content description metadata field automatically to such file. Content description metadata is used to describe the resource consumption of the file for the playback synthesizer.

3.4 Auralisation Tool

Auralisation Tool is a VST effect plug-in that is installed within the NAS 2.0 VST Plug-ins install set.

The tool auralises input to simulate the acoustics and digital signal processing of target devices. You can use the Auralisation Tool as a master effect when playing audio channels.

In Cubase SX 2.0, open Mixer from the **Devices** → **Mixer** menu. Open the VST Output Channel Settings dialog by clicking **Edit Output Channel Settings** from the output bus channel of the Mixer.

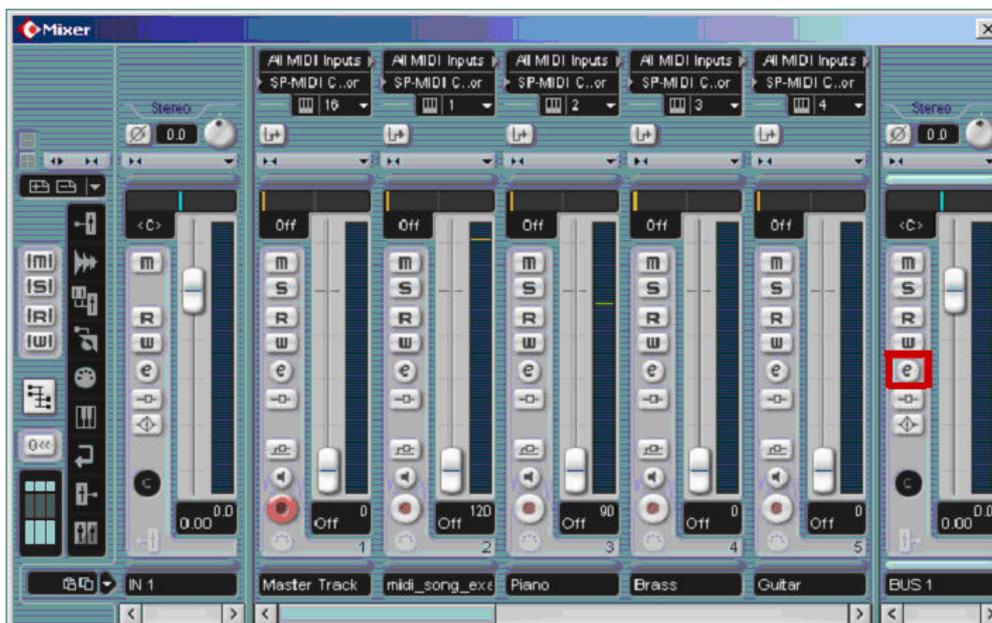


Figure 26: The Edit Output Channel Settings button marked with a red rectangle on the right

Choose **Nokia_Audio_Suite_2_0 / Auralisation tool** from the insert effect drop-down menu as shown in Figure 26 below.



Figure 27: Choosing the Auralisation Tool as a insert effect

Choose the device you want to simulate from the effects drop-down menu in the **BUS 1: Ins. # - Auralisation tool** dialog box.

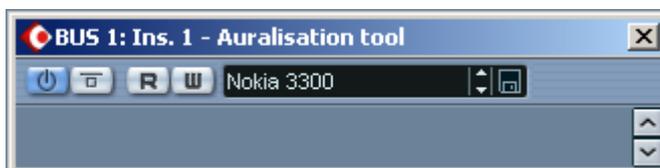


Figure 28: Selecting Nokia 3300 as the simulated device

4 Test and Example files

NAS 2.0 software package is bundled together with a set of MIDI, MobileDLS, and MobileXMF files.

The provided Test MIDI files are designed for previewing and tuning MobileDLS Instruments under production with NAS 2.0. If you are using a Test file, import the file into Cubase and set the Program of the MIDI track to correspond with the MobileDLS Instrument program number in NAS 2.0.

Example files provide you with concrete examples of how MobileDLS and MobileXMF files are typically structured, how the MIDI Lights data works with MIDI files, and for hearing what kind of benefits using MobileDLS and MobileXMF formats provide over MIDI-only songs.

Test MIDI files:

Test_halfstepscale_21-108.MID

This MIDI file contains the whole octave scale of wide octave range MIDI Instruments (for example, piano, most of the synth group Instruments and bass & lead Instruments). You can use this Test file to preview a wide range Instrument, which is played back with single notes at half steps from note a1 to c9.

Test_fullstepscale_21-108.MID

This MIDI file contains the whole octave scale of wide octave range MIDI Instruments (for example, piano, most of the synth group Instruments, and bass & lead Instruments). You can use this Test file to preview a wide range Instrument, which is played back with single notes at full steps from note a1 to c9. Notes of this file are double-length, which allows you to tune the loop position of a waveform audio sample.

Test_fullstepscale_39-96.MID

This MIDI file contains part of an octave scale of for more limited range MIDI Instruments (for example, most of Woodwinds and Horn Instruments). You can use this Test file to preview a limited range Instrument, which is played back with single notes at full steps from note a3 to c8.

Test_standarddrum.MID

This MIDI file contains the whole octave range of the MIDI Drumkit, from b2 to a6. The file only plays back one note for each Drumkit percussive sample. You can use this file to preview Drum samples.

Test_string&pizzicato.MID	This MIDI file contains a chord of three notes, played with alternating voicing moving from lower notes towards the high notes, composed in an arrangement typically used for String Instruments in western classical music. You can use this file to preview all String Instruments, pizzicato strings and other Instruments resembling these types of strings (for example, some synth Instruments).
Test_strings.MID	This MIDI file contains a composition of three notes playing a <i>legato</i> -like melody, with a scale moving from lower notes towards the high notes. You can use this file to preview all String Instruments and string-like Instruments.
Test_chords.MID	This MIDI file contains a composition with minor chords in a narrow range (notes are positioned within a half octave) that moves towards the high notes. You can use this file to preview most musical Instruments.
Test_horn.MID	This MIDI file contains a composition with a two-note voicing typical for Horn and Woodwind Instruments. You can use this file to preview Horn and Woodwind type of Instruments.
Test_piano.MID	This MIDI file contains a melodic song alternating between low and high notes (including chord, melody, and bass lines). You can use this file to preview all keyboard Instruments (pianos, electric pianos, and organs).
Test_pad&synth.MID	This MIDI file contains a melody building up to a chord of six notes, moving from lower notes towards the high notes. You can use this file to preview Instruments that belong to the Pad and Synth Instrument groups. This file is also suitable for previewing all keyboard sounds.
Example files:	
Espionage_vibra.MID	This MIDI file contains a MIDI Vibra configuration on Channel 16.
Light_Simulation_demo.MID	This MIDI file contains MIDI Lights data.

Dancehall.mxmfm	This MobileXMF file contains a SP-MIDI file as control data and a MobileDLS Soundbank as a sound source for the MIDI file. Only the custom MobileDLS Soundbank is used as a sound source (the MIDI file does not use any General MIDI Instruments).
Dancehall_control.MID	The MIDI file of Dancehall.mxmfm as a separate file.
Dancehall_project.xmfm	This Project file contains the contents of Dancehall.mxmfm.
Dancehall_source.DLS	<p>Dancehall_source.DLS is a MobileDLS Soundbank that is produced to act as a sound source of the Dancehall.mxmfm. It is controlled by the Dancehall_control.MID.</p> <p>Dancehall_source.DLS contains five MobileDLS Instruments (bass, drumkit, nygtr, synthpad, and vocals) in its Instrument pool and 15 waveform audio files used by the Instruments in its Waveform pool.</p> <p>Bass, nygtr, synthpad, and vocals are melodic Instruments and therefore Instrument-specific (“Use Instrument” is set in the Instrument Editor) articulation data setting are used. Drumkit uses Region Specific articulation data setting, as is typical with Drum-type</p>

5 FAQ

Why there are two MIDI players in NAS 2.0?

In NAS 2.0 you can play MIDI files either with a Cubase player or an internal NAS player. When the Cubase player is selected as a host player, you can play your compositions while editing them. Internal NAS player plays ready-made files that are included in a created NAS project.

Why both host and NAS 2.0 MIDI players can be playing at the same time?

The host MIDI player enables you to play and test external instruments (from an external MIDI keyboard) simultaneously while a composition is playing on NAS 2.0 player.

Later you can play the composition on the host player and record your material over the composition.

I have opened a MIDI song in Cubase. How do I add MIDI Lights data to this song?

Export the MIDI data into a file in Cubase and import the MIDI file into NAS 2.0. Click MIDI Lights node of the imported MIDI file in the Project Tree; MIDI Lights Editor is opened and you can use its functionality to create, modify and add MIDI Lights Configurations.

I have opened a MIDI song in Cubase. How do I add Vibra to this song?

MIDI Vibra is enabled in Cubase. Insert Bank and Program change (MSB 121, LSB 6 Program 125) events into the start of the MIDI file by using the List Editor of Cubase.

I have opened a MobileDLS Soundbank in NAS 2.0. How do I preview its playback?

Open the MIDI file you want to use for preview playback in Cubase; you can use one of the Test files provided with NAS 2.0. Check the BankMSB, BankLSB and Program numbers of the MobileDLS Instrument in the Instrument Editor of NAS 2.0 and add corresponding Bank and Program change events into the MIDI file in Cubase by using the List Editor. Start the MIDI file playback in Cubase.

6 Terms and Abbreviations

Term or abbreviation	Description
Attack	Function of an envelope that controls the time it takes for the signal to reach its highest level
CC1	MIDI Control Change message 1
CP	MIDI Channel Pressure message
DAHDSR envelope	Delay-Attack-Hold-Decay-Sustain-Release envelope
Decay	A function of an envelope for controlling the time it takes for a certain signal to decay to the Sustain level
Delay	A function of an envelope for controlling the time it takes for a certain signal to start when it has been triggered
DLS	DownloadableSounds Format
Envelope	A set of values that define the shape of the amplitude or pitch of a sound
GM	General MIDI
Hold	A function of an envelope for controlling the time a certain signal is played back at its highest level
Host	A VST-compatible MIDI sequencer program used in connection with NAS 2.0
LC	Lights Configuration, MIDI Sysex data
LFO	Low Frequency Oscillator
LSB	Least Significant Byte
Loop	An option to repeat a sample forever by replaying it automatically when a certain point is reached
MIDI	Musical Instrument Digital Interface
MIP	Maximum Instantaneous Polyphony
MMA	MIDI Manufacturers Association
Mobile DLS	A wavetable instrument representation format that is optimized for use in mobile applications
MobileXMF	A standard audio format for bundling SP-MIDI, MobileDLS samples and copyright information all in one deliverable MobileXMF package
MSB	The Most Significant Byte.
SP-MIDI	Scalable polyphony MIDI.
Sustain	A function of an envelope that controls the signal level following the Decay phase, while the key is still held down on the MIDI keyboard
Sysex message	MIDI System Exclusive message
Velocity	The rate at which a key in input device is depressed, used to control the volume of an audio signal

VST	Virtual Studio Technology. VST is a registered trademark of Steinberg Media Technologies GmbH
VSTe	Virtual Studio Technology effect
VSTi	Virtual Studio Technology instrument
Release	Function of envelope that controls the signal after a key is released
Timbre	A sound's tone color, which is a function of its harmonic content