Ethno Instrument
User Guide

MOTU

Contents

CHAPTER 1   About Ethno Instrument

Ethno Instrument is a universal world/ethnic instrument plug-in for Mac and Windows. Ethno Instrument supports all major audio plug-in formats on both platforms (MAS, VST, AAX, RTAS, and Audio Units).

A world of ethnic instrument sounds at your fingertips

Ethno Instrument delivers expressive ethnic instrument sounds combined with authentic world music loops in one simple-to-use window. From solo instruments to full ensembles, Ethno Instrument delivers all of the exotic textures you need to take your recordings to the four corners of the globe. Included is a massive 21 GB library of instrument samples from all over the world, recorded with pristine audio fidelity and careful attention to detail. You can browse sounds by instrument category or by regions of the world. Or, use the handy search feature to quickly zero in on the sound, instrument, loop or phrase you are looking for.

Phrases and loops

Ethno Instrument's sound library includes a vast library of authentic loops and phrases that can be instantly tempo-locked to your host software time line. You can slice loops with one click to trigger each beat from your keyboard, or drag & drop loops into your host software tracks. Ethno Instrument is truly unique because it provides virtual instruments, loops and phrases together in one seamless, integrated window, with all the flexibility you need to sculpt your music to the very smallest detail.

Universal plug-in or stand-alone operation

Ethno Instrument operates both as a stand-alone application and as a plug-in inside a host audio/MIDI sequencer application such as Digital Performer, Pro Tools, Logic, SONAR, Cubase, Nuendo, Live, and virtually any major audio software program for Windows and Mac.

As a stand-alone application, Ethno Instrument turns your Mac or PC into a streamlined world instrument powerhouse with unlimited parts, disk streaming, 17 independent audio output pairs and 21 GB of world/ethnic sounds. Stand-alone operation also allows you to use Ethno Instrument with music software applications that do not host third party instrument plug-ins. Stand-alone operation is virtually identical to plug-in operation, except for a few additional settings for audio/MIDI input and output.

As a plug-in, Ethno Instrument can be used as a flexible, state-of-the-art sound source directly within your projects. You can save all Ethno Instrument settings with the project for instant and total recall. Since all Ethno Instrument settings are saved with your host application session, you enjoy the highest degree of convenience and speed because there is no separate application or associated documents to manage.

Collaborate across platforms

Because Ethno Instrument supports every major audio production platform, you can effortlessly move from one platform to another — or collaborate with colleagues who use different audio software. For example, you could compose and track a project in Digital Performer, Logic, or Cubase and then move to Pro Tools for mixing. Simply save an Ethno Instrument multi (a snapshot of all its settings) in DP, Logic or Cubase and then load it into Ethno Instrument running in Pro Tools. All settings are exactly preserved, and Ethno Instrument is ready to go.

Operation at a glance

Ethno Instrument displays all essential settings in one window, showing you everything in one glance, without the need to flip through different pages or dig through menus. Adjust your sound quickly and intuitively.

Real acoustic spaces

To further enhance the stunning realism of your compositions, Ethno Instrument includes a highly CPU-efficient convolution reverb processor to produce the most realistic acoustic spaces available. From directly in the Ethno Instrument window, you can audition and choose authentic acoustic spaces, natural spaces like caves and forests to spacious halls and soaring cathedrals.

Flexible multi-timbral performance

Each instance of Ethno Instrument supplies unlimited parts (instruments, loops or phrases), up to 64 MIDI channels and 17 separate audio output pairs. Each part has its own unique volume, pan, etc. Each part can receive MIDI data from one of 64 separate MIDI channels, giving up as many as 64 different instruments to play simultaneously. Simple stacks can be created by assigning two or more parts to the same MIDI channel. If 64 separate instruments are not enough, you can open another instance of the plug-in inside your software — as many Ethno Instrument plug-ins as your host software and CPU resources permit.

Powerful synthesis engine

The central section of the Ethno Instrument window shows an amplitude envelope, filters, velocity response curves and LFO. These parameters let you carefully shape the sound of each instrument, and they can be controlled independently for each of Ethno's unlimited parts. The award-winning UVI-Engine that powers Ethno Instrument delivers virtually unlimited polyphony (256 voices per preset) and ultra-low latency.

Non-western tuning and scales

Many cultures have unique tuning and scales that are far different from the chromatic, 12-tone western scale. Ethno Instrument lets you specify non-western scales, individually for each part. Many scale presets are provided.

Disk streaming

Disk streaming, which can be enabled or disabled independently for each instrument, loop or phrase is a process where only a small initial portion of each sample (instrument sound) is loaded from the hard drive into RAM in preparation for playback, and the rest of the sample is streamed from the hard drive when the note is actually played, rather than being loaded in its entirety beforehand. Streaming conserves large amounts of RAM, allowing you to load more instruments simulta-neously and free up your RAM resources for other plug-ins and applications. Streaming also significantly speeds up the time it takes for instruments to load, especially instruments with large sample sets.

Compatibility with MachFive and other UVI instrument products

If you own MachFive, the universal sampler, and you prefer the convenience of consolidated sound library access via MachFive, you can access Ethno Instrument sounds directly from the soundbank and preset menus in MachFive. Once loaded, you can take full advantage of MachFive's sophisticated layering and stacking features to create elaborate Ethno Instrument combinations, for live performance or complex MIDI sequencing.

The Ethno Instrument sound library presets can also be opened in other products powered by the UVI engine, including BPM and the free UVI Workstation player.

Version 2 new feature highlights

Here is a brief summary of new features added in Version 2 of Ethno Instrument:

21 GB of world/ethnic sounds

The Ethno Instrument Version 2 sound library has almost tripled in size from 8 GB to 21 GB and now represents by far the most complete and definitive library of world/ethnic sounds ever offered. See:

- chapter 8, "Instruments" (page 75)

- chapter 9, "Loops and Phrases" (page 115)

Unlimited parts

You can now play as many instruments and loops in one instance of Ethno as you wish. See:

- "The part list" on page 42

Non-western tuning and scales

Ethno Instrument plays authentic non-western tempered scales via any standard MIDI controller and provides dozens of tuning presets from all over the world, developed by a world expert in micro-tuning. Ethno also supports the Scala open standard for scale tuning and imports Scala (.scl) files via simple drag and drop. See:

- "Tuning" on page 53

- Appendix B, "Microtonal Tuning" page (125)

Browser searching

The new search features in the browser allow you to find sounds quickly and easily. See:

- "Browser search" on page 47

Enhanced effects processing

Version 2 Includes new modeled analog EQ, CPU-optimized convolution reverb and eight new filters (rez, comb, analog and others).

Industry-leading time stretching

Version 2 uses a new audio time-stretching engine that produces stunning sound quality, even with extreme changes in tempo.

Keyswitch presets

The Version 2 sound library adds dozens of new, richly-layered keyswitch (KS) presets in all categories for ultra-expressive performance. See:

- "Keyswitch (KS) presets" on page 72

Version 1 compatibility

Ethno Instrument Version 2's new sound library is compatible with Version 1, so music programmed with Version 1 presets can be loaded and played with Version 2.

Latest-generation UVI Engine

The UVI Engine in Version 2 provides state-of-the-art virtual instrument performance and robust compatibility with the latest Mac OS X and Windows operating systems, plus the latest DAW hosts.

Version 2 sound library highlights

Here are highlights of some of the new and exciting instruments, loops and phrases added in Version 2:

Japan — Taiko drums (hundreds of loops and sound presets)

Africa — Large drums

Asia — Thai drums

Polynesia — Oceanic drums

India instruments — 30 new multi-sampled instruments, with special new legato presets for ultra-realistic performance

India loops — hundreds of new "Urban India" loops (in the style of Slumdog Millionaire)

Eastern Europe — extended cymbalum and Balkanish voices

Gongs — from all over the globe, perhaps the most extensive collection ever offered

World voices — vocal phrases with no words, easily time-stretched to any tempo, including:

- Balkanish voices
- Arabic voices
- Persian voices
- Other world voices

More rare and exotic instruments — hard-to-find instruments, captured with the very best recording techniques. See the summary below.

New Version 2 loops and phrases

- Japanese taiko drums
- Balkanish voices
- Arabic voices
- Persian voices
- India percussion loops
- India percussion phrases

New version 2 instruments

Africa
- African large drums
- African flutes
- Ngoni Donso

Asia
- Gongs
- Koto
- Liu Qin
- Pipa
- Shakuhachi
- Shamisen
- Taiko
- Thai drums

Australia
- Oceanian drums

Celtic
- Bag pipes

Eastern Europe
- Balalaika
- Balkanish voices
- Cymbalum

India
- Dilruba
- Harmonium
- Indian flute
- Indian percussion
- Jaladarangam
- Khombu
- Magudi
- Nadhaswaram
- Santoor
- Sarod
- Shank
- Shenai
- Sitar v2

Middle Eastern/Mediterranean
- Arabic voices
- Baglamas
- Bouzouki
- Mandolin
- Mediterranean Lira
- Middle East Santur
- Persian Voices

Occidental
- Concertina

South America
- Equatorian drum
- Latin panpipe

Xtra World Voices

Quick Reference

Ethno Instrument is a multitimbral instrument. The Parts section shows unlimited parts, and each part can load a different instrument and receive on a separate MIDI channel. 64 MIDI channels are available if your host software supports multiple banks of MIDI channels for instrument plug-ins. Otherwise, 16 MIDI channels are available. Click the name of the part to view its settings, including the ADSR amplitude envelope, LFO and other settings. You can also load, save and view 'multis', which are a snapshot of the entire Ethno window, including all presets and reverb settings.

The main, guitar-pick-shaped portion of the window shows the additional settings for each part. To view a part's settings here, click the name of the part in the part list. An ADSR amplitude envelope is provided, for controlling the contour of the part. There are two filters, an LFO, a portamento setting, polyphony, tuning and scale settings, and MIDI note-on velocity response settings for fine-tuning how the part responds to MIDI data.

The settings in this portion of the window apply to the currently selected (highlighted) part in the part list. Each part has its own settings. Click the part first to view and change its settings.

The Global Section provides volume and tuning settings that affect all parts.

The map shows a picture of the instrument selected (where applicable), and the area of the world where it's from. Click it to toggle between the map and the picture.

Click here to open expert mode, which lets you assign key switches, velocity ranges and zone splits for advanced live performance situations. You can also adjust disk streaming settings and assign parts to Ethno's 17 separate outputs.

Choose a custom tuning and/or scale for non-western instruments that use non-western tonality.

This section lets you control the tempo and synchronization of Ethno Instrument's loops and phrases. Several different loop modes and several speed and sync settings are provided to cover just about any performance situation.

Click here to drag and drop loops into the tracks of your host software. You can drag as audio or as MIDI notes that trigger the sliced loop. Click the Map button to slice it.

Use the on/off button to enable the convolution reverb, and then choose the desired space from the menu. Use the control knobs to adjust the sound of the space. If you have a slow computer, try using the "simple reverb," which is a modeled reverb that uses much less processing power than the convolution reverbs.

The tempo and transport controls allow you to play back loops and phrases together at a wide range of tempos. Both tempo and transport control can by locked to your host audio software, if desired, so that all loops and phrases loaded in Ethno Instrument play perfectly in time with your host software tracks.
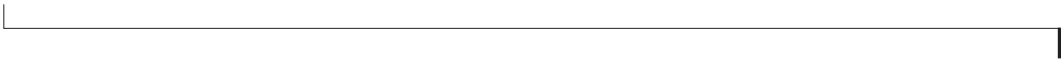
Installation

OVERVIEW
Thank you for purchasing Ethno Instrument.

PACKAGE CONTENTS
Your Ethno Instrument package includes:

■ Ethno Instrument installer disc

■ Ethno Instrument soundbank DVD discs

■ Ethno Instrument User Guide with tear-out registration card

ATTENTION UPGRADING VERSION 1 USERS
☛ Your upgrade package includes a license card with your unique Ethno Instrument version 2 iLok license code printed on it. Since you already have an iLok you can proceed directly to "Preparing your iLok USB Smart Key".

ATTENTION NEW USERS: AN ILOK IS REQUIRED
If you are a new Ethno user: this product requires an iLok Smart Key, a small USB device (sold separately) that holds the license for your MOTU software. Before you install and use your MOTU software, you must obtain an iLok, if you don't already have one.

☛ You will not be able to use your Ethno Instrument software without an iLok.

Figure 2-1: Ethno Instrument is compatible with iLok 1 and iLok 2 USB Smart Keys.

Do you already own an iLok?
You may already own an iLok if you upgraded from a previous version or own any other product that uses iLok. If so, you can skip to "Downloading your Ethno license to your iLok" on page 12.

Purchasing an iLok
If you do not already own an iLok, you can purchase one from your local music retail shop, an on-line music technology reseller, or iLok.com.

iLok compatibility
MOTU instrument products are compatible with iLok 1 or 2 (Figure 2-1).

PREPARING YOUR iLOK USB SMART KEY
Ethno Instrument will not run unless it detects an iLok Smart Key plugged into any available USB port on your computer. In addition, the iLok must hold an Ethno Instrument license. (A version 1 license will not work with Ethno Instrument version 2.)

Do you already own an iLok?
You may already own an iLok if:

■ you upgraded from Ethno 1

- you own another MOTU instrument product

- you own a 3rd-party product that uses iLok

If so, you can skip to "Downloading your Ethno license to your iLok" below.

Purchasing an iLok
If you do not already own an iLok, you can purchase one from your local music retail shop or on-line music technology reseller.

iLok compatibility
Ethno Instrument is compatible with any iLok (1 or 2), as shown in Figure 2-1 on page 11.

Support for iLok Eden
Eden refers to Pace Anti-Piracy's major platform upgrade for iLok copy protection. Eden provides state-of-the-art security and convenience for your Ethno 2 software. Visit iLok.com for complete details about how Eden can help you manage your iLok assets.

☛ Before running Ethno 2, be sure to visit iLok.com to download and install the latest iLok software on your Mac or PC.

Downloading your Ethno license to your iLok
Your Ethno Instrument package includes a card with your unique iLok license code printed on it. Follow the instructions below to redeem the code and download the resulting Ethno software license to your iLok.

☛ Ethno Instrument will not run without the downloaded license in your iLok, so be sure to follow these important instructions before proceeding to install and use Ethno.

Installing iLok License Manager
1 Download and install the iLok License Manager application from ilok.com.

This software is required for iLok operation on your computer.

2 Plug in your iLok into any available USB port on your computer.

3 Launch iLok License Manager and create an account, if you don't already have one.

4 Choose "Redeem Activation Code" from the Licenses menu, then enter your unique, 30-digit license code (found on the license card included with your Ethno package).

5 Click on your account name to view your new authorization in the list. Click it to select it, choose "Activate" from the Licenses menu, select your iLok in the window that appears, and click "Activate" to move your activated license into your iLok.

Your Ethno Instrument software license is now in your iLok. Be sure the iLok is connected when you run Ethno.

Managing iLok licenses
If you have multiple iLoks, you can consolidate all of your licenses onto a single iLok. Use iLok License Manager to move product licenses from one iLok to another, consolidate them onto one iLok, protect them from loss or damage, or otherwise manage your product license assets.

If you have further questions about your iLok, visit www.iLok.com, or contact MOTU Customer Service at +1 (617) 576-2760.

SYSTEM REQUIREMENTS
Ethno Instrument 2.0.4 has the following minimum and recommended system requirements:

- Mac or PC with Intel Core Duo CPU 1.83 GHz or faster; multiple processors or a multi-core processor is required. Intel Core 2 Duo CPU 2.0 GHz or faster recommended. Macs with PowerPC CPUs are not supported.

- 2 GB of RAM is required; 4 GB or more is highly recommended.

- CD/DVD disc drive for installation.

- Mac OS X version 10.5 or 10.6 (v10.5.8 or later is required), or Windows 8, 7 or Vista (32- or 64-bit; Vista SP2 or later is required).

- A large hard drive (preferably at least 100 GB) with enough free space to hold the 21 GB soundbank files. The drive on which the sounds are stored must be a fast hard drive. See below for Mac- and Windows-specific hard drive requirements.

- A CD/DVD disc drive for installation.

- An available USB port for the iLok USB key. If you have multiple products that use iLoks for authorization, you can consolidate multiple authorizations onto a single iLok using www.ilok.com.

- A digital audio workstation program or other program that hosts AU, VST, AAX or RTAS instrument plug-ins. Alternatively, Ethno Instrument can be used as a standalone application.

64-bit operation
For native 64-bit operation, Ethno Instrument has the following additional requirements:

- Mac OS X v10.6, Windows 8, or a 64-bit version of Windows 7 or Vista

- 64-bit CPU

- 64-bit plug-in host application, if using the 64-bit plug-in

Hard disk format
Due to the large size of Ethno Instrument's factory soundbank UFS files, the disk containing the soundbank files must be able to support individual files larger than 4 GB. This is determined by the disk's file system format.

The default file system format for disk drives on Mac OS X and Windows are compatible with Ethno Instrument's soundbank files:

- Mac OS X: HFS+ (Mac OS Extended, journaled or unjournaled)

- Windows: NTFS

The FAT32 format is not compatible with Ethno Instrument's soundbank files, as it does not allow file sizes greater than 4 GB.

If you experience trouble copying the UFS files to your hard disk, refer to the troubleshooting chapter in the Ethno Instrument User Guide.

UVI ENGINE XT
Ethno Instrument 2.0.4 has been significantly updated, due to the incorporation of the latest UVI Engine XT first introduced in the recent release of MachFive 3. Ethno Instrument 2.0.4 is now based on this same core code base, which offers:

- Compatibility with the latest Mac and Windows operating systems

- 64-bit operation

- CPU performance optimizations

- Dozens of "under-the-hood" improvements

INSTALLATION

Windows users: Uninstall previous versions
Before running this Ethno Instrument installer, Windows users should uninstall previous versions of Ethno Instrument by opening the Windows Control Panel, choosing *Programs and Features* (Vista or 7) or *Add or Remove Programs* (XP), and uninstalling Ethno Instrument.

☛ If you are using the DXi version of Ethno Instrument version 1, see "DXi transition" on page 14 before uninstalling.

Run the Ethno Instrument installer
Run the Ethno Instrument installer first before you copy the UFS soundbank files from the soundbank DVDs, as follows:

1 Insert the *Ethno Instrument Installer* CD; or, if you have downloaded the Ethno Instrument installer, locate the folder containing the download.

2 Double-click *Ethno Installer* (Mac), *Setup32.exe* (Windows 32-bit), or *Setup64.exe* (Windows 64-bit).

3 Follow the directions the installer gives you.

☛ Windows VST users: setup lets you choose the location for the Ethno Instrument VST plug-in. Point your host application to this same directory.

Copy the UFS soundbank files to your hard drive
Ethno Instrument includes three 8 GB (dual layer) *soundbank* DVDs that contain a total of 21 GB of multi-sampled instruments. To install the UFS soundbank files, copy them from the DVDs to the following location:

Mac OS X
startup disk/Library/Application Support/MOTU/Ethno/

Windows
startup disk:\Program Files\MOTU\Ethno\

The term *startup disk* in the path names above is the name of your system hard drive (usually *Macintosh HD* or *C*).

Place the UFS files directly in this location. Alternatively, you can place the UFS files in another location (possibly on an external or second hard drive), create aliases (Mac OS X) or shortcuts (Windows) to them, and then place the aliases or shortcuts in this location.

☛ If you create aliases or shortcuts, the names must be the same as their corresponding UFS files. If the alias or shortcut name includes the words *alias* or *shortcut to,* it will not work.

PLEASE REGISTER YOUR SOFTWARE
MOTU can only provide customer service and technical support to registered users. Therefore, it is important for you to register your software immediately after purchase.

To do so, visit www.motu.com/registration to register online. Or, fill out and mail in the registration card found at the beginning of the *User Guide* (leave the rest of the cardboard page in the manual for your future reference).

☛ If you purchased an upgrade from an earlier version at motu.com, you are already registered and no further action is necessary.

VISIT MOTU.COM FOR UPDATES
Software updates are periodically posted on our website, so check our website for the latest updates at www.motu.com.

TECHNICAL SUPPORT
If you have questions, please review the *User Guide* carefully first. You can reach MOTU tech support as follows:

■ 24-hour online tech support database with search engine: www.motu.com

■ Online: www.motu.com/support

■ Phone: +1 (617) 576-3066
(9 a.m. – 6 p.m. Eastern)

■ Downloads: www.motu.com

DXI TRANSITION
Ethno Instrument version 2 .0 and later does not have a DXi version. Windows users should instead use the VST or RTAS plug-in or the standalone Ethno Instrument application.

If you have projects that use the DXi version of Ethno Instrument, before uninstalling Ethno Instrument version 1 or installing Ethno Instrument version 2, follow these steps to transition from the DXi version to another format (VST, in this example):

1 Open any project files that use DXi instances of Ethno Instrument.

2 Open the DXi instance of Ethno Instrument and save a multi.

3 Create a new VST instance of Ethno Instrument.

4 Load the multi file from the DXi instance into the VST instance.

QuickStart Guide

Open Ethno Instrument

1   After Ethno Instrument installation, launch your audio sequencer or MIDI software.

2   Open Ethno Instrument in the usual fashion, either the stand-alone application on your hard drive or the plug-in from within your audio sequencer.

Choose a preset

3   Before you can begin using Ethno Instrument, you need to go to the Part section (as shown below in Figure 3-1) to load an instrument preset, loop or phrase into a part in Ethno Instrument's part list.

To get started, double-click this preset menu to choose an instrument, loop or phrase.

Figure 3-1: Choosing an instrument.

4   To load an instrument, click the Geographic or Instrument tabs at the top of the browser (Figure 3-2); to load a loop or phrase, click the Loops tab. Then click a bank name in the list and click in the columns that appear to browse sub-categories or choose an instrument or loop. Either double-click the item you wish to choose, or click it once to highlight it and click the OK button to load it. It is possible to listen to items in the browser to audition them as you select them. You'll learn how to do this later on when reading the section called "Preset browser" on page 43.

Figure 3-2: The browser.

☛   If the preset menu is empty, then Ethno Instrument has lost the location of the Ethno soundbank files. *See* "When I try to choose a preset, the preset menu is empty. Why is it empty?" on page 127.

Set up MIDI input to the instrument

5   If you are running Ethno Instrument as a plug-in inside your audio sequencer host, part 1 receives on MIDI channel 1 by default, as shown below in Figure 3-3 by the setting "A1".

Figure 3-3: Part 1 MIDI channel assignment is "A1".

6   Send MIDI from your MIDI software to Ethno Instrument on channel 1, or choose a different channel and make sure that the Ethno Instrument part one assignment matches the transmit channel

of your MIDI controller. (You'll see Ethno Instrument as a destination in your MIDI output menus.)

7 If you are running the Ethno Instrument stand-alone application, open the preferences (File menu) and click the *MIDI Devices* tab. Make sure that an available MIDI device connected to your system is chosen for MIDI Port A. Part 1 receives on MIDI channel 1 by default, as shown above (Figure 3-1). Send MIDI from your MIDI software to Ethno Instrument on channel 1, or choose a different channel and make sure that the Ethno Instrument part one assignment matches the transmit channel of your MIDI controller.

Check the audio output assignment

8 If you are running Ethno Instrument as a plug-in inside your audio sequencer host, the Ethno Instrument track has an audio output assignment. Make sure that it is assigned to the appropriate audio output in your system (the headphone outs, main outs, or whatever you are using for listening).

9 If you are running the Ethno Instrument stand-alone application, open the preferences (File menu) and click the *Audio Device* tab. Check the Output Device assignment and make sure the sample rate setting matches the setting on your audio hardware (or the built-in audio hardware of your computer, if that is what you are using).

Play the instrument

10 Try playing your MIDI controller. You should now hear the sound of the instrument you chose back in step 3.

11 If you hear it, congratulations! You are now ready to use Ethno Instrument.

If you don't hear anything

12 Check to see if the MIDI light to the left of the instrument is blinking when you play notes on your MIDI controller. If it blinks, then MIDI is OK. If not, check your MIDI cables and software settings again.

13 Check the audio output assignment for the track on which Ethno Instrument is instantiated. Make sure it is assigned to your headphones, main speakers, or whatever you are listening to.

What is saved with your sequencer project

When you save your sequence, Ethno Instrument is also saved in the exact state you left it, including all chosen presets (instruments) and settings for each part.

The Ethno Instrument Application

OVERVIEW

Ethno Instrument is supplied in two forms:

- As a stand-alone application

- As a plug-in

This chapter explains how to use the Ethno Instrument stand-alone application. For information about operating it as a plug-in, see chapter 5, "The Ethno Instrument Plug-in" (page 25).

STAND-ALONE OPERATION

Ethno Instrument can operate as a stand-alone instrument application, independent of a plug-in host, turning your Mac or PC into a streamlined world instrument powerhouse with unlimited parts, disk streaming, 17 independent audio outputs and 21 GB of world/ethnic instruments, loops and phrases. Stand-alone operation also allows you to:

- play Ethno Instrument from an external MIDI keyboard or other MIDI controller, allowing you to use Ethno Instrument as a live instrument

- use Ethno Instrument as a comprehensive world instrument for an external MIDI sequencer or MIDI-capable music software running on another computer

- use Ethno Instrument as a comprehensive world instrument for MIDI-capable music software that does not host 3rd-party instrument plug-ins but that is running on the same computer as Ethno Instrument

These three scenarios are briefly described below. The rest of this chapter explains the settings in Ethno Instrument necessary to establish MIDI and audio connections for these scenarios.

Playing Ethno Instrument as a live instrument from MIDI controller

To play Ethno Instrument as a live instrument from a MIDI controller, you need to route MIDI data from your controller to Ethno Instrument via a MIDI interface connected to the computer, and then route the audio output from Ethno Instrument to your computer's audio hardware, as shown below. The MIDI data triggers sounds in Ethno Instrument, which then produces audio signal to be routed to your headphones or speakers in your studio:

MIDI keyboard or controller

MIDI data

Ethno Instrument running on a computer

Ethno Instrument audio output from the computer
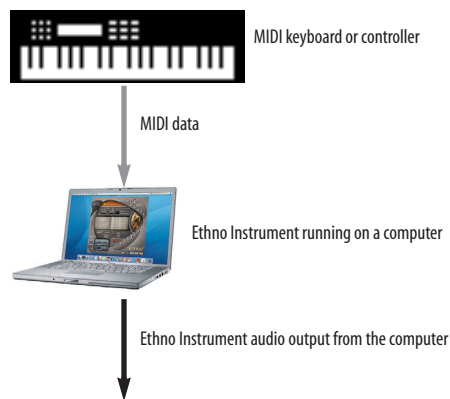
Figure 4-1: The flow of MIDI data and audio signal when playing Ethno Instrument as a live instrument.

MIDI connections

There are several ways to get MIDI data into your computer. Here are a few:

■ A USB MIDI keyboard or pad controller that connects directly to the computer

■ A MIDI-equipped keyboard connected to a USB MDI interface, or to an audio interface that doubles as a MIDI interface, via a standard MIDI cable

Audio connections

There are many ways to play audio from your computer. The simplest method is to use the computer's built-in audio capabilities. You can also use a third-party audio interface. A perfect example is the MOTU UltraLite-mk3, an affordable, bus-powered FireWire audio interface that also provides MIDI input and output, as shown below:

Figure 4-2: An example setup for stand-alone operation using a MOTU UltraLite-mk3 audio interface. In this example, the UltraLite-mk3 is also handling MIDI data transmission from the keyboard controller to the computer and Ethno Instrument.

Using Ethno Instrument as a sound source for music software running on another computer

When running as a stand-alone application on a computer by itself, Ethno Instrument can serve as a sound source for MIDI equipped music software, such as an audio sequencer application, running on another computer.

The advantage of this "satellite" setup is that you can fully dedicate Ethno Instrument satellite computer's processing resources to Ethno Instrument, without affecting the performance of your audio sequencer, notation program or other MIDI authoring software running on your main computer.

The disadvantage to this setup is that you must manage the operational overhead of two (or more) computers. For example, you will need to save the Ethno Instrument settings on the satellite computer in a way that lets you easily cross-reference them to the corresponding file or project for your authoring software on your main computer. If you prefer to save the Ethno Instrument settings directly in your host authorizing software, you are better off running Ethno Instrument as a plug-in. But if processing resources are at a premium, and you have an extra computer on which to run Ethno Instrument, this "satellite" computing scenario can be very beneficial.

The setup for running Ethno Instrument on a satellite computer is similar to the live keyboard scenario described in the previous section, except that audio sequencer software or other authoring software running on your main computer serves as the source of MIDI data being sent to Ethno Instrument running on the satellite computer, as demonstrated in Figure 4-3. MIDI data is transmitted from the host computer via a FastLane MIDI interface and MIDI cable to the UltraLite-mk3 audio/MIDI interface connected to the laptop running Ethno Instrument.
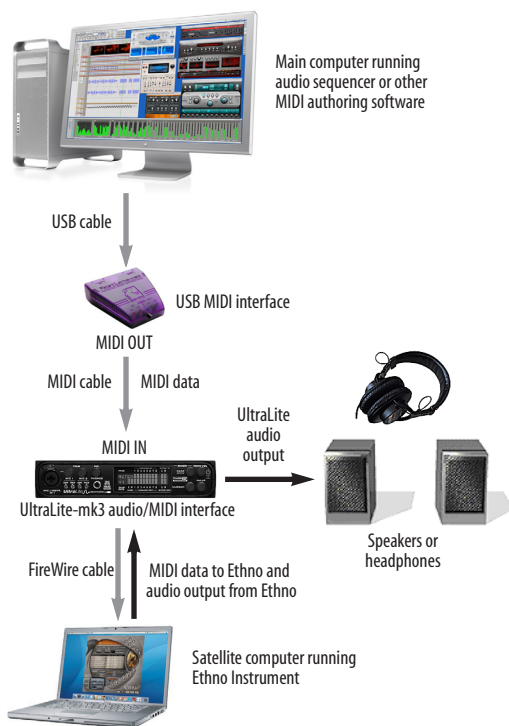
Figure 4-3: An example setup for stand-alone operation using a MOTU UltraLite-mk3 audio interface. In this example, the UltraLite-mk3 is also handling MIDI data transmission from the keyboard controller to the computer and Ethno Instrument.

The example setup shown in Figure 4-3 shows one satellite computer. But you can use this same basic idea for two or more satellite computers, each running virtual instruments as well. For multiple satellite computer setups, you may also want to consider using just one or two computer monitors connected to a computer monitor switcher. These devices, available from your favorite computer supplies retailer, allow you operate multiple computers from the same screen, keyboard and mouse.

Running Ethno Instrument stand-alone on the same computer as your host software

If you are planning to run Ethno Instrument on the same computer as your audio sequencer, notation program or other MIDI authoring software, it will be most convenient for you to run Ethno Instrument as a plug-in inside your host software.

If, however, your authoring software does not have the ability to host instrument plug-ins, it is possible that you might be able to run Ethno Instrument in stand-alone mode and trigger Ethno Instrument sounds from your host software using inter-application MIDI transmission, if your host software supports this feature. *Inter-application* MIDI transmission is when one program sends MIDI data to another program that is running at the same time. In essence, both programs are running side by side as stand-alone applications, and they pass MIDI data (and perhaps even audio streams) between each other.

Inter-application MIDI

On the Mac, inter-application MIDI functionality is supported by the Mac operating system (Mac OS X) itself, and many current music software packages support Mac OS X's inter-application features. Consult your host software documentation for details. On the Mac, you can set up a compatible host application to publish a virtual MIDI device (stream), which then appears in Ethno Instrument's MIDI Device tab menus.
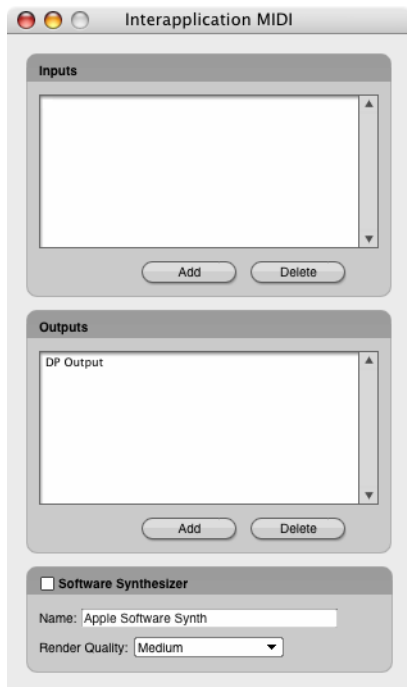
Figure 4-4: An example of the inter-application MIDI feature in a host program. This window in Digital Performer (Setup menu> Inter-application MIDI) lets you create a 'virtual' MIDI output device (stream) from Digital Performer, as shown in this example by the name 'DPOutput'. You can then choose this a virtual MIDI device (source) from within Ethno Instrument (running stand-alone, not as a plug-in). If you then play a MIDI track to the MIDI channels on this virtual output device, they will trigger parts in Ethno Instrument that are assigned to receive on those same MIDI channels.

On Windows, there are third party utilities available for Windows, such as *LoopBe* or *MIDI Yoke*, that allow MIDI programs to transmit MIDI data to each other.

Inter-application audio

The audio output from Ethno Instrument can either play directly to your audio interface hardware connected (via the settings described later in this chapter), or you can use third-party downloadable utilities (such as Cycling 74's *Sound Flower* utility for Mac OS X or other similar downloadable third-party audio utility) to route Ethno Instrument's audio output back into your host audio sequencer application (or any other audio software running on the same computer).

MANAGING LATENCY WITH STAND-ALONE OPERATION

Latency is the time it takes for MIDI data from your controller to reach Ethno Instrument and then for Ethno Instrument to respond to it and produce sound. See "Managing latency" on page 26, which discusses ways to manage latency that apply to both plug-in operation and stand-alone operation.

OPENING THE STAND-ALONE VERSION

On the Mac, the stand-alone version of Ethno Instrument can be found in your Applications folder. On Windows, it can be found under the *Start menu > Programs > MOTU.*

Stand-alone operation is identical to plug-in operation as described in "The Ethno Instrument Plug-in" on page 25, with the exception of the additional stand-alone settings described in this chapter.

AUDIO AND MIDI SETTINGS

The stand-alone version of Ethno Instrument has a few basic settings that can be found in *File menu > Audio and MIDI Settings*:

Figure 4-5: The stand-alone version Audio and MIDI settings.

AUDIO DEVICE TAB

The *Audio Device* tab settings (Figure 4-5) let you make several audio hardware device settings.

API

Choose the desired audio driver for the audio interface you are using for Ethno Instrument. For Mac OS X, this will almost always be set to *Core Audio*. If your Windows audio device provides both MME and ASIO driver support, you are free to choose either driver for Ethno Instrument, but ASIO is recommended.

Output device

Choose the desired audio hardware from the *Output Device* menu (Figure 4-5). For example, you could choose your computer's built-in audio hardware. If you have a third party audio interface installed or connected, and you do not see it in the menu, be sure that you have correctly installed its driver and that it is otherwise functioning properly, independently of Ethno Instrument. For example, can you access the hardware from the system software (Mac OS X or Windows) and other audio applications?

Sample Rate

Choose the desired Sample Rate (Figure 4-5) for playback. The choices in this menu are provided by your audio hardware driver, and the setting you choose here is the sample rate your hardware will be set to. 44.1 kHz is the standard rate for audio compact discs. Ethno Instrument samples are sample-rate converted on the fly to match the rate you've chosen.

Buffer size (Mac)
Output Latency (Windows)

This setting is crucial for managing your computer's processing resources. In general, settings of 256, 128 or 64 samples produce better latency performance. But lower settings place higher demand on your computer's processor.

Refresh Audio Devices

If you make changes to your audio device configuration (outside of Ethno Instrument), click the *Refresh Audio Devices* button (Figure 4-5) to see those changes reflected in the Ethno Instrument Audio Devices tab.

ROUTING TAB

The stand-alone version of Ethno Instrument provides 17 independent stereo outputs (a main out pair, plus 16 additional output pairs numbered 2 through 17) to which you can freely assign each part, as explained in "Outputs" on page 70.

The *Routings* tab (Figure 4-6) provides a way for you to map each Ethno Instrument output to a physical output connector on your audio hardware. For example, you might map Ethno Instrument's "Main Out Left/Right" output pair to the headphone output of your audio interface.

The connectors you see in the *Physical Output* menus (Figure 4-6) are provided by your hardware and its software driver. If you do not see the desired hardware device outputs in the menus, be sure that you have correctly installed its driver and that it is otherwise functioning properly, independently of Ethno Instrument. For example, can you access the hardware from the system software (Mac OS X or Windows XP) and other audio applications?
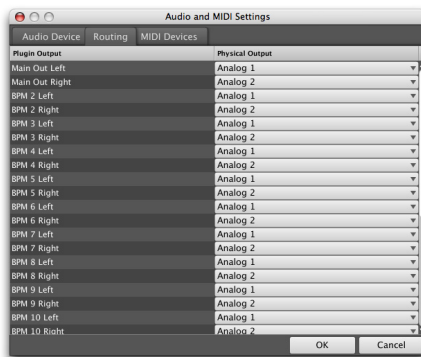
Figure 4-6: Mapping stand-alone version outputs to the physical connectors on your audio hardware.

MIDI DEVICES TAB

The *MIDI Devices* tab (Figure 4-7) lets you configure how external MIDI sources are mapped to Ethno Instrument's 64 MIDI channels (four ports of 16 channels each).
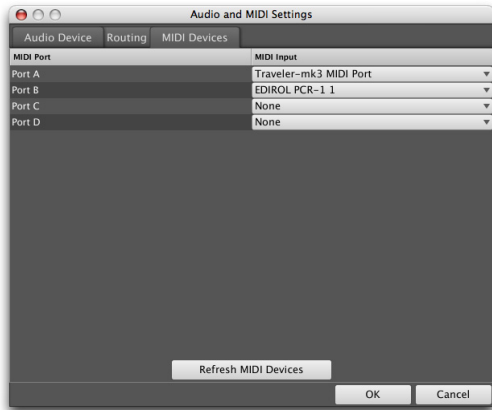
Figure 4-7: MIDI devices.

As defined by the MIDI specification, MIDI channels are supplied in banks of 16 channels. For example, one MIDI cable carries 16 MIDI channels. On multiport MIDI interfaces, such as the MOTU MIDI Express 128, each MIDI port carries its own set of 16 MIDI channels.

This means that there is no such thing as MIDI channel 17, 18, 19, etc. So how does Ethno Instrument provide 64 MIDI channels? The answer is: by dividing them into four ports of 16 channels each: Port A, Port B, Port C and Port D. Each port represents one MIDI cable — or MIDI port on a MIDI interface. The *MIDI Devices* tab (Figure 4-7) lets you map external MIDI sources to each port. These sources could be any of the following:

■ A MIDI IN port on a MIDI interface that is connected to the computer

■ A "virtual" MIDI cable from MIDI software running concurrently with Ethno Instrument (such as Digital Performer)

■ A USB MIDI controller (a keyboard controller that is connected directly to the computer via a USB cable)

■ An audio interface that also supplies one or more MIDI IN ports (such as the MOTU 828mk3 or Traveler-mk3)

When any of these devices are "on line" (that is, they are connected to your computer with their drivers properly installed — or in the case of MIDI software programs, they are running simultaneously with Ethno Instrument), they will display their available MIDI ports in the four MIDI port menus shown in Figure 4-7.

You can choose any source you wish for each port. If you choose the same source for two or more port, just be aware that you will trigger the same MIDI channel on both port. For example, if you assign your controller to both Port A and Port B, and it transmits on MIDI channel 1, you will trigger any Ethno Instrument parts that are assigned to either channel A1 or B1. To make channel A1 and B1 independent from one another, assign them to different sources in the MIDI Devices tab.

Refresh MIDI Devices

If you make changes to your MIDI device configuration (outside of Ethno Instrument), click the *Refresh MIDI Devices* button to see those changes reflected in the Ethno Instrument MIDI Devices tab.

FILE MENU

The File menu for the stand-alone version of Ethno Instrument provides access to the audio and MIDI settings discussed in this chapter.

CHAPTER 5   The Ethno Instrument Plug-in

OVERVIEW

Ethno Instrument is supplied in two forms:

■ As a stand-alone application

■ As a plug-in

This chapter provides basic setup and operation instructions for each supported plug-in format, with specific explanations for a variety of popular host audio software applications. After reading the first two sections (for all users), turn to the section that applies to you.

For information about operating the stand-alone application, see chapter 4, "The Ethno Instrument Application" (page 19).

When operating Ethno Instrument as a plug-in inside a host audio program, you can open — or *instantiate* — Ethno Instrument on two or more tracks at a time. We refer to each independently operating Ethno Instrument as an *instance of Ethno Instrument*. For example, you could say that it is possible to open *multiple instances of Ethno Instrument* in a project. Each one opens as a separate window and operates independently.

CONSERVING CPU RESOURCES

Regardless of your host application, Ethno Instrument provides several settings that are crucial for managing your computer's precious processing (CPU) resources. Another setting, generally referred to as *hardware buffer size*, can also dramatically impact Ethno Instrument performance. This last setting is not in Ethno Instrument; instead, you'll find it either in your host application or in your audio hardware driver configuration settings.

The Polyphony setting

The Polyphony setting (see "Polyphony (Poly)" on page 52) lets you control the maximum allowed number of stereo notes that can be played simultaneous by a part. The upper limit is 256. This setting can be adjusted individually for each part. Keep it as low as possible to conserve CPU bandwidth. For further details, see page 52.

Other ways to optimize Ethno Instrument performance

Here are three additional ways you can optimize Ethno Instrument performance:

1. The filter requires processing bandwidth, so disable the filter (choose *Off* from the filter menu) when not using it.

2. Long envelope times can increase the polyphony count — without being obvious. Make sure your amplitude envelope is set as short as necessary. For details, see "Amplitude Envelope" on page 50 and "Filter envelope" on page 51.

3. Ethno Instrument's built-in convolution reverb will increase the CPU load. Reverb is a very CPU-intensive effect, with longer reverb tails producing the heaviest CPU load. See "Reverb" on page 62 for ways to optimize reverb performance.

Hardware buffer size

Another crucial setting for managing your system's resources is the *hardware buffer size*. This setting is discussed more specifically for each host application later in this chapter. In general, under Mac OS X, this setting is managed by (and found in) your host audio software. Under Windows, some host audio applications, such as SONAR, control this setting, and you'll find it in the host software. For other Windows applications, such as Cubase and Pro Tools, it is managed by the audio hardware driver and is usually found in the driver configuration software for your audio hardware. In general, settings of 256, 128 or 64 samples produce better latency performance. But lower settings place higher demand on your computer's processor.

MANAGING LATENCY

Latency is a term we use to refer to the very small delay that can occur between when a MIDI note is played and the resulting Ethno Instrument sound is triggered. The discussion below explains how to best reduce — and in some cases completely eliminate — latency. However, regardless of which host application you use, there are two general situations that you should be aware of in which latency may be an issue:

■ During live MIDI input

■ During MIDI track playback

Live MIDI input

Live input latency can occur when you play your MIDI controller to trigger sounds "live" in Ethno Instrument, as demonstrated below in Figure 5-1. The most important setting to control live input latency, regardless of your host application, is the "Hardware buffer size" on page 26. Lower hardware buffer settings (512 samples or below) make live input latency almost inaudible. The lower the setting, the more accurate live playing will feel. However, lower settings place higher

demand on the computer, so if you are placing high demands on Ethno Instrument, you may not want to go much lower than 512 samples. If you can live with a little "sponginess" when playing live parts, you could even set the buffer size to 1024 samples. This will give you even better Ethno Instrument performance.

☛ It is important to note that live input latency has no effect whatsoever on the accuracy with which the MIDI data is recorded. This is only a monitoring issue (i.e. what you hear when you play live).

MIDI track playback

MIDI sequencers store streams of MIDI data in their tracks. When you play back the sequence, this MIDI data is sent to Ethno Instrument (and other MIDI instruments) to trigger sounds. The question is: how much time elapses between when a MIDI data event is played from the track and when Ethno Instrument plays the sample being triggered? This period of time, if any, could be referred to as *MIDI playback latency*.

The latest versions of the host applications described in this chapter all have ways to completely eliminate MIDI playback latency for virtual instruments like Ethno Instrument: their MIDI track playback is extremely accurate — even sample-accurate in some cases. (Host applications either send the MIDI data a little early or cue up Ethno Instrument's audio playback a little early so that it plays exactly when the MIDI note plays.) For a few host applications, however, this period of time is affected by the "Hardware buffer size" on page 26: the higher the buffer size, the longer the playback latency. The following sections explain which applications are affected by this setting with regard to MIDI track playback. As with live input latency, lower buffer settings result in more accurate playback, but at the expense of increased processing load on your computer.

MIDI or USB Cable

MIDI Controller

Ethno Instrument audio output
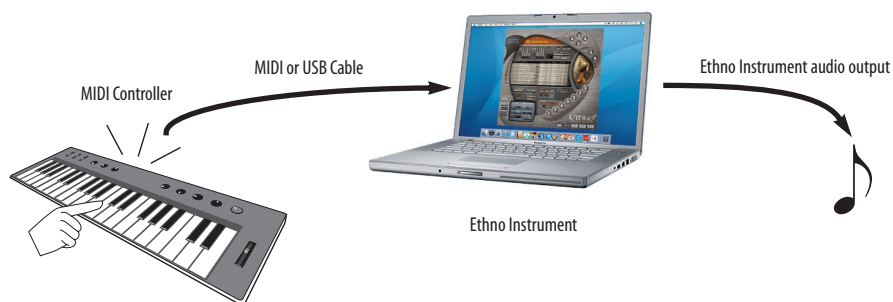
Ethno Instrument

Figure 5-1: Latency during live MIDI input. You press a key on your controller keyboard. The note gets sent to Ethno Instrument, which then plays a note in response to the received MIDI data. Latency is the time it takes between when you play the note and then hear it. High latency feels "spongy". In other words, notes seem to play consistently a little late. Live input latency has no effect whatsoever on the accuracy with which the MIDI data is recorded. This is only a monitoring issue (i.e. what you hear when you play live).

DIGITAL PERFORMER (MAC OS X)

For Digital Performer, Ethno Instrument operates as a standard MAS instrument plug-in. For complete details about running instrument plug-ins in Digital Performer, refer to your DP documentation. Here is a brief overview of how to use Ethno Instrument in Digital Performer.

Installation for DP

The Ethno Instrument installer places the Ethno Instrument plug-in in the MAS plug-ins folder:

/Library/Audio/Plug-ins/MAS/

Calling up Ethno Instrument on an instrument track

Ethno Instrument is accessed from an instrument track in Digital Performer's Mixing Board. To create a new instrument track with Ethno Instrument already instantiated on it, choose *Project menu> Add Track> Instrument Track> MOTU:Ethno Instrument*. To instantiate Ethno Instrument on an existing instrument track, just choose it from the topmost insert menu.
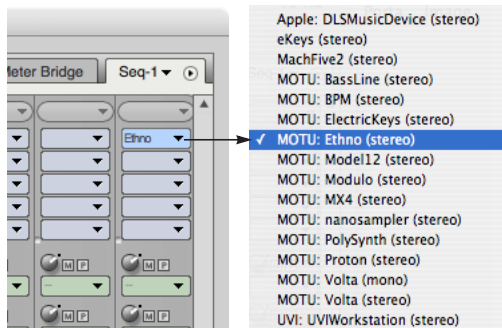
Figure 5-2: Opening Ethno Instrument on an instrument track in Digital Performer.

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in Digital Performer as your computer's processing resources will allow. Keep in mind that Ethno Instrument operates as a multitimbral instrument, so each instance of Ethno

Instrument is capable of playing different instruments (triggered from separate MIDI channels).

Using Ethno Instrument in a V-rack

If you are working with multiple sequences in a Digital Performer project document, and the sequences are making use of the same sounds in Ethno Instrument, consider instantiating Ethno Instrument in a V-rack. By doing so, you will only have to instantiate Ethno Instrument once, in the V-rack, instead of multiple times in each individual sequence. This is a much more highly efficient way to work, as it speeds up the time it takes for the project to open and the amount of time to switch between sequences. It also takes up much less computer memory.

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Specifying audio output

By default, Ethno Instrument sends the output of all parts to the audio output assignment of the instrument track on which it is instantiated. But it also supplies multiple independent outputs, which let you send parts to different destinations in the Digital Performer mixing environment, including the separate outputs on your audio hardware. For details, see "Outputs" on page 70.

Figure 5-3: In Digital Performer, Ethno Instrument sends audio to the track's audio output assignment. In this example, the instrument track is being played on the main outs of a MOTU FireWire audio interface.

MIDI I/O

MIDI I/O between Ethno Instrument and Digital Performer is handled by Mac OS X's built-in MIDI services (*CoreMIDI*). When you first instantiate a Ethno Instrument plug-in, Ethno Instrument publishes 64 MIDI channels to Digital Performer. (Each instance of Ethno Instrument publishes its own set of 64 channels.) These MIDI channels appear in the output assignment menus of DP's MIDI tracks.

☞ Ethno Instrument must be instantiated in the project before you'll see its MIDI channels displayed in the MIDI output menus in DP.

To send MIDI data from a DP track to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Near sample-accurate MIDI playback

In regard to "Managing latency" on page 26, DP's MIDI track playback (the timing between MIDI tracks in Digital Performer and the audio being triggered in Ethno Instrument) is accurate to within one sample. In other words, Ethno Instrument audio will never trigger more than one sample earlier or later than the exact sample location prescribed by the MIDI data event triggering the sample. This is because both DP and Ethno Instrument take advantage of Mac OS X's MIDI time-stamping features. This allows DP to accurately pre-cue MIDI data for playback. Ethno Instrument plays back in DP with the tightest timing possible.

Reducing live input latency

In regard to "Managing latency" on page 26, you can minimize live input latency with Ethno Instrument by keeping Digital Performer's *Buffer Size* setting as low as possible. This setting is found in the Setup menu> Configure Audio System> Configure Hardware Driver. Try values of 256

samples or lower, if your computer can handle them. Lower settings produce higher processing demands on your computer's CPU resources.

PRO TOOLS (MAC & WINDOWS)

Ethno Instrument operates as a standard AAX plug-in for Pro Tools 11 and above. It can also run as an RTAS plug-in for earlier versions of Pro Tools. For complete details about running AAX and RTAS plug-ins in Pro Tools, refer to your Pro Tools documentation. Here is a brief overview of how to use Ethno Instrument in Pro Tools.

Installation for Pro Tools

The Ethno Instrument installer places the Ethno Instrument plug-in in here:

Platform	Location
Mac OS X	/Library/Application Support/Digidesign/Plug-ins
Windows	\Program Files\Common Files\DAE\Plug-ins

Calling up Ethno Instrument on an instrument track

Ethno Instrument is accessed from the insert menus of any instrument track in Pro Tools. Just choose it from the insert menu and it will open as a plug-in.
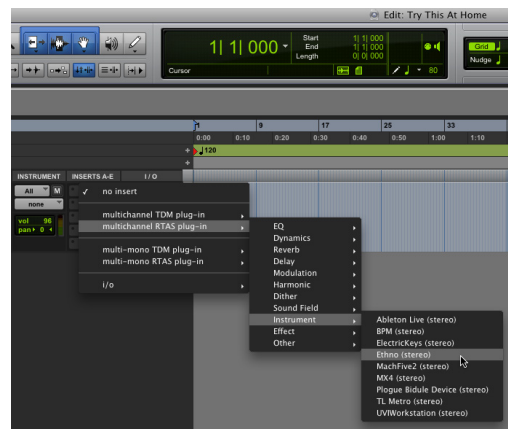
Figure 5-4: Opening the Ethno Instrument plug-in in Pro Tools (same for Mac and Windows).

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in Pro Tools as it — and your computer's processing resources — will allow. Keep in mind that Ethno Instrument operates as a multitimbral instrument, so each instance of Ethno Instrument is capable of playing different instruments (triggered from different MIDI channels).

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Specifying audio output

By default, Ethno Instrument sends the output of all parts to the audio output assignment of the instrument track on which it is instantiated. But it also supplies multiple independent outputs, which let you send parts to different destinations in the Pro Tools mixing environment, including the separate outputs on your audio hardware. For details, see "Outputs" on page 70.
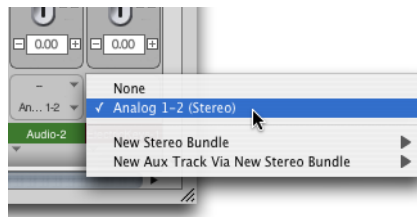
MIDI I/O

MIDI I/O between Ethno Instrument and Pro Tools is handled by Mac OS X's built-in MIDI services (*Core MIDI*). When you first instantiate the Ethno Instrument plug-in, Ethno Instrument publishes 64 MIDI channels to Pro Tools. (Each instance of Ethno Instrument publishes its own set of 64 channels.) These MIDI channels appear in the output assignment menus of Pro Tool's MIDI tracks.

☛ Ethno Instrument must be instantiated in the session before you'll see its MIDI channels displayed in the MIDI output menus in Pro Tools (Figure 5-5) below.

To send MIDI data from a Pro Tools track to a specific Ethno Instrument part, assign the MIDI track to the corresponding Ethno Instrument MIDI channel for the bank or part.
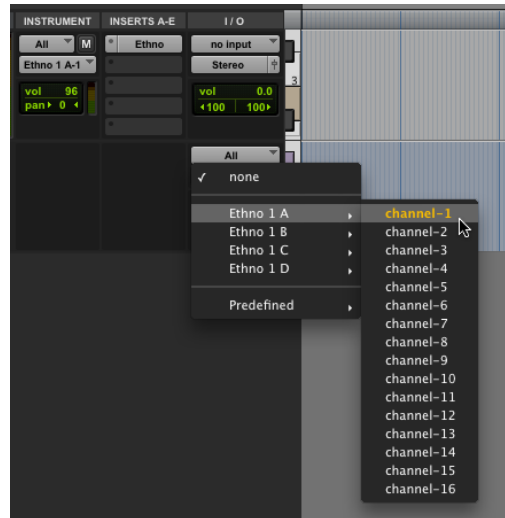
Figure 5-5: Assigning a Pro Tools MIDI track to a Ethno Instrument MIDI channel.

Reducing buffer latency

In regard to "Managing latency" on page 26, you can minimize both live MIDI input latency and MIDI track playback latency by keeping your Pro Tools DAE *Buffer Size* setting as low as possible. Consult your Pro Tools manual for details about adjusting the DAE buffer size. Lower settings produce higher processing demands on your computer's CPU resources.

LOGIC (MAC OS X)

For Logic, Ethno Instrument operates as a standard Audio Unit (AU) plug-in.

Installation for Logic

The Ethno Instrument installer places the Ethno Instrument AU plug-in in the Components plug-in folder:

/Library/Audio/Plug-ins/Components/

Opening Ethno Instrument on an instrument track

In Logic Pro, create an audio instrument track. Then open a stereo Ethno Instrument on the instrument track.
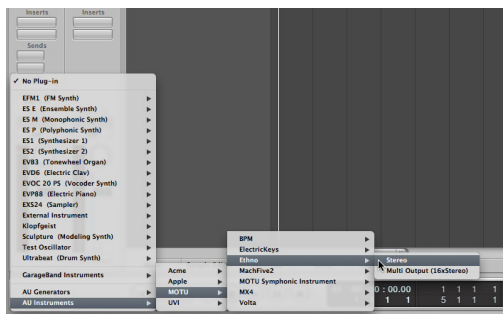
Figure 5-6: Opening Ethno Instrument on a Logic Pro instrument track (from the track settings panel in this example).

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in Logic Pro as your computer's processing resources will allow. Keep in mind that Ethno Instrument operates as a multitimbral instrument, so each instance of Ethno Instrument is capable of playing different instruments (triggered from different MIDI channels).

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Specifying audio output

By default, Ethno Instrument sends the output of all parts to the audio output assignment of the instrument track on which it is instantiated. But it also supplies multiple independent outputs, which let you send parts to different destinations in the Logic mixing environment, including the separate outputs on your audio hardware. For details, see "Outputs" on page 70.

MIDI I/O

MIDI I/O between Ethno Instrument and Logic is handled by Mac OS X's built-in MIDI services (*CoreMIDI*). When you first instantiate a Ethno Instrument plug-in and choose a preset, Ethno Instrument publishes 16 MIDI channels to CoreMIDI and Logic. (Each instance of Ethno Instrument publishes its own set of 16 channels.) These MIDI channels will automatically become available in Logic on Ethno Instrument's instrument track. No extra preparation is necessary.

☛ Ethno Instrument must be instantiated in your Logic session before you'll see its MIDI channels displayed in the MIDI output menus in Logic.

To send MIDI data from a Logic track to a specific Ethno Instrument part, send MIDI data to the corresponding MIDI channel for the part. For further important details about MIDI channel assignments in Ethno Instrument, see "MIDI channel" on page 42).

In the Ethno Instrument instrument track (or any other tracks assigned to the Ethno Instrument instrument object), each MIDI data event is tagged with a MIDI channel. Use Logic's list editor to assign existing notes to a MIDI channel, and then assign that same MIDI channel to the desired part (or parts) in Ethno Instrument (as explained in "MIDI channel" on page 42). Any notes in the instrument track that match a part's MIDI receive channel in Ethno Instrument will play that part. The same is true for any new data recorded, or live data that is 'patched through' to Ethno Instrument from your controller keyboard. In this scenario, make sure the Ethno Instrument instrument track channel (in the track settings panel) is set to *All* or "*0*" (zero).

You can also route data from other MIDI tracks to Ethno Instrument by assigning the track to the Ethno Instrument audio instrument and tag all notes in the track to the necessary MIDI channel for Ethno Instrument.

Latency

In regard to "Managing latency" on page 26, Logic's *I/O Buffer Size* setting (as shown below in Figure 5-7) has no effect on either live MIDI input latency or MIDI track playback, as Logic has other ways of managing them. In general, Ethno Instrument will perform as well as any other virtual instrument that you use in Logic.
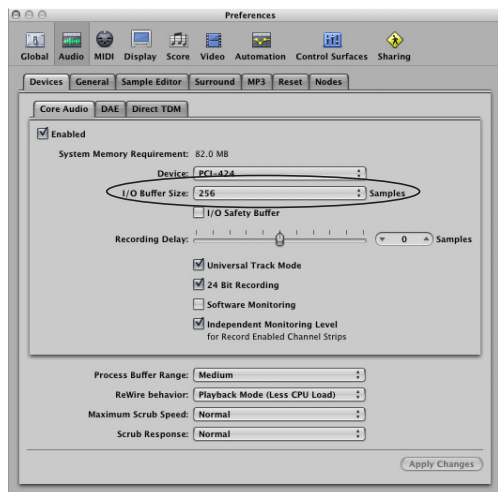
Figure 5-7: Logic's I/O Buffer Size setting.

OTHER AUDIO UNIT HOSTS (MAC OS X)

For Mac OS X audio/MIDI applications that support Audio Units (AU) plug-ins, Ethno Instrument operates as a standard AU plug-in. The AU host application must also support MIDI sequencing and Mac OS X's built-in MIDI services (*CoreMIDI*) to send MIDI data to Ethno Instrument. Ethno Instrument sounds are triggered by MIDI data received from the host application.

Installation for AU hosts

The Ethno Instrument installer places the Ethno Instrument AU plug-in in the Components plug-in folder:

/Library/Audio/Plug-ins/Components

Calling up Ethno Instrument on an audio track

Ethno Instrument is accessed in an Audio Unit host application in the standard fashion as an AU plug-in.

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in your host application as it — and your computer's processing resources — will allow. Keep in mind that Ethno Instrument operates as a multitimbral instrument, so each instance of Ethno Instrument is capable of playing different instruments (triggered from different MIDI channels).

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Specifying audio output

By default, Ethno Instrument sends the output of all parts to the audio output assignment of the instrument track on which it is instantiated. But it also supplies multiple independent outputs, which

let you send parts to different destinations in your host software's mixing environment, including the separate outputs on your audio hardware. For details, see "Outputs" on page 70.

MIDI I/O

MIDI I/O between Ethno Instrument and an AU plug-in host application is handled by Mac OS X's built-in MIDI services (*CoreMIDI*). When you first instantiate a Ethno Instrument plug-in, it publishes 16 MIDI channels to CoreMIDI. (Each instance of Ethno Instrument publishes its own set of 16 channels.) These MIDI channels should automatically appear in the MIDI output assignment menus in your host application.

☛ Ethno Instrument must be instantiated in the AU host project before you'll see it displayed in the MIDI output menus in the host.

To send MIDI data from a MIDI track in your host application to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Reducing buffer latency

In regard to "Managing latency" on page 26, the hardware buffer size may or may not impact live MIDI input latency and MIDI track playback: it depends on the host software. Consult the documentation for your host software for information about using virtual instruments.

CUBASE AND NUENDO (MAC & WINDOWS)

For Cubase or Nuendo, Ethno Instrument operates as a standard VST instrument (VSTi).

Installation for Cubase or Nuendo

The Ethno Instrument installer places the Ethno Instrument VST plug-in here:

Platform	Location
Mac OS X	/Library/Audio/Plug-Ins/VST
Windows	\Program Files\MOTU\Vstplugins
	If you want to install the VST in another Vstplugins folder, copy the Ethno Instrument VST file from this folder to the desired location.

Opening a Ethno Instrument VSTi

Go to the *VST Instruments* rack and choose Ethno Instrument in a slot, as shown below:
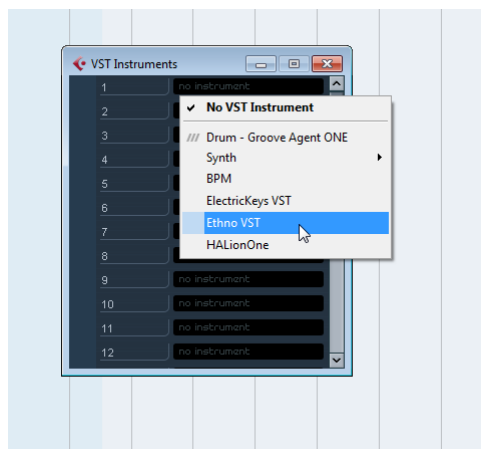
Figure 5-8: Opening Ethno Instrument in the VST Instruments window (same for Mac and Windows).

Alternatively, you can create an instrument track, as shown below:
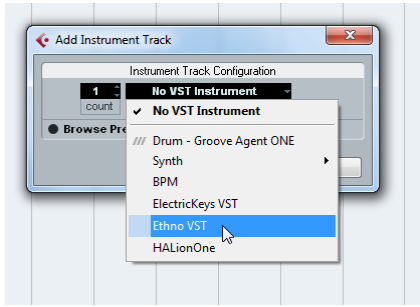
Figure 5-9: Creating an instrument track for Ethno Instrument (same for Mac and Windows).

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in the VST Instruments rack as your computer's processing resources will allow. Keep in mind that Ethno Instrument operates as a multitimbral instrument, so each instance of Ethno Instrument is capable of playing different instruments (triggered from different MIDI channels).

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Setting up audio outputs

Use the Device Setup window to enable VST outputs as usual. Then, add the desired output busses in the *VST Connections* window (Devices menu). For complete information about setting up audio outputs for VST instruments, refer to your Cubase or Nuendo manual.

Once you've set up the desired output bus, go to the Mixing Board and assign the Ethno Instrument output (Ethno) to the desired output bus:
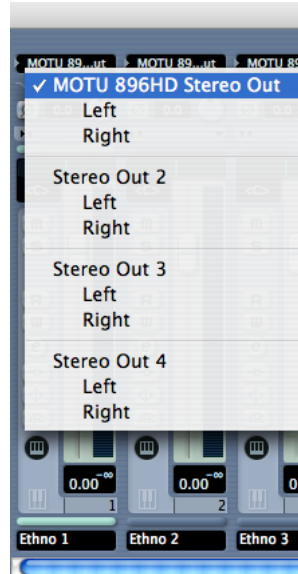
Figure 5-10: Assigning the Ethno Instrument output to the desired output bus.

MIDI I/O

MIDI I/O between Ethno Instrument and Cubase or Nuendo is handled by VST. When you first instantiate a Ethno Instrument plug-in, Ethno Instrument publishes 16 MIDI channels to Cubase or Nuendo. (Each instance of Ethno Instrument publishes its own set of 16 channels.) These MIDI channels automatically appear in the output assignment menus of Cubase or Nuendo's MIDI tracks:
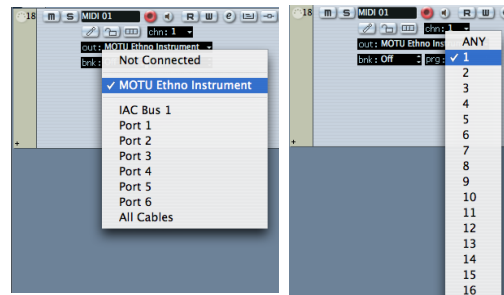
Figure 5-11: Assigning a MIDI track to Ethno Instrument and choosing a MIDI channel.

☛ Ethno Instrument must be opened in your Cubase or Nuendo project before you'll see its MIDI channels displayed in the MIDI output menus in Cubase or Nuendo.

To send MIDI data from a MIDI track to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Reducing buffer latency

In regard to "Managing latency" on page 26, Cubase and Nuendo provide ways to manage virtual instrument playback timing (consult your user guide for details). You can minimize live input latency with Ethno Instrument by keeping their *Audio Buffer Size* setting as low as possible. This setting is found in the Device Setup window under the *VST Instruments* list item. Try values of 256 samples or lower, if your computer can handle them. Lower settings produce higher processing demands on your computer's CPU resources.

Under Mac OS X, the Audio Buffer setting is found in the Device Setup window under the *VST Audio System* list item (Figure 5-12).
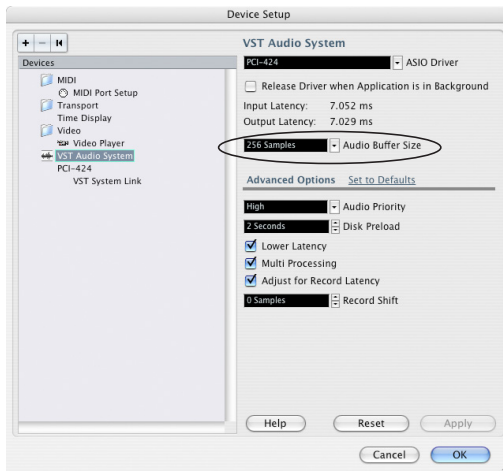
Figure 5-12: Setting the Audio Buffer Size in Cubase or Nuendo (Mac).

Under Windows, open the Device Setup window and choose your audio hardware from the list on the left, found under *VST Audio System* (Figure 5-13). Click the Control Panel button to launch your audio hardware's configuration software.
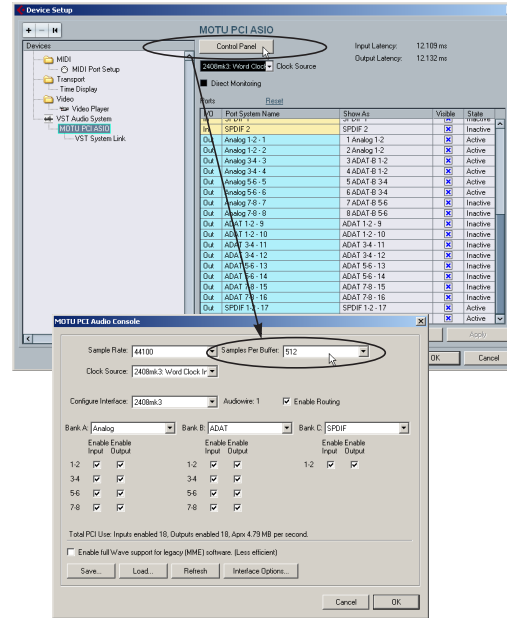
Figure 5-13: Setting the Audio Buffer Size in Cubase or Nuendo.

LIVE (MAC & WINDOWS)

For Ableton Live running on Mac OS X or Windows, Ethno Instrument operates as a standard VST instrument (VSTi). Alternatively, you may use Ethno Instrument as an Audio Unit (AU) instrument when running Live on Mac OS X; the process is the same as described for VST.

Installation for Live

The the Ethno Instrument installer places the Ethno Instrument VST plug-in here:

Platform	Location
Mac OS X	/Library/Audio/Plug-Ins/VST
Windows	\Program Files\MOTU\Vstplugins
	If you want to install the VST in another Vst-plugins folder, copy the Ethno Instrument VST file from this folder to the desired location.

Opening the Ethno Instrument VSTi

Go to the Plug-in Device Browser and drag the Ethno Instrument VST onto a MIDI track, or into the Clip/Device Drop Area, to create a new track.
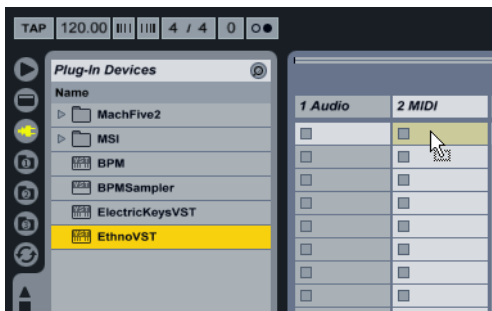
Figure 5-14: Opening Ethno Instrument in the VST Instruments window.

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in the VST Instruments rack as your computer's processing resources will allow.

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Setting up audio outputs

Use the *Preferences > Audio* window to enable outputs as usual. Once you've set up the desired outputs, assign the output of the Ethno Instrument track to the desired bus. Choose *Master* to assign it to the master output bus, or choose *Ext. Out* then select a different output from the menu below.

Figure 5-15: Assigning the Ethno Instrument output to the desired output bus.

MIDI I/O

When you first instantiate the Ethno Instrument plug-in, Ethno Instrument publishes itself as a MIDI destination to Live, which appears in the output assignment menus of Live's MIDI tracks.

☛ Ethno Instrument must be opened in your Live project before you'll see it displayed in the MIDI output menus in Live.

To send MIDI data from a MIDI track to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Reducing buffer latency

In regard to "Managing latency" on page 26, Live provide ways to manage virtual instrument playback timing (consult your user guide for details). You can minimize live input latency with Ethno Instrument by keeping the *Audio Buffer Size* setting as low as possible. Try values of 256 samples or lower, if your computer can handle them. Lower settings produce higher processing demands on your computer's CPU resources.

In Live, the *Buffer Size* setting is found in the *Preferences > Audio* window (Figure 5-16). On Mac OS X, you can directly change that setting. On Windows, click the *Hardware Setup button* to launch your audio hardware's configuration software.
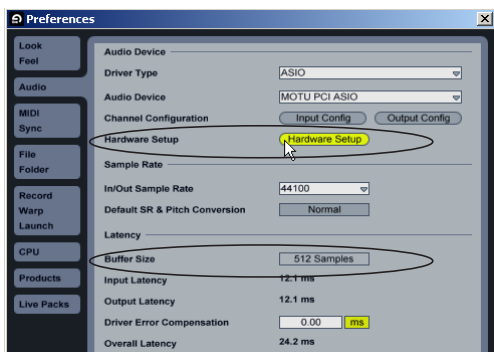
Figure 5-16: Setting the Audio Buffer Size in Live.

SONAR (WINDOWS)

For SONAR, Ethno Instrument operates as a standard VSTi instrument.

Installation for Sonar

The Ethno Instrument installer places the Ethno Instrument VST plug-in here:

Platform	Location
Mac OS X	/Library/Audio/Plug-Ins/VST
Windows	\Program Files\MOTU\Vstplugins
	If you want to install the VST in another Vstplugins folder, copy the Ethno Instrument VST file from this folder to the desired location.

Opening the Ethno Instrument VSTi

To open Ethno Instrument in SONAR, go to the *Insert* menu and then choose it from the *Soft Synth*s sub-menu. Or go to the *View* menu and open the *Synth Rack*. In the Synth Rack window, click the *Insert Soft Synth* button. In either case, if the *Ask This Every Time* option is checked, the *Insert Soft Synth Options* window appears (Figure 5-17). Click OK.
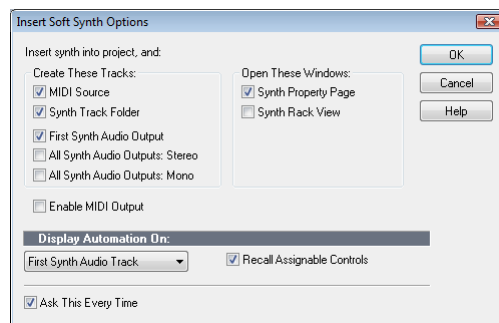
Figure 5-17: Opening Ethno Instrument in SONAR.

Using multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in the Synth Rack as SONAR as your computer's processing resources will allow.

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Setting up audio outputs

Ethno Instrument audio output needs to be assigned to a SONAR audio track input. If you enabled one or both of the audio output options in the *Soft Synth Options* window (Figure 5-17), SONAR has already done this step for you. If not, choose Ethno Instrument from an audio track input menu.

MIDI I/O

When you first instantiate an Ethno Instrument plug-in, it publishes itself as a MIDI destination to the VSTi host, appearing in the output assignment menus of SONAR or other VSTi host's MIDI tracks.

☞ Ethno Instrument must be opened in your SONAR project before you'll see its MIDI channels displayed in the MIDI output menus in the host application.

To send MIDI data from a MIDI track to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Reducing buffer latency

In regard to "Managing latency" on page 26, SONAR provides ways to manage virtual instrument playback timing (consult your user guide for details). You can minimize live input latency with Ethno Instrument by keeping the *Buffer Size* setting as low as possible. This setting is found in the Audio Options window under the General tab, as shown below in Figure 5-18. Lower settings produce higher processing demands on your computer's CPU resources.
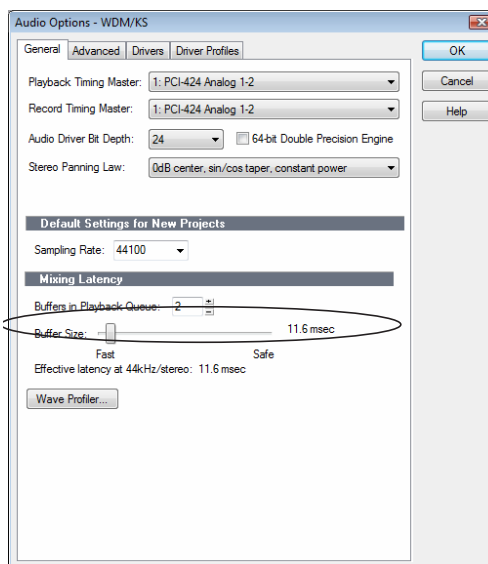
Figure 5-18: Setting the Audio Buffer Size in SONAR.

OTHER VST HOSTS (MAC & WINDOWS)

For other VST hosts running on Mac OS X or Windows, Ethno Instrument operates as a standard VST instrument (VSTi).

Installation for Your VST host

The Ethno Instrument installer places the Ethno Instrument VST plug-in here:

Platform	Location
Mac OS X	/Library/Audio/Plug-Ins/VST
Windows	\Program Files\MOTU\Vstplugins

You can copy the Ethno Instrument VST file from the directory listed above to the Vstplugins folder of your choice after installation completes. Or you can point your host application to the directory listed above.

Calling up Ethno Instrument on an audio track

Ethno Instrument is accessed in a VST host application in the standard fashion as an VST plug-in.

Working with multiple instances of Ethno Instrument

You can open as many instances of Ethno Instrument in your host application as your computer's processing resources will allow.

Initiating Ethno Instrument operation

Before you can begin using Ethno Instrument, you need to choose a preset for at least one part. For details, see chapter 3, "QuickStart Guide" (page 17).

Specifying audio output

Ethno Instrument sends its audio output to the audio output assignment of the instrument track on which it is instantiated.

MIDI I/O

When you first instantiate an Ethno Instrument plug-in, Ethno Instrument publishes itself as a MIDI destination to the VST host and appears in the output assignment menus of the VST host's MIDI tracks.

☛ Ethno Instrument must be instantiated in the VST host project before you'll see it displayed in the MIDI output menus in the host.

To send MIDI data from a MIDI track to a Ethno Instrument part, assign the MIDI track to any Ethno Instrument MIDI channel and then assign that channel to the part (as explained in "MIDI channel" on page 42).

Reducing buffer latency

In regard to "Managing latency" on page 26, the hardware buffer size may or may not impact live MIDI input latency and MIDI track playback: it depends on the host software. Consult the documentation for your host software for information about using virtual instruments.

The Ethno Instrument Window

OVERVIEW

The Ethno Instrument window is comprised of four sections, as shown below in Figure 6-1. This chapter covers each section in detail.
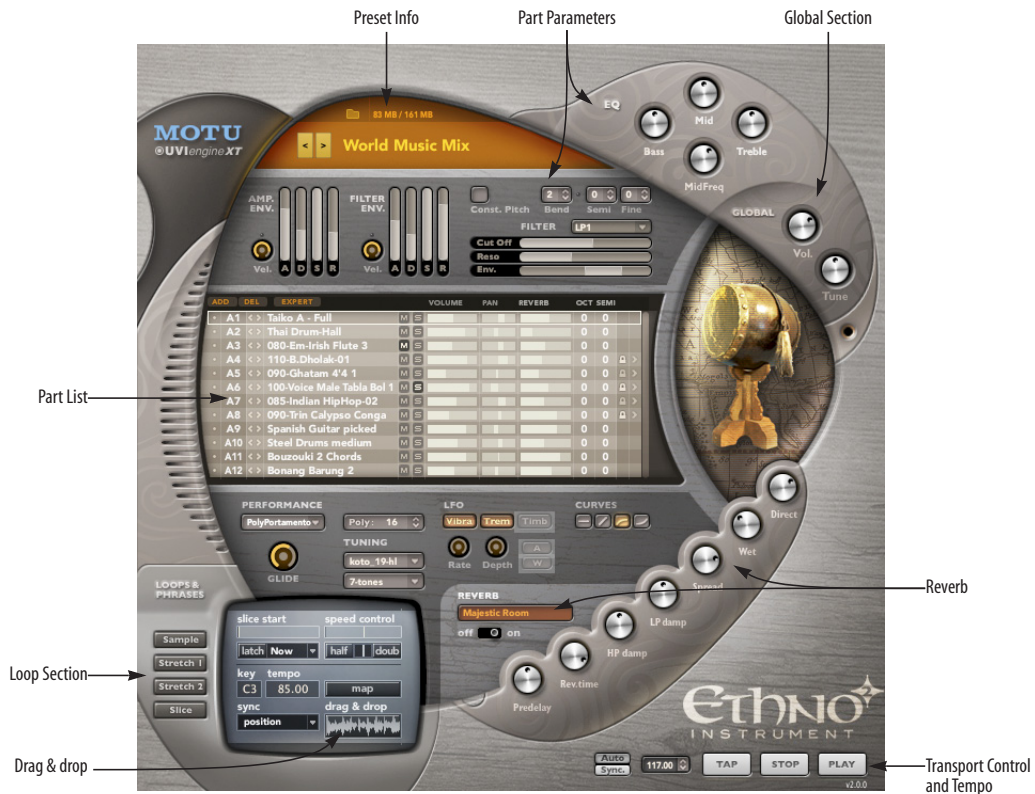
Figure 6-1: The Ethno Instrument window.

CONVENTIONS AND SHORTCUTS

Ethno Instrument provides the following user interface conventions and shortcuts.

Scroll wheel support

Ethno Instrument supports the scroll wheel on your mouse.

Right-clicking

There is extensive support for right-clicking in Ethno Instrument. Except where noted, Mac users can use Control-clicking as an alternative for right-clicking.

Option/Alt key

In this manual, we will use the convention *Option/Alt* for any operation or shortcut that involves the Option key on the Mac or the Alt key on a PC.

Shortcuts for changing Ethno Instrument settings

Here are several shortcuts for changing settings for Ethno Instrument's controls, knobs, sliders and so on:

Action	Shortcut
Return to default	Option-click (Mac) Alt-click (Win)
Enter numeric value	double-click
Fine adjustment	hold option/Alt while dragging control
Relative adjustment	hold shift while dragging control
MIDI learn	control-click (Mac) or right-click
Play/stop (stand-alone version only)	spacebar

PART LIST

Ethno Instrument is a multitimbral instrument that provides unlimited parts. Each part can have its own MIDI channel and preset (sound). Each instance of Ethno Instrument that you call up in your host software can play back an unlimited number of parts.

The part list

The part list (Figure 6-2 on page 43) displays each individual part as a separate line in the list, with its own settings.

Selecting a part

Click a part to select it. A white border appears around it. The currently selected part is loaded with any loop, phrase or sound that you select in the browser with *AutoPlay* enabled. You can also select a part to view its part-specific settings (above and below the part list), or to delete the part (as explained below).

Adding, deleting and clearing parts

To add a part, click the *ADD* button (Figure 6-2).

To clear a part of the current loop or instrument, right-click and choose *Clear Part*.

To delete a part, select it and click the *DEL* button (Figure 6-2).

Part controls

Each part has the controls shown in Figure 6-2 on page 43. These items are briefly explained below, moving from left to right across each row.

MIDI mute

The MIDI mute button (Figure 6-2), when enabled, temporarily disables MIDI input to the part.

MIDI channel

Press the MIDI channel menu for a part (Figure 6-2) to choose the desired MIDI receive channel for the part.

Four banks of MIDI channels

Ethno Instrument provides 64 separate MIDI channels, divided into four banks of 16 channels each: Bank A, B, C and D. MIDI channels in Bank A are designated as A1, A2, A3, A4, etc. up to A16. Similarly, channels in Bank B are designated as B1, B1, B2, B3, etc. and so on for banks C and D as well. When you choose MIDI channels for Ethno Instrument in your host software or in the part list, you will always see them presented as a bank letter plus MIDI channel number. You can use any MIDI channel you wish for each Ethno Instrument part. Parts (as many as you wish) can also share any MIDI channel.

☞ This feature (multiple banks of MIDI I/O) is supported by the stand-alone, MAS, AAX and RTAS versions of Ethno Instrument. As of this writing, the VST and Audio Unit (AU) standards do not support multiple banks of MIDI channels. If you are using Ethno Instrument in one of these plug-in formats, and you need more than 16 parts, open a second instance of the plug-in.

Rack parts can be assigned to any MIDI input you want. By default, the first part in Rack A defaults to A5, the second part to A6, and so on. This is because pad banks A, B, C, and D respond to MIDI channels A1 through A4, so the parts start at channel A5 to avoid a MIDI channel conflict with the pad banks.

For details about setting up MIDI I/O with the stand-alone version of Ethno Instrument, see "MIDI Devices tab" on page 24. For setting up MIDI I/O with the plug-in version running in your favorite host, see chapter 5, "The Ethno Instrument Plug-in" (page 25).

Creating instrument "stacks"

With 64 available MIDI channels, you can assign each part to its own MIDI channel, if you wish. But you can also assign multiple parts to the same channel to easily create layers ("stacks"), where all instruments that share the same MIDI channel play exactly the same notes.

Next/previous preset buttons

The Next/Previous preset buttons (Figure 6-2) let you easily browse through a series of presets.

Preset browser

The Preset browser (Figure 6-2) lets you choose any preset (instrument, loop or phrase) in the Ethno Instrument library. Each part can be loaded
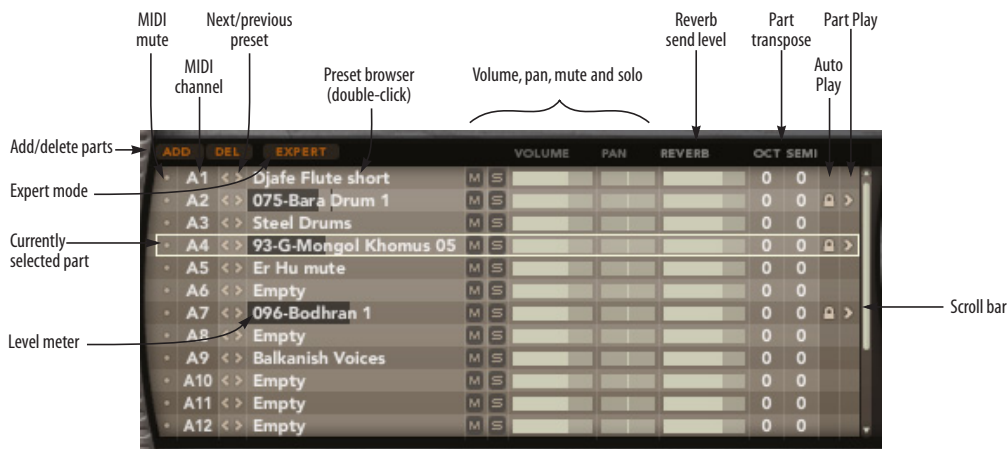
Figure 6-2: The Part list.

with its own unique preset. You can also load the same preset on two or more parts, if you would like to use the same instrument playing different notes, for example.

To access presets, double-click the current preset (or double-click the word *Empty*). The preset browser appears, as shown in (Figure 6-3). For further details, see "Preset Browser" on page 45.

Part volume, pan, mute and solo

Each part has individual volume, pan, mute and solo settings (Figure 6-2). Drag horizontally on the part volume or pan to adjust it, or double-click to edit the value numerically. Volume range is from -400 to +6 dB. Pan goes from -1.00 to +1.00, where zero is center (C). Option-click to return to zero dB or pan center.

Click the Mute *(M)* button (Figure 6-2) to temporarily silence the part. When you mute a part, it no longer expends system resources. Click the Solo (*S*) button (Figure 6-2) to silence all parts that are not currently soloed.

Both volume and pan can be automated with the standard MIDI controllers #7 (volume) and #10 (pan), although you can use any controller you wish, as explained below. Mute and Solo can also be automated via MIDI.

Reverb send level

Ethno Instrument provides a very high quality reverb processor, which realistically produces the sound and ambiance of real acoustic spaces. Each part has an individual reverb send level setting (Figure 6-2) to control the level of the part's signal being sent to the reverb processor. Drag horizontally on the reverb send level slider to adjust it, or double-click to edit the value numerically. Reverb send level range is from -400 (off) to +6 dB. Option-click to go directly to -400.

Clicking a part to view its settings

The settings in the Ethno Instrument window control the currently selected part. To select a part, click its name so that it is displayed with a white border around it, as demonstrated in Figure 6-2 on page 43. Portions of the Ethno Instrument window that display part-specific information do so for the currently selected part. This includes the Part Parameter section (page 50) and the Loop section (page 56).

Part transpose

The Octave (*OCT*) setting (Figure 6-2) transposes incoming MIDI notes for the part (or preset) in increments of one octave. The Semitone (*SEMI*) setting (Figure 6-2) transposes incoming MIDI notes for the part (or preset) in increments of one semitone (half step). For audio transpose, see "Pitch settings" on page 52.

Part Play/Auto Play

If a loop has been loaded into the part and it is in *Slice* mode (see "Slice" on page 57), the *Part Play* button appears (Figure 6-2). Click it to play or stop the loop by itself.

Click the *AutoPlay* button (Figure 6-2) to toggle the individual part's *AutoPlay* status. When AutoPlay is enabled for the part, you'll see a lock icon (to indicate that the part is locked to Ethno's main transports). Toggling a part's AutoPlay button allows you control whether or not each individual part follows Ethno's transport controls. For complete details about the transports, see "Transport Control and Tempo" on page 55.

PRESET BROWSER

The Preset browser (Figure 6-3) lets you load any preset (instrument, loop or phrase) in the Ethno Instrument library into the currently selected part.

To access presets, double-click the current preset name or the word *Empty* for a part in the Part List (Figure 6-2 on page 43). The preset browser appears, as shown in (Figure 6-3).

Browser tabs

Click the tabs (Figure 6-3) to browse instruments (by geographic region or category), loops and phrases.

Choosing (loading) presets

To choose (load) preset, double-click it. The browser will remain open for further browsing.

Alternately, you can click a preset once to select it and then click OK. The preset is loaded into the part and the browser closes. If you click Cancel instead, the preset is not loaded.

When the *Preview* option (Figure 6-3) is enabled, you only need to click once to load a loop or phrase (from the Loops tab), instead of double-clicking. The browser remains open for further browsing. when you are finished, use the OK button to confirm your choices or Cancel to dismiss them and then close the browser.

☛ Tip for Mac OS X users: you can use the arrow keys on your computer keyboard to navigate through the preset browser and select items in the same fashion as the Mac OS file browser.

Closing the browser

To close the browser, click OK to keep your preset choices or click Cancel to dismiss them.

The browser can stay open while choosing presets for multiple parts

The browser works interactively with the part list, loading the preset you click into the currently selected part. You can freely switch to any part in the list (by clicking it), while the browser is still open, to load a preset into it. There is no need to close the browser before you move to the next part.
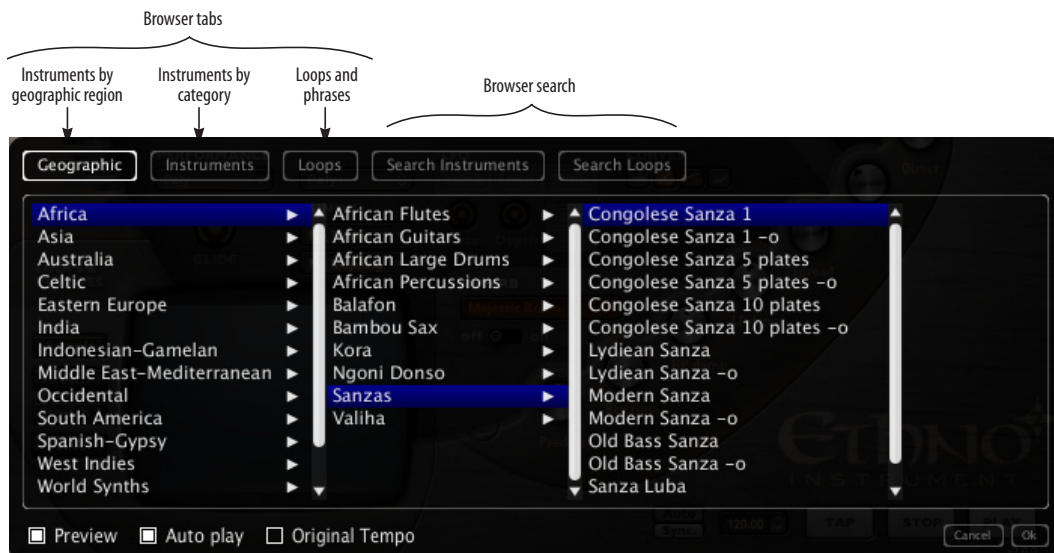
Figure 6-3: Double-click to access the preset browser.

Additionally, double-clicking any part in the Parts List which currently has a sound loaded will reveal that sound in the browser.

This makes it it fast and easy to quickly fill up the part list with instrument sounds, loops and phrases.

The browser scroll bar
The sound categorization in Ethno Instrument's browser is extensive. Therefore, as you browse, you will often navigate through several columns, more than can be displayed in the fixed width of the browser. When this happens, the browser provides a horizontal scroll bar at the bottom. Drag the scroll bar to slide the browser left or right to view columns that are not currently visible.

Figure 6-4: Browser scroll bar.

Original tuning and western tuning
As demonstrated below in Figure 6-5, the *Congolese Sanza 1* preset has two versions: one that is followed by a dash and the letter "O" (-o), and one that is not.
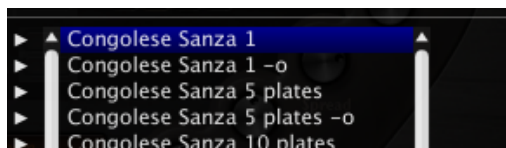
Figure 6-5: Original and western tuning.

The dash-o indicates that the preset provides the notes of the instrument in their original, authentic tuning. In some cases, the notes of the instrument may not even go up or down as you play consecutive notes on your MIDI keyboard (or other controller). A preset that is listed with the same name, but without the dash-o at the end of its name, provides the same instrument tuned to a 12-tone western chromatic scale. You can freely use either version of the preset (or even both, loaded into two separate parts) as your musical needs require.

Loops and phrases
Loops and phrases are found in the Loops tab. Loops can play seamlessly and continuously. Phrases have a beginning, middle and end, and are generally not intended to loop continuously and seamlessly. Instead, phrases are meant to be played in a "one-shot" fashion, such as a vocal phrase or utterance. Phrases are indicated by the letter "P" in parentheses following their name, as demonstrated below for Africa voices:
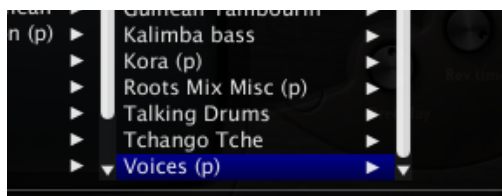
Figure 6-6: Phrases are indicated by the letter "P" in parentheses.

Loop tempo
Many loops indicate their original tempo at the beginning of their name.
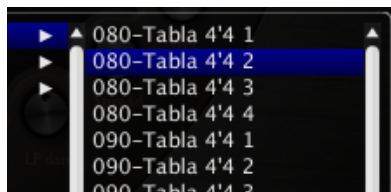
Figure 6-7: Loops with tempo indication.

Auditioning while browsing

If your MIDI controller is set up properly to play the part that you are currently browsing, you can play the currently selected instrument, loop or phrase in the browser window. Just select the part and play your controller.

Preview

When the *Preview* option (Figure 6-3) is enabled, you can load loops and phrases with just one click, instead of having to double-click to load them.

Auto Play

When checked, the *Auto Play* option (Figure 6-3) makes loops play immediately as soon as you click them in the browser. Note that this feature only applies to loops, not phrases (Figure 6-6). This allows you to easily listen to loops as you select them. If the *Sync to Host* option is enabled (see "Sync to Host" on page 55), and your host software is currently playing back as you are browsing, loops will play in tempo with your music as you browse. Or you can hear them at their original tempo during browsing using the *Original Tempo* option (explained below).

Original Tempo

If you wish to hear the loop currently selected in the browser at its originally recorded tempo (during browsing only), enable (check) the *Original Tempo* option. Since Ethno Instrument does such a good job of time-stretching loops, even at extreme tempos, this option can be useful for getting a sense of how the loop is supposed to sound, as it was originally recorded. Once you select the loop and OK the browser, it will play at the tempo determined by the tempo settings (see "Transport Control and Tempo" on page 55).

Browser search

Click *Search Instruments* or *Search Loops* (Figure 6-3) to access the browser's search engine (Figure 6-8). Type in the desired text, and the browser immediately lists all instrument or loop presets with that text in their name.
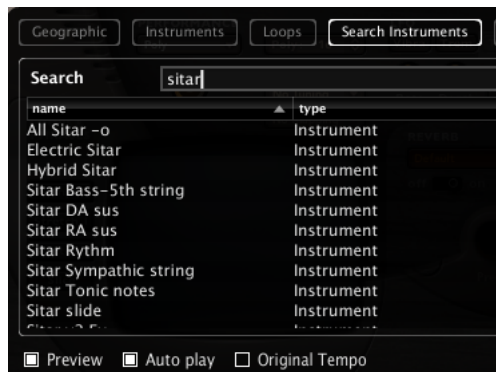
Figure 6-8: Using the browser's search engine.

You can further sort the list by name or preset type by clicking the column headings. Clicking the heading repeatedly toggles between ascending and descending order.

MULTIS

A *multi* is like a "snapshot" of the current settings in the Ethno Instrument window. It saves all settings in the window, including all presets currently loaded, and the current reverb, tempo and loop settings, if any. Multis are a powerful and convenient way to transfer Ethno Instrument settings to other projects, clients, colleagues, and even other host applications.

The current multi settings are displayed at the top of the Ethno Instrument window:
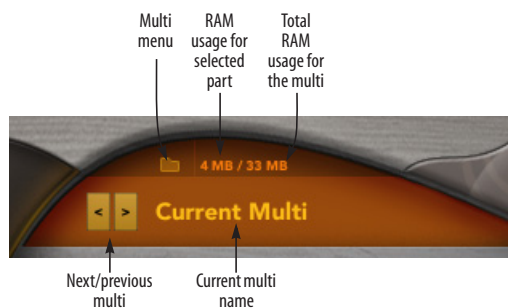
Figure 6-9: The multi settings.

Multi menu

The Multi menu (Figure 6-9) provides several commands for saving, loading and clearing multis. Multis can be saved anywhere you wish on your hard drive, so they can also be managed as standard documents via your computer desktop.

Saving a multi

To save a multi:

1 Set up the Ethno Instrument window the way you would like to save it.

2 Choose *Save Multi* from the Multi menu (Figure 6-9).

3 Type in a name for the multi and save it in the standard fashion anywhere you wish on your hard drive. For your convenience, Ethno Instrument

provides a folder or directory called *Scenes*, in which the installer places several factory-supplied multis (scenes).

Loading a multi

To load a multi from disk:

1 Choose *Load Multi* button from the Multi menu (Figure 6-9). Alternately, you can double-click the current multi name (Figure 6-9).

2 If you wish to add the new multi parts to the list of parts currently loaded, click *Append Multi* in the lower-left corner of the browser, as shown in Figure 6-10. If you leave it unchecked, the new multi will completely replace all current parts.

Figure 6-10: Appending a multi.

3 Use the standard navigation features of your computer to locate the saved multi on your hard drive and open it.

Clearing a Multi

The *Clear Multi* command in the Multi menu (Figure 6-9) quickly clears all of the currently loaded presets (sounds) from the part list. It also clears the current reverb setting and turns off the reverb altogether. This feature is meant to provide you with a convenient way to "start from scratch."

RAM usage

For your convenience, the RAM used by the preset for the currently selected part in the Part List (see "Clicking a part to view its settings" on page 44) is displayed as shown in Figure 6-9. Also displayed is

the total memory currently used by all parts (and Ethno Instrument altogether). This helps you keep track of how much memory in your computer is being used for the sounds loaded into Ethno Instrument. It is important to never use more RAM than your computer has available, as this means that the instruments won't be able to play properly. You can reduce the amount of RAM being used by enabling disk streaming. See "Streaming" on page 69.

Next/previous multi buttons

Click the Next/Previous buttons (Figure 6-9) to scroll through the list of multis in the folder or directory in which you last saved or loaded a multi.

Multi name

The name of the current multi is displayed as shown in Figure 6-9. Double-click the name to load a different multi.

Default multi

The stand-alone version of Ethno Instrument (chapter 4, "The Ethno Instrument Application" (page 19)) supports a default multi feature which is designed to automatically load your preferred multi as soon as the application is launched. To use this feature:

1 Create a multi as usual.

2 Name the multi *Default.ethn*.

3 Save the multi (or an alias of the multi) in the following Mac folder or Windows directory:

Platform	Location
Mac	Library/Application/support/MOTU/Ethno
Windows	\Program files\MOTU\Ethno Instrument

This feature is particularly useful if you have a standard template of instruments, and you would like that template to be loaded and ready as soon as the stand-alone application is opened.

GLOBAL SECTION

The Global section provides general settings that affect the entire plug-in as a whole (all parts).

Figure 6-11: The Global section.

Global volume

The *Volume* setting in the Global section (Figure 6-11) serves as a overall volume setting for the entire Ethno Instrument plug-in. It is applied as a final, additional gain stage for all Ethno Instrument parts.

Double-click the knob to edit the value numerically. Option- or Alt-click to return to the default value of unity gain (0 dB).

Tune

The *Tune* knob (Figure 6-11) is a global tuning stage for the Ethno Instrument window. It is applied to the entire plug-in as a whole, in addition to any other instrument-specific tuning adjustments that have been made. For example, you could tune Ethno Instrument to reference A at 442 Hz (instead of 440). The range is from 420 Hz to 460 Hz.

Double-click the knob to edit the value numerically. Option- or control-click to return to the default value of 440 Hz.

If you have multiple Ethno Instrument plug-ins instantiated in your software, this global tune setting affects each plug-in separately.

PART PARAMETERS

The *Part Parameters* in the Ethno Instrument window (Figure 6-12) provide settings for the currently selected part (see "Clicking a part to view its settings" on page 44). If the currently selected part is loaded with a loop, there are additional loop parameters, as explained in "Loop Section" on page 56. The parameters discussed below apply to any Ethno Instrument material that is currently loaded in the part (instrument, loop or phrase).

Figure 6-12: The Part Parameters.

EQ section

The EQ section (Figure 6-13) provides high-quality bass, treble and adjustable mid-frequency tone control for the instrument (part). The center frequency for the *High* band is 6kHz. For the *Low* band it is 120Hz. The center frequency for the *Mid* control is adjustable between 20 Hz and 20 kHz.

Figure 6-13: The EQ section.

Amplitude Envelope

The amplitude envelope (Figure 6-14) lets you control the *attack* (A), *decay* (D), *sustain* (S) and *release* (R) characteristics of the instrument, loop or phrase loaded into the currently selected part.

Figure 6-14: The Amplitude Envelope.

The attack, decay and release parameters are time-based parameters (a length of time), while the sustain parameter is a level (volume) parameter. When a note is played, the envelope generator begins to rise to its full level at the rate set by the attack parameter. Upon reaching peak attack level, it begins to fall at the rate set by the decay parameter down to the volume level set by the sustain parameter. The envelope remains at the sustain level as long as the note sustains. When the note stops, level returns to zero at the rate set by the release parameter.

Below is a summary:

Envelope stage	unit	range
Attack (A)	msec	0.00 msec to 10 seconds
Decay (D)	msec	0.00 msec to 20 seconds
Sustain (S)	percent	zero to 1 (full scale)
Release (R)	msec	0.00 msec to 20 seconds

Resonant Filter

The Filter section (Figure 6-15) provides several filter types for shaping the sound of the instrument.

Figure 6-15: The Filter section.

Filter Type

Choose the type of filter you wish to apply from the menu(Figure 6-15). Ethno Instrument provides the following filter types:
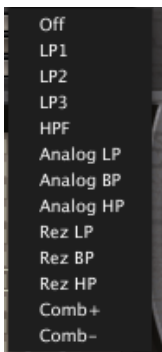
Figure 6-16: Filter types.

The filter type menu uses the following abbreviations:

Abbreviation	Meaning
HP	High Pass
LP	Low Pass
BP	Band Pass
Rez	Resonant
Comb+	Comb filter with positive feedback
Comb-	Comb filter with negative feedback

Cutoff (Cutoff Frequency)

Turn the *Cutoff* knob (Figure 6-15) to modify the cutoff frequency of the filter. The cutoff frequency can be automated by sending a MIDI controller to Ethno Instrument, as explained in "MIDI automation" on page 66.

Reso (Resonance)

Resonance (Figure 6-15) emphasizes the cutoff frequency of the filter. Higher resonance values can significantly boost gain, so you may need to attenuate the volume of the instrument (part) to achieve a clean sound. Resonance can be automated by sending a MIDI controller to Ethno Instrument, as explained in "MIDI automation" on page 66.

Env (Envelope Depth)

The *Envelope Depth* knob (Figure 6-15) is like a valve that governs the amount of envelope control signal you want to apply to the filter. Positive envelope depth values open up the filter relative to the cutoff frequency; negative values close (invert) it. A value of +1.00 applies the envelope in full, and -1.00 applies the envelope in full, but completely inverted.

Filter envelope

Ethno Instrument provides a separate envelope for filter modulation. Think of the *filter envelope* (Figure 6-15) as a hard-wired control signal for the filter cutoff frequency. It provides the following conventional 4-stage controls:

Stage	Name	Unit of measurement
A	Attack time	Milliseconds
D	Decay time	Milliseconds
S	Sustain level	Percent of filter cutoff frequency
R	Release time	Milliseconds

Velocity

Velocity (Figure 6-15) allows you to control the cutoff frequency with MIDI note-on velocity. This control has a range from -1 to +1. If you wish the cutoff frequency to be fixed, set this control to zero (0). Negative values (below zero) lower the cutoff frequency the harder you strike a key. Positive values (above zero) raise the cutoff frequency the harder you strike a key. To hear an example of how this control can be used, try loading the *Occidental>Accordions>Acc-Bajan 2* preset and choose the band-pass (BP) filter type. Now set the velocity control to zero (12 o'clock position). Play a note, striking the key at various velocities. Now try the same thing with the velocity knob to around -0.3 (around 10 o'clock) and again at +0.3 (around 2 o'clock). This will give you a good sense of the effect that this control has over the cutoff frequency.

Pitch settings

The *pitch* settings (Figure 6-17) let you modify the pitch reference for the currently selected part.

Figure 6-17: The Pitch settings.

Semi-tone and Fine tune

The *Semi-tone* and *Fine-Tune* settings (Figure 6-17) transpose the part in semitones and cents, respectively. This is audio transposition (not MIDI). The Fine Tune range is from -100 to +100 cents (one semitone). For MIDI transposition, see "Part transpose" on page 44.

Bend

The *Bend* setting (Figure 6-17) controls the pitch bend range for the part. The range is from zero to 24 semitones (two octaves).

Constant pitch

Enable the *Constant Pitch* button if you would like to maintain the same pitch, regardless of what MIDI note is played. Use the Semi-tone and Fine-Tune settings (they work the same as explained above) to adjust the pitch as desired. This setting is especially useful for loops or phrases that you do not wish to transpose at all when playing them.

Performance settings

The *Performance* settings (Figure 6-18) control how many notes you can play at once and what happens during the transition between consecutive notes.

Figure 6-18: The Performance menu.

Polyphony (Poly)

The *Polyphony* setting (Figure 6-19) determines how many stereo notes the currently selected part can play simultaneously. For example, a setting of 12 lets you play 12 stereo notes. The maximum settings is 256 stereo notes (per part). Note that this is a per part setting, and it controls the currently selected part.

☛ Caution: higher polyphony settings demand more of your host computer's processing power. For example, if you set the polyphony to 64 voices and played only 12 notes, Ethno Instrument would require much more computer processing power than it would when playing those same 12 notes with a polyphony setting of 12. Try to keep the polyphony setting as low as possible — only use what you know you'll need for the part. This setting is one of the most significant ways of optimizing Ethno Instrument CPU usage and managing your computer's processing resources.

Portamento menu

The *Portamento* menu (Figure 6-19) controls whether you can play multiple notes at once and what happens between consecutive, overlapping notes when you play.

Figure 6-19: The Portamento menu.

Poly

Choose *Poly* mode (Figure 6-19) for normal, polyphonic instrument operation, where you would like to be able to play multiple notes at once. In Poly mode, there is no portamento "glide" (pitch bend) between consecutive notes that overlap.

PolyPortamento

PolyPortamento mode (Figure 6-19) is similar to MonoPortamento mode (below), except that each note continues to sustain, without being cut off by the next note. This allows you to play chords that include portamento transitions (*glide*) between moving notes within the chord. The direction of the portamento bend into the next note being played (down or up) is determined by the last note played: if it is higher, then the portamento bends down into the next note. If it is lower, portamento bends up into the next note. The speed of the portamento bend is determined by the *Glide* setting (below).

☛ The *Polyphony* setting (Figure 6-18 on page 52) must be 2 or higher for PolyPortamento mode to fully work as intended.

MonoRetrigger

Choose *MonoRetrigger* (Figure 6-19) to make the currently selected part play like a monophonic synth, where only one note can play at a time. Each new note played replaces any currently sustaining notes, without any *glide* between them (below). MonoRetrigger mode is ideal for solo instruments.

MonoPortamento

MonoPortamento mode (Figure 6-19) is similar to MonoRetrigger mode above, except that when consecutive notes overlap, you'll hear portamento (bending pitch) between the two notes. The speed of the portamento is controlled by the *Glide* setting (below).

Glide

The *Glide* knob (Figure 6-18) controls the length of the portamento transition between notes in the two portamento modes described in the previous section. The range is from 0.00 ms (milliseconds) to 1.00 second.

Tuning

The *Tuning* menus (Figure 6-20) provide a comprehensive selection of authentic, non-western scales with microtonal tuning.

Figure 6-20: Microtonal tuning.

Choose the desired scale from the *Tuning* menu (Figure 6-21), which provides sub-menus organized by geographical region.

Figure 6-21: The Tuning sub-menu.

Choose the desired mode from the *Scale Mapping* menu (Figure 6-22), which provides scales ranging from five tones up to twenty-four tones.
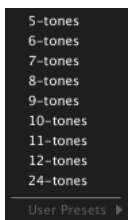
Figure 6-22: Scale mapping menu.

For information about creating your own user presets in the Tuning and Scale mapping menus, plus more in-depth information about Ethno Instrument's microtuning feature, see Appendix B, "Microtonal Tuning" page (125).

LFO

The LFO section (Figure 6-23) lets you apply modulation effects such as vibrato, tremolo and timbre changes to the instrument.

Figure 6-23: The LFO section.

Vibrato, tremolo and timbre

Enable the type of LFO modulation you would like to apply by clicking its button (Figure 6-23) to illuminate it. You can apply any combination of all three modulation types:

LFO modulation type	Modulates
Vibrato	Pitch
Tremolo	Amplitude
Timbre	Cutoff frequency of the LFO's multimode filter

Rate and depth

Rate (Figure 6-23) controls the speed of the LFO oscillation in hertz (cycles per second) from zero to 20.00 Hz. *Depth* (Figure 6-23) controls how much the LFO affects the instrument sound. If mod wheel is assigned to control depth, the depth knob setting becomes the maximum value for when the mod wheel is all the way up. For example, if the Depth knob is set to 0.50, then moving the mod wheel all the way up sets the depth to 0.50.

A and W

The *Aftertouch* (A) and *Mod Wheel* (W) buttons give you external control over the LFO depth from your controller keyboard. To enable external control via one or both of these types of data, simply enable (illuminate) the corresponding button. You can enable both at the same time.

Velocity curve

Click the desired note-on velocity response curve (Figure 6-24).

Figure 6-24: The velocity response curves.

The flat line option plays all struck notes at the same velocity. By default, the velocity value is 127, but the Flat velocity curve can be set to any value from 1-127. All notes played by the part will then be played at the note-on velocity that you specify. To edit this value, double-click the Flat velocity button. You can then type in a velocity from your computer keyboard, or you can play a note on your MIDI controller. Click anywhere outside of this text box, or press Enter, to confirm the value.

Choose the linear curve for a 1-to-1 response curve (all notes are played at the velocity at which the key is struck). This is the normal response for MIDI data.

The logarithmic curve produces higher velocity values that result in a higher volume than linear mode. This curve is good for piano-action keyboards that need hard hitting to send high velocity values.

The exponential curve produces medium velocity values, which result in a lower volume than in linear mode. This curve is well-suited for soft keyboards that send high velocity values with a light touch.

TRANSPORT CONTROL AND TEMPO

Because many of its sounds are loops, Ethno Instrument provides a Play and Stop button, along with a tempo setting, that allows you play all currently loaded loops in tempo with one another.

Figure 6-25: The transport and tempo controls.

Play and Stop buttons

Click *Play* and *Stop* (Figure 6-25) to start and stop all currently loaded loops that have their individual *AutoPlay* setting enabled. For details about how to enable (or disable) AutoPlay for each part, see "Part Play/Auto Play" on page 44. Only parts with their individual AutoPlay setting enabled will respond to Ethno Instrument's Play and Stop buttons.

Host AutoPlay

When the host *AutoPlay* option (Figure 6-25) is enabled, the plug-in version of Ethno Instrument follows the main transports of the host software. You can also still use Ethno's Play and Stop buttons

independently from the host. In other words, Ethno's play button won't start the host, but the host's play button will start Ethno.

In the stand-alone version of Ethno Instrument, the AutoPlay option has no effect (because there is no host software present).

Tempo

The Tempo setting (Figure 6-25) lets you specify the tempo in *BPM* (beats per minute). All loops are time-stretched in real time to match this global tempo setting.

Sync to Host

When the *Sync to Host* option (Figure 6-25) is enabled in the plug-in version of Ethno Instrument, the BPM setting becomes disabled (it cannot be directly modified) and instead displays the current tempo setting of the host software. Ethno Instrument follows the tempo of the host software, so that all Ethno loops play in tempo with your host software tracks. Use the tempo controls in the host software to control overall tempo of both Ethno Instrument and the host software tracks.

Loop tempos and authentic rhythmic feel

Ethno Instrument loops have been recorded and prepared with the utmost care in preserving the original, authentic rhythmic feel of the loop. As a result, you may sometimes hear loops from different regions of the world that sound like they are not playing in tempo with each other. This is not because the loops are being incorrectly played by Ethno Instrument. The tempo settings of the loops themselves and Ethno Instrument's tempo-matching features are extremely sophisticated, accurate and true. Instead, loops won't necessarily always "groove" with each other, due to the authentic, albeit irregular, timing of the musicians that performed the loops. These timing variances are an essential musical component of the loop, dutifully preserved by Ethno Instrument.

In cases like these, you might try importing the loops into your host software to apply quantization or other tempo and beat matching features that the host software offers. For example, Digital Performer' Beat Detection Engine can work wonders on loop tempos, giving you complete control over them. For example, you can quantize loops to a more precise rhythmic grid, apply the groove of one loop to another to match them, and many other beat and tempo-related operations.

LOOP SECTION

The *Loop Section* of the Ethno Instrument window (Figure 6-26) provides settings for the loop or phrase loaded into the currently selected part (see "Clicking a part to view its settings" on page 44). If the currently selected part is loaded with an instrument, the Loop Section controls disappear.

Figure 6-26: The loop settings.

Four loop modes

Ethno Instrument provides four different loop modes that provide a variety of loop playback behaviors: *Sample*, *Stretch 1, Stretch 2* or *Slice*. As with other loop parameters, each part can have its own loop mode setting. Which mode you use for a loop or phrase will depend on the nature of loop or

phrase itself and how you would like to use it within a musical context. The four loop modes are available for loops and phrases as follows:

Loop mode	Loops	Phrases
Sample	Yes	Yes
Stretch 1	Yes	Yes
Stretch 2	Yes	Yes
Slice	Yes	No

Slice mode is not available for phrases because phrases consist of musical material (such as a vocal utterance) that does not lend itself to being split up into short rhythmic pieces.

Sample

Click the *Sample* button (Figure 6-26) to put the loop or phrase into Sample mode.

Figure 6-27: Sample mode.

In sample mode, the loop or phrase is triggered in the same fashion as a traditional sampler: as you play the sample with different keys up and down your MIDI keyboard (or other MIDI controller), both the pitch and the duration of the sample will change. The higher the note, the higher the pitch of the sample and the faster it plays; the lower the note, the lower and slower it plays. Ethno Instrument's global tempo setting (and the tempo setting of the host software, if any) is ignored. The sample plays at the speed dictated by the note played.

Sample mode is good for material such as vocals, where precise tempo control is not required. It is also good for producing the "sampler effect".

Stretch 1

Click the *Stretch 1* button (Figure 6-26) to put the loop or phrase into Stretch 1 mode. In Stretch 1 mode, the MIDI note you play to trigger the loop or phrase affects its pitch, but not the tempo. For example, if you play a three-note chord, all three triggered loops (or phrases) will play at the same speed (but at the different pitches you played). Playback speed is determined by the speed controls (see "Tempo" on page 55), the host tempo (if sync is enabled, as discussed in "Sync to Host" on page 55), and the *Loop sync* setting (explained on page 58).
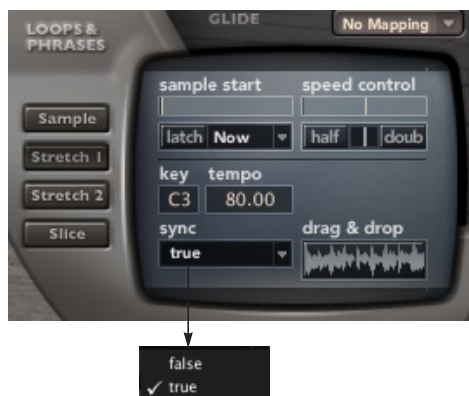
Figure 6-28: Stretch 1 mode.

Stretch 2

Click the *Stretch 2* button (Figure 6-26) to put the loop or phrase into Stretch 2 mode. Stretch 2 mode is similar to Stretch 1 mode, except that it employs a more sophisticated time-stretching engine to process the audio when it is played at a slower or faster tempo than the loop or phrase's original tempo.

To further enhance the audio quality of the Stretch 2 time-stretching, the *Preset* menu (Figure 6-29) provides several settings for various types of audio material. For best results, choose the preset that most closely matches the nature of the loop or phrase being played. You can also freely experiment with the presets to find the one that sound the best to your ears.

Stretch 2 mode is particularly useful for vocal phrases (using the *Voice* preset), or any material when it is stretched by extreme amounts (slower or faster).
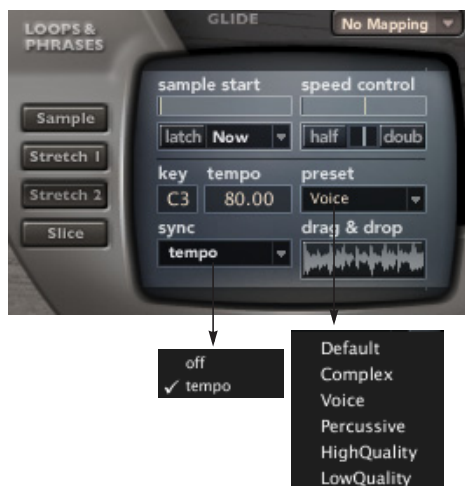
Figure 6-29: Stretch 2 mode.

☛ Stretch 2 mode places higher, more intensive processing demands on your computer. Therefore, if you are experiencing performance issues, or if you hear unwanted artifacts in the audio being produced by Ethno Instrument, try reducing the number of parts using Stretch 2 mode. You can use Stretch 1 mode as a more efficient alternative. If the part is playing a loop, you could also use Slice mode as a more efficient alternative.

Slice

Click the *Slice* button (Figure 6-26) to put the loop into Slice mode. Note, however, that Slice mode is not available for phrases. If a phrase is loaded in the currently selected part, the Slice button becomes grayed out (unavailable).

Figure 6-30: Slice mode.

Slice mode works in the same fashion as described above for Stretch 1 mode: the MIDI note you play to trigger the loop or phrase affects its pitch, but not the tempo. Slice mode differs from Stretch mode in regards to how it responds to the tempo sync modes. See the "Loop sync" section below.

Map
When the Slice button is enabled, you can also enable *Map* mode (Figure 6-31).

Figure 6-31: Slice mode with Map mode enabled.

Doing so splits up the loop into rhythmically even slices (or "hits") and then maps the slices chromatically to MIDI notes starting with middle C (C3). This allows you to play each individual slice by itself from a note on your MIDI controller. By playing the notes upwards chromatically, you can recreate the original loop. But you can mix them up to play the loop in any way you wish. MIDI

mapping opens up a world of possibilities for restructuring the beats of the loop, quantizing them, groove quantizing them, etc.

To trigger a mapped sliced loop, make sure that the Ethno Instrument part that currently holds the sliced loop is properly receiving MIDI data from your MIDI keyboard (or other controller).

Map mode also allows you to drag and drop the loop, in the form of MIDI note data, into a MIDI track in your host software. You can then manipulate the loop as MIDI data in your host. For details, see "Drag & Drop" on page 61.

Loop mode summary
Here is a summary of the loop modes discussed above:

Loop mode	Works with	MIDI note affects	Tempo is determined by
Sample	Loops Phrases	Pitch and duration	MIDI note
Stretch 1	Loops Phrases	Pitch only	Speed, tempo and loop sync controls
Stretch 2	Loops Phrases	Pitch only	Speed, tempo and loop sync controls
Slice	Loops only	Pitch only	Speed, tempo and loop sync controls
Slice with Map	Loops only	Slice played	N/A

Loop sync
The settings in the loop *Sync* menu (Figure 6-26) let you synchronize the loop or phrase to Ethno Instrument's global tempo (BPM) setting. If the

Sync to Host option (page 55) is enabled, then the loop or phrase will also synchronize to the tempo of your host software, if any.

Sync menu item	What it does
Off	The loop or phrase does not sync to tempo.
Tempo	The loop or phrase follows tempo, but not position. Loops and phrases always start at the beginning.
Position	Loops follow both tempo and position (their beats and barlines always align with the tempo). Phrases follow tempo, but not position.

Tempo sync

When you choose the *Tempo* setting (Figure 6-26), the loop or phrase will play at the tempo indicated by Ethno Instrument's BPM setting, or as determined by the host software if the *Sync to Host* option is enabled. However, in this mode, the loop or phrase always starts at the beginning (or at the location determined by the Sample start setting). In addition, it begins to play at the instant it is triggered, so it is up to you to trigger it "on the beat". If you trigger it between beats, it will play in tempo, but offset from the beat by what you played.

Position sync

The *Position* sync setting (Figure 6-26) only affects loops, and only when they are in Slice mode without mapping ("Slice" and "Map" on page 58). When a loop is in Slice mode with Position sync, it might be helpful to think of the loop as looping indefinitely, whether you are actually playing it or not. When you play a note to "trigger" the loop, you are actually just "unmuting" it, and it begins to play at the position in the loop that currently matches the tempo and meter. For example, if the loop is two bars long, and you trigger it at the second measure of your music, then it plays starting at bar two of the loop.

Loop Sync summary

Putting a loop into Slice mode and choosing Position sync gives you the highest degree of tempo synchronization because the loop will not only play

in tempo, its beats and barlines will always match the beats and barlines prescribed by the tempo. Here's a summary of the different loop modes and sync settings:

	Sync off	Tempo sync	Position sync
Sample	Sync setting has no effect.	Sync setting has no effect.	Sync setting has no effect.
Stretch 1	Plays at original tempo.	Follows tempo but does not automatically align beats.	Follows tempo but does not automatically align beats.
Stretch 2	Plays at original tempo.	Follows tempo but does not automatically align beats.	Follows tempo but does not automatically align beats.
Slice	Plays at original tempo.	Follows tempo but does not automatically align beats.	Follows tempo and aligns beats.
Slice+map	No effect	No effect	No effect

Speed control

The *Speed Control* slider (Figure 6-26) lets you speed up or slow down the loop or phrase. This setting is applied relative to the other sync and tempo settings. The range is from 50% slower to 50% faster than the original tempo, which is represented by the center position of the slider at 0.00. Option/Alt-click the slider to return to zero.

When loops or phrases are in Sample mode, their speed is governed by the MIDI note that you play. Therefore, the Speed Control slider disappears if the current loop or phrase is in Sample mode.

Half/double speed

The *Half* and *Double* Speed buttons (Figure 6-26) let you slow down the loop or phrase to one half (50%) or one quarter (25%) of the current tempo, or speed it up to twice (200%) or four times (400%) the current tempo. Similar to the Speed Control slider, this setting is applied relative to the other sync and tempo settings. It can be combined with the Speed Control slider, allowing you to specify any tempo within a range of 25% to 400% of the current tempo. Considering that the current tempo

of Ethno Instrument can be set from 10 BPM to 400 BPM, these tempo controls give you an extremely wide range of tempo control.

Sample Start

The *Sample Start* slider (Figure 6-26) lets you specify any location in the loop or phrase as the sample start time. This is the location at which the loop or phrase will begin playing.

In Sample mode or Stretch 1/2 mode, the Sample Start slider provides a range from zero percent (0%) to 100%, where zero is the very beginning of the loop or phrase.

In Slice mode (without mapping), the Sample Start slider provides a range from the first slice (0) to the last slice. The number of the last slice depends on the length of the loop and the number of slices. For example, if a two-bar loop is divided into 16th note slices, it will have 32 slices total. This means that slice 16 is the downbeat of measure 2. So if you set the Sample Start slider to 16, the loop will start on the downbeat of measure 2.

Loop/Phrase Start menu

The *Loop/Phrase Start* menu (Figure 6-26) lets you specify when the loop or phrase begins to play after you trigger it. Note that this is different from the Sample Start (explained in the previous section), which determines the location within the loop where it starts. Instead, the Loop/Phrase Start menu settings determines when the loop begins to play, relative to other loops currently playing, and/or the global tempo of Ethno Instrument during playback (or your host software, if Ethno Instrument is syncing to it).

Start menu setting	What happens
Now	Plays immediately, as soon as the loop or phrase is triggered.
Next Beat	Begins playing at the next beat
Next Bar	Begins playing at the downbeat of the next measure.

In Stretch 1 or Stretch 2 mode (page 57), loops and phrases always begin playing at the beginning of the loop or phrase (plus any offset added by the Sample Start slider). So if you choose *Next Beat*, the loop or phrase will begin playing at the next beat from its beginning. This may or may not be what you want musically. For example, if you trigger the loop or phrase just after beat 2, it will come in on beat 3, but start playing at its beginning (beat 1). If you are creating poly rhythms in this manner, this might be just what you want. But if you want the loop to come in on beat 3 playing its own beat 3, then use Slice mode ("Slice" on page 57) with Position sync "Position sync" on page 59). The Position sync setting keeps the loop's beats aligned with the global tempo, regardless of when the loop begins playing (on the next beat or next bar). Position sync is only available for loops, not phrases.

Latch

When the *Latch* button (Figure 6-26) is off (disabled), a loop or phrase plays for as long as you hold down the note on your MIDI keyboard (or other controller). When Latch is on (enabled), a loop or phrase continues to play, even when you lift your finger from the key on your controller. If the loop or phrase is in Stretch mode, or if it is a loop and it is in Slice mode (without mapping), it will continue to repeat indefinitely. If the loop or phrase is in Sample mode, it will play once and then stop. In either case, play the same key again to make it stop playing.

Loop mode	Latch Off	Latch On
Sample	Plays only when the note is held on.	Plays once and stops.
Stretch 1 or Stretch 2	Plays only when the note is held on.	Repeats indefinitely until the same note is played again. Turning latch off stops all latched notes.
Slice (without mapping)	Plays only when the note is held on.	Repeats indefinitely until the same note is played again. Turning latch off stops all latched notes.

Key

The *Key* setting (Figure 6-26) shows the root key for the loop or phrase. Changing it transposes the loop or phrase. Use this setting to adjust the key of the individual loop or phrase, relative to others.

Tempo

The *Tempo* setting (Figure 6-26) shows the original tempo for the loop or phrase. Use this setting to adjust the speed at which the loop or phrase plays, relative to the other speed control settings for it.

Key Range display

When an instrument preset is loaded, the Loop settings area displays the preset's key range. In the example below, the Harmonium mute preset is loaded.

Figure 6-32: Key Range display for instruments.

DRAG & DROP

The Drag and Drop area (Figure 6-33) lets you drag and drop loops and phrases into the tracks of your host software.
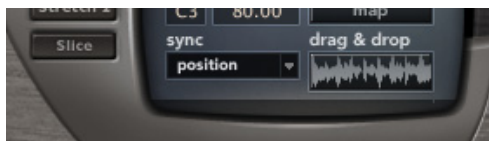

Figure 6-33: Drag and Drop area.

Loops and phrases are transferred as a standard audio clip. Loops that are in Slice mode with mapping ("Map" on page 58) can be dragged as MIDI data (MIDI notes) into a MIDI track, which can then trigger the mapped loop in Ethno Instrument.

In either case, once the loop is placed in your host software, it is completely independent of Ethno Instrument at that point, and you can treat it as regular audio or MIDI data. This opens up a world of possibilities for manipulating the raw audio or MIDI data using the features in your host software.

The Drag and Drop area

The Drag and Drop area displays the data format of the currently selected loop or phrase as follows (see "Clicking a part to view its settings" on page 44):

Drag & Drop button icon	Data Type
	Audio
	MIDI (in Map mode)

Figure 6-34: Drag and drop button icons.

Use the icons shown above to determine where you should drop the loop in your host software.

Dragging audio data

When you see the audio data icons shown in Figure 6-34, this means that you are dragging a standard mono or stereo audio clip. You can drag and drop it anywhere into your host software that accepts audio clips via drag and drop. A good rule of thumb is: if it works from your computer desktop, it should work from Ethno Instrument. If your host makes a distinction between mono and stereo audio material and therefore places restrictions on where the audio can be placed based on the channel format, use the mono and stereo icons shown in Figure 6-34 to determine where you can successfully drop the loop or phrase.

Conforming to the host tempo

If the *Sync to Host* option is enabled ("Sync to Host" on page 55) when you perform the drag and drop operation, the loop or phrase will snap to the host's tempo when you place it in an audio track, such that it conforms to the host's time line. If your host software has the ability to snap the drag and drop operation to measures and/or beats, this will help produce rhythmically accurate results quickly.

If *Sync to Host* is disabled, the loop or phrase retains is original tempo when placed in the track.

Dragging MIDI data

When you see the MIDI data icon shown in Figure 6-34, this means that Map mode is enabled and you are dragging a sliced, mapped loop in the form of MIDI data. Therefore, you should find a destination in your host software that accepts MIDI data, such as a MIDI track, although your host may also provide other possible destinations. For example, in Digital Performer, you could drag a MIDI loop into a clipping window.
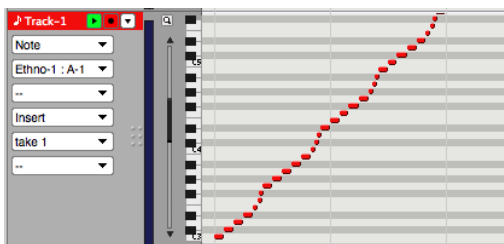

Figure 6-35: Dragging and dropping a MIDI loop into a MIDI track.

☞ When dragging a MIDI clip from Ethno into a host application, the clip consists of a standard MIDI file with both MIDI data and tempo information. Some host applications may have special requirements for dropping MIDI files that include tempo (Conductor track) information. In the case of Digital Performer, the tempo information is placed in DP's Conductor track. Therefore, make sure the Conductor track is visible in the Sequence Editor when dropping the clip into a MIDI track there. Otherwise, DP won't accept the drag and drop operation.

Triggering Ethno Instrument slices from the host

When a mapped MIDI loop is dropped into a MIDI track, it looks similar to the MIDI data shown in Figure 6-35. Each MIDI pitch triggers a different loop slice. If you play notes chromatically upwards from C3, you will recreate the original loop. If you play them rhythmically in a different order, you'll play the individual slices but the result will sound quite different from (but similar to) the original loop.

Notice in the example that the MIDI track is assigned to play its MIDI data output to the Ethno Instrument part that holds the mapped loop. Be sure that your host software MIDI track output is directed to the part in Ethno Instrument that holds the mapped loop. Otherwise, the MIDI data from the track will not reach the sliced mapped loop.

REVERB

The reverb section (Figure 6-36) lets you play Ethno Instrument sounds in an acoustic space of your choosing.

Figure 6-36: The Reverb section.

Turning reverb on/off

Use the on/off button (Figure 6-36) to enable or disable the reverb for global use within the plug-in. Turn it off if you are not using it, as you do not want to waste your computer's valuable processing resources.

Applying reverb to each part

To apply reverb to a part, turn up the reverb send level (Figure 6-2 on page 43) for the part as explained in "Reverb send level" on page 44. Each part has its own unique reverb send setting, which allows you to apply different amounts of reverb to each part, or even disable it completely for some parts.

Reverb menu

Choose the desired acoustic space from the *reverb menu* (Figure 6-36). There are two types of reverb presets provided in the menu: *Simple* and *IR (impulse response)* as shown in Figure 6-37. These two types are discussed in the following sections.

Figure 6-37: The reverb menu.

Simple reverbs

If your computer cannot handle the convolution reverb acoustic spaces (impulse responses), try using the *Simple* reverbs (Figure 6-37). These are non-convolution (synthesized) reverbs that place a negligible load on your host computer.

Simple reverb settings

Simple reverbs have the following settings:

Simple reverb setting	Unit	Range	Explanation
Reverb time	sec	0-10	*Reverb time* (Figure 6-36) controls the length of the *reverb tail* (the portion of the sound as it trails off to silence). Longer reverb times make your music sound like it is in a larger space; shorter times sound like a smaller space. The maximum allowed time varies and depends on the specific acoustic space you have chosen.
HP Damp	-	0.5 - 1.5	A high pass filter that reduces low frequencies as you increase the HP damp setting.
Wet	dB	–∞ to 6	A signal with no reverb applied to it is commonly referred to as being *dry*. Therefore, a signal that is being processed with reverb is referred to as being *wet*. The *Wet* setting (Figure 6-36) does what its name implies: it controls the amount (volume) of the treated (wet) signal. If you want more reverb, turn up this setting; if you want less reverb, turn it down.
Direct	dB	–∞ to 6	*Direct* (Figure 6-36) controls the volume of the original dry (unprocessed) signal. This allows you to precisely control the amount of the original dry signal is mixed in with the wet (processed) signal.

Simple reverb presets

The simple reverb sub-menu provides several presets shown in Figure 6-37. You can choose a preset and use it as is, or change its settings to create your own customized reverb sound.

Convolution reverbs

Ethno Instrument is equipped with *convolution* (sampled) reverb. Convolution is a process where the characteristics of a real acoustic space are directly sampled, such as a church, concert hall, theater, or outdoor space. The resulting *impulse response* (IR) consists of an audio file that holds the actual sound decay characteristics of the acoustic space. By sophisticated signal processing, that

impulse response can then be applied to any audio material, making it sound exactly as if it were being heard in the acoustic environment captured by the impulse response.

Convolution reverb is the most realistic type of reverb ever developed because it faithfully reproduces the actual characteristics of real acoustic spaces. As a result, it requires intense processing. Therefore, when you choose a convolution reverb preset, be mindful of the amount of processing demands it imposes on your computer.

To use a convolution reverb, choose a preset from one of the *IR* sub-menus shown in Figure 6-38.

Figure 6-38: Convolution reverb presets.

Computer performance

If you are running Ethno Instrument on a slower computer, the processing demands of convolution reverb can be reduced by the following techniques:

■ Raise the buffer size of your hardware as explained in "Hardware buffer size" on page 26.

■ Employ the CPU conservation techniques discussed in "Conserving CPU resources" on page 26.

■ If your host audio application has a track freeze or bounce-to-disk feature, you can use it to "print" CPU-intensive Ethno Instrument tracks and then take them off line.

Convolution Reverb settings

Here is a brief summary of the reverb settings for convolution reverbs.

Predelay (0-100msec)

PreDelay (Figure 6-36) is the amount of time before you hear the very first reflections. For example, if you are in a large room, it takes longer for the first reflections return. PreDelay is useful for clarifying the original sound. For example, if you apply a larger amount of predelay to an instrument, the reflections won't start until after a note has been played.

Reverb time (10-100%)

Reverb time (Figure 6-36) controls the length of the *reverb tail* (the portion of the sound as it trails off to silence). Longer reverb times make your music sound like it is in a larger space; shorter times sound like a smaller space.

The maximum allowed time varies and depends on the specific acoustic space you have chosen.

HP damp (-1 to +1)

HP damp (Figure 6-36) is a high pass filter that reduces low frequencies as you increase the HP damp setting. Positive values damp high frequencies, while negative values expand high frequencies.

LP damp (-1 to +1)

LP damp (Figure 6-36) is a low pass filter that reduces high frequencies as you increase the LP damp setting. Positive values damp low frequencies, while negative values expand low frequencies.

Spread (-1 to +1)

Spread (Figure 6-36) controls the stereo imaging of the reverb. If you turn this control down, the reverb effect will become mono.

Wet (–∞ to +6dB)

A signal with no reverb applied to it is commonly referred to as being *dry*. Therefore, a signal that is being processed with reverb is referred to as being *wet*. The *Wet* setting (Figure 6-36) does what its name implies: it controls the amount (volume) of the treated (wet) signal. If you want more reverb, turn up this setting; if you want less reverb, turn it down. Also be sure that the reverb slider (Figure 6-12 on page 50) is turned up for the parts on which you wish to hear reverb.

Direct (–∞ to +6dB)

Direct (Figure 6-36) controls the volume of the original dry (unprocessed) signal. This allows you to precisely control the amount of the original dry signal that is mixed in with the wet (processed) signal.

Saving reverb settings as part of a multi

If you make changes to the reverb settings and wish to save the current reverb settings for use in other projects, you can save them as part of a multi. See "Multi menu" on page 48.

Convolution reverb presets

Real acoustic spaces throughout the world were carefully selected and recorded to compliment the Ethno Instrument sound library. A wide variety of spaces are provided, and each space can be fine-tuned even further by adjusting the reverb settings. These reverbs were captured in cathedrals, temples, concert halls, forests, canyons, caves and other locations.

Remember, the longer the reverb time, the more processing it requires, and the greater the demand placed on your computer.

Cathedrals & Churches

Big Chapel Hall
Bright Cathedral
Cathedral Hall
Cathedral Organ
Church Organ Hall
Church Reflexions
Huge Church
Mystic Canyon
Requiem Room
Small Chapel

Cave & Forest

Between the trees
Blair Witch Verb
Deep in Forest
Mystical Space
Ominous Cavern
Primeval Chamber
Straight Cave
Twisted Nature
Underworld Space

Concert Halls

Bright Concert Hall
Concert Half
Concert Hall
Large Ensemble Room
Majestic Room
Open Opera Space
Symphonic Hall
Warm Ambiance

Deluxe Reverb

Flat Room
Large Hall
Large Plate
Medium Hall
Medium Plate
Small Hall
Small Plate
Warm Room
Wood & Large

Other Rooms

Capital Hall
Close Piano Room
Pink Concert Room
Quartet Room
Small Concert Hall

Small Concert Room

Warm and Small Room

Wood Ambiance

Temple & Co

Calm And Beauty

Hypnotic reflections

Meditation Temple

Small Temple Ambiance

Spacious Church

THE Cathedral

Warm Chapel

MIDI AUTOMATION

You can send MIDI continuous controller data to any Ethno Instrument knob or slider to control it remotely from your MIDI controller or automate it from recorded controller data in a MIDI track in your audio sequencer.

Assigning a MIDI controller to a setting

Before you assign a MIDI controller to a knob or slider, check to see if it is a part-specific setting. If so, select the desired part in the part list first. Also make sure your MIDI controller is transmitting the data on the same MIDI channel that the part is receiving on.

To assign a MIDI controller to a knob or slider, control-click it, or if you have a right mouse button, right-click it. A window appears:

Figure 6-39: Assigning a MIDI controller to a control to automate it.

Send the desired controller from your keyboard, on the appropriate MIDI channel (explained further below). As you move it, the controller data type is accepted and the window is dismissed.

To remove a controller, control-click or right-click the control and click *Clear* (Figure 6-39).

Assigning controllers to global settings

Global settings in the Ethno Instrument window are ones that are not part specific. Global settings include global volume and tune ("Global Section" on page 49), and reverb settings ("Reverb" on page 62). When assigning a MIDI controller to a global setting, the MIDI channel on which you send the controller data does not matter: it can be transmitted on any MIDI channel.

Assigning controllers to part settings

When you assign a MIDI controller as described above, it is connected to the control for the currently selected part (see "Clicking a part to view its settings" on page 44). Therefore, you must also transmit the data on the part's MIDI receive channel (see "MIDI channel" on page 42).

Similarly, after you make the assignment and want to use the newly assigned controller, you must select the part to activate the remote control. The only exception to this are the part volume, pan, mute, and solo controls, which can be controlled without first selecting the part. This allows you mix multiple parts simultaneously, as long as your MIDI controller can transmit the controller data for each part on separate MIDI channels.

MIDI automation examples

Here are a few examples of how you could use MIDI automation to control Ethno Instrument.

Controlling the volume of each instrument
To control the volume of each instrument individually, perhaps from a MIDI controller device with faders on it, click the name of a part to highlight it (Figure 6-2 on page 43), control-click or right-click its volume slider (Figure 6-12 on page 50) and then move the desired fader on your controller to complete the assignment (Figure 6-39).

☛ Make sure the fader is transmitting on the part's MIDI receive channel.

Repeat this procedure for each instrument.

Controlling the timbre of an instrument
MIDI automation is an ideal way to have hands-on, real-time dynamic control over the timbre of an instrument. Here are just a few examples:

■ Control the rate and depth of both vibrato and tremolo in the LFO section to quickly and easily produce incredibly realistic vibrato, especially for solo instruments.

■ Control the attack parameter (in the ADSR amplitude section) to achieve dynamic control of an instrument's articulations in real time.

Default MIDI controllers
By default, MIDI controller numbers 7, 10 and 11 are assigned to part volume, pan and expression.

MIDI MODULATION
MIDI Modulation is an extension of Ethno Instrument's MIDI automation capabilities discussed in the previous section. MIDI Modulation works as a real time control that modulates a parameter's value without changing the preset setting itself. It can either add to or subtract from the parameter's current value, while at the same time preserving the preset's original value for the parameter.

This feature is available for non-voice-specific parameters, such as volume, pan and filter cutoff frequency. It is also available for loop parameters such as Speed and Sample Start.

Option/Alt-right click (or option-control-click with a single-button Mac mouse) to bring up the MIDI Modulation window.

Figure 6-40: MIDI Modulation.

The MIDI Modulation window (Figure 6-40) looks very much like the MIDI Control window (Figure 6-39 on page 66), except this window also has a slider in the middle. For a negative modulation value, drag the slider to the left; for a positive value, drag the slider to the right. Now send the desired controller for your keyboard, and the window is dismissed.

This is useful to provide an extra degree of control and variance over the details of your Ethno Instrument sounds. For example, try using MIDI Modulation to modify the filter cut-off frequency. You can also use it to create crossfades between different controls. For example, you could assign two parts to respond to the same MIDI channel: modulate volume on one part with Expression (CC 11) and drag the slider to the right, and modulate volume on the other part with Expression and drag the slider to the left. The result is that you could crossfade between the two parts by moving your expression controller.

EXPERT MODE

Click the *Expert Mode* (Figure 6-41) button to access the Expert Mode settings (Figure 6-42).

Expert
Mode

Figure 6-41: Accessing Expert Mode.

KEYSWITCHING

The Keyswitch settings (Figure 6-42) allow you to load multiple presets into two or more parts and then dynamically play and mute them from your MIDI controller using key switching, note range, velocity range or any combination of the three. This powerful feature gives you a great deal of real-time control over the instruments you are playing from your controller.

Setting up parts for keyswitching

Load the instruments you would like to include for use. Then assign them all to the transmit MIDI channel you will use to control them from your MIDI controller. They should all share this same

transmit channel. For example, in Figure 6-42 all parts are assigned to MIDI channel A1, which is the transmit channel for the MIDI controller being used. Then click the Expert Mode button to program the Keyswitch settings for each part.

The Keyswitch settings

The Keyswitch settings are displayed to the right of the part's preset name, as shown in Figure 6-42. You can use any combination of the three settings for each part. To enable a setting, click the check box next to it, so that the check box is filled in. An empty box means that the setting is disabled (not used).

To change a pitch value or note velocity number with the mouse, drag up or down. To change it from your MIDI controller, double-click it to make it turn red, and then play your MIDI controller to enter the desired velocity value or note pitch.

Key Range

The *Key Range* (Figure 6-42) determines the note range over which the instrument will play.

Velocity Range

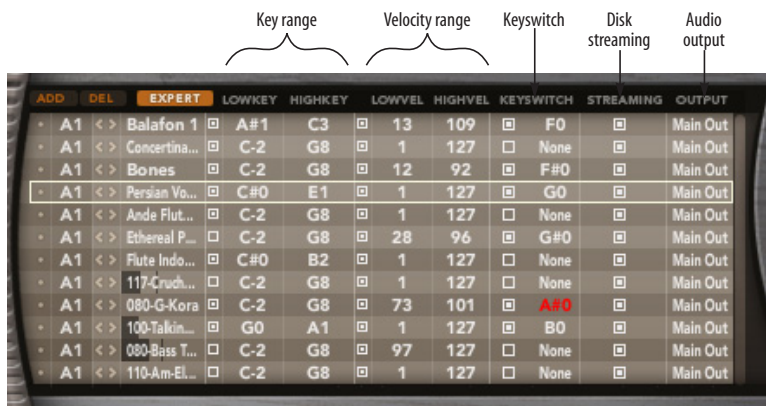The *Velocity Range* (Figure 6-42) determines the MIDI note-on velocity range that will trigger the instrument.

Figure 6-42: Expert Mode settings.

Key Switch

The *Key Switch* (Figure 6-42) determines the MIDI note that can be played to toggle the instrument on and off. Note that multiple instruments can have key switches, allowing you to turn them on and off either independently or in groups for instant stacks.

STREAMING

Disk streaming (Figure 6-42) allows you to load very large presets (that consist of a large amount of audio sample data) into Ethno Instrument, even if the samples are larger than the amount of free memory (RAM) available in your computer. Rather than loading the entire sample set into RAM, Ethno Instrument reads (streams) the sample from the hard drive as the preset is being played. This allows Ethno Instrument to play combinations of presets that add up to a gigabyte (GB) of sample data or more.

Memory requirements and recommendations

Disk streaming is not a "cure all" for running Ethno Instrument on a computer that has lower amounts of memory installed. The minimum RAM required to run Ethno Instrument is still 1 GB, and it is still strongly recommended that you install at least 2 GB. Optimum performance will be achieved with 4 GB of RAM or more. The streaming feature allows you to play much larger samples, but it doesn't necessarily squeeze more samples into less RAM.

Disk performance

The disk streaming performance can be heavily affected by the speed of the hard drive on which the Ethno 2.ufs files reside. For streaming, the faster the hard drive is, the better. You should use at least a 7200RPM drive.

If you are using Ethno Instrument in a host application such as Digital Performer, Pro Tools or Logic, and you are also recording and playing disk tracks in the host software, you should strongly

consider placing the Ethno soundbank files on their own, separate hard drive. If your host software is recording and playing audio files while Ethno Instrument is attempting to stream samples from the same hard drive, the hard drive can quickly be pushed beyond its performance limits. If the disk tracks are playing from one hard drive, and Ethno Instrument is streaming from another separate drive, you are much less likely to encounter disk performance issues.

Enabling streaming

Disk streaming can be enabled in Ethno Instrument on a part by part basis. Streaming can be enabled on as many parts as you like.

To enable streaming for a part in the Expert mode *Streaming* settings (Figure 6-42), click the check box in the part's Streaming column.

Streaming settings

There are two streaming preferences (Figure 6-43) that allow you to optimize streaming performance for your computer. To access these settings, choose *Streaming settings* from the Multi menu (Figure 6-9 on page 48):
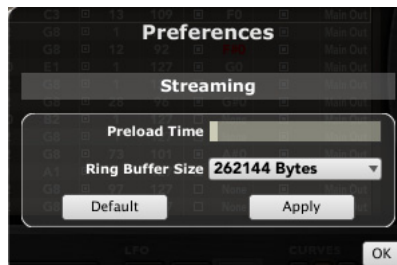

Figure 6-43: Streaming settings.

Preload Time

The *Preload Time* (Figure 6-43) is the amount of each sample pre-loaded into RAM when the preset is first loaded.

Lower values require less RAM overall, but increase the load on the host computer processor and the hard drive. Don't use very small values because this causes many small samples to be streamed unnecessarily. The result is unnecessary strain on your computer.

If you would like to place a limit on the minimum size of the samples to be streamed, use this setting. Samples that are smaller than the *Sample preload size* will not be streamed.

In situations where a preset consists of a large number of very large samples, and you have lots of extra RAM installed in your computer, a higher sample preload size can actually allow you to play more parts because the processor and hard drive strain will be lower.

Ring Buffer Size

The *Ring Buffer Size* ((Figure 6-43)) is the number of samples reserved for each voice after streaming has begun and the sample is being played. Lower values can sometimes help eliminate dropouts and similar artifacts, but lower values also increase the load on the host computer processor and the hard drive. Higher values reduce processor strain, but require more memory.

OUTPUTS

The *Output* settings (Figure 6-42 on page 68) let you assign each part to one of 17 possible stereo output pairs (main outs plus 16 stereo aux outputs). Each output pair can be assigned to (or routed by your host audio software to) a pair of physical outputs on your audio hardware. This provides you with a great deal of flexibility in sub-mixing Ethno Instrument's parts.

The list of stereo pairs that you see in each *Outputs* menu depends on the situation in which you are running Ethno Instrument.

Multiple outputs and stand-alone operation

If you are running Ethno Instrument as a stand-alone application, the output menu displays a main out pair, plus 16 additional separate output pairs, numbered 2 through 17. To learn how to map these output pairs to the physical outputs on your audio hardware, see chapter 4, "The Ethno Instrument Application" (page 19) and "Outputs" on page 70.

Multiple outputs and plug-in operation

If you are running Ethno Instrument as a plug-in, the output menu displays whatever outputs are made available to the plug-in by your host software. For example, in Digital Performer, you will see pairs of busses, as supplied by Digital Performer's current studio configuration (Setup menu). Your host software allows you to map the busses to the physical outputs on your audio hardware.

The Sound Library

OVERVIEW

This chapter provides general information about using the Ethno Instrument sound library, including browsing and loading instrument presets, loops, and phrases.

☛ For a detailed overview of Ethno Instrument's 21 GB sound library, see chapter 8, "Instruments" (page 75) and chapter 9, "Loops and Phrases" (page 115).

BROWSING INSTRUMENTS

Instruments can be accessed in the Ethno Instrument browser (Figure 6-3 on page 45) via the *Geographic* or *Instruments* tabs, which give you access to the same set of instrument sounds listed either by geographic region or by instrument category.

Figure 7-1: Browsing instruments by geographic region.

Figure 7-2: Browsing instruments by category.

INSTRUMENT DESCRIPTIONS

Brief descriptions of each instrument can be found alphabetically in chapter 8, "Instruments" (page 75).

PRESET SIZE

Each instrument preset consists of samples that are loaded into your computer's memory (RAM), either in their entirety or in portions that are streamed from the hard drive. The "Instruments" chapter lists the size of each preset to give you an idea of how much RAM would be used on your computer to load each preset with the disk streaming feature ("Streaming" on page 69) turned off. When streaming is turned on, sample sizes are much smaller, since streaming only loads a small portion of the sample. You can also view the size of a preset after it is loaded, as shown in Figure 6-9 on page 48. For further information, see "RAM usage" on page 48.

AUTHENTIC VERSUS WESTERN TUNING

As shown below in Figure 7-3, many instruments are supplied as two presets: the "-o" version provides the original authentic tuning and the other provides western chromatic tuning. For details, see "Original tuning and western tuning" on page 46.
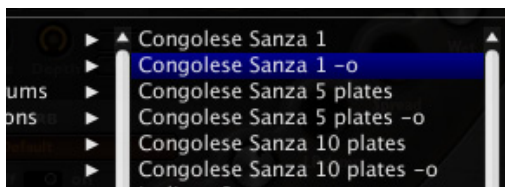

Figure 7-3: Original and western tuning.

NOTE RANGES AND MAPPING

Each Ethno Instrument preset has a specific note range of samples. In general, non-chromatic (-o) presets start at C2. Some presets use white keys only, while others use white and black keys, depending on the number of samples.

KEYSWITCH (KS) PRESETS

Presets with the letters *KS* at the end of their name (Figure 7-4) offer keyswitch layers, just like Expert Mode keyswitching. However, these keyswitches are "built in" to the preset and do not require Expert mode programming on your part.

Figure 7-4: Keyswitch (KS) presets. In this example, the KS preset (selected) provides three layers made up of the Amajingu Flute presets above (hit, short and sustain).

When you load a KS preset into a part, the keyswitches for the preset are displayed in the Loop settings area (Figure 7-5):
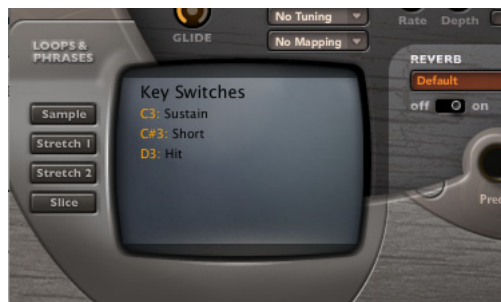

Figure 7-5: Key switch settings for a KS preset.

BROWSING LOOPS AND PHRASES

Loops and phrases can be accessed in the Ethno Instrument browser (Figure 6-3 on page 45) via the *Loops* tab, which organizes them by geographic region.
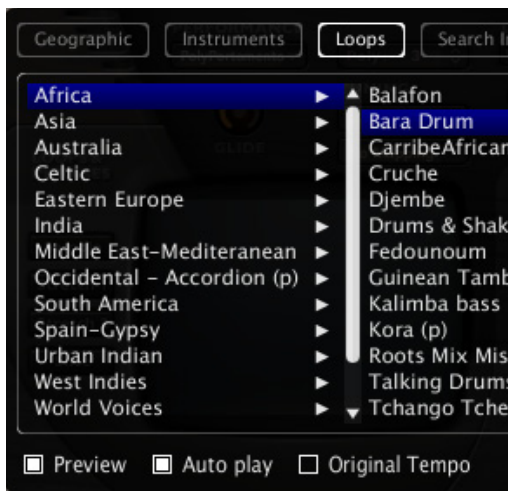

Figure 7-6: Browsing loops.

PHRASES VERSUS LOOPS

As shown in Figure 7-7 below, folders that have the letter *P* in parentheses "(p)" in the name contain phrases. All other folders contain loops.
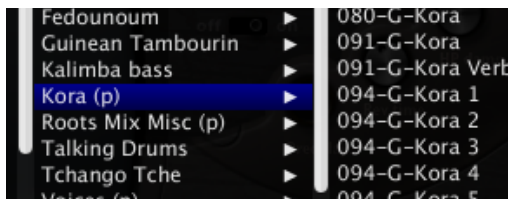

Figure 7-7: Phrases are indicated by the letter "P" in parentheses.

Both phrases and loops can be played by triggering them with a MIDI note. Loops, however, can also be played with Ethno Instrument's Play and Stop buttons, as well as the host software transport controls. Phrases can only be triggered by MIDI notes.

LOOP TEMPO

Many loops indicate their original tempo at the beginning of their name.

Figure 7-8: Loops with tempo indication.

KEY SIGNATURE AND TUNING

Most phrases contain original key signature information, and the root note of the phrase is mapped to the keyboard to match the phrase's original key. For example, a phrase called *094-G-Kora 1* is mapped to G3 on the MIDI keyboard, so if you want to play the phrase at its original pitch, play G3.

The range of phrase root pitches is from C3 to B3. This provides consistency across phrases, but of course not all phrases will sound in tune because of tuning and micro-tuning variations from the original instruments.
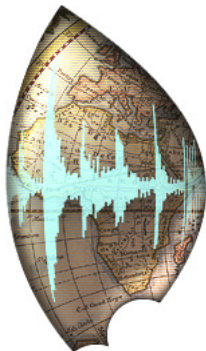
BROWSING LOOPS AND PHRASES

For further information about browsing loops, see:

- "Preset browser" on page 43

- "Auditioning while browsing" on page 47

- "Preview" on page 47

- "Auto Play" on page 47

- "Original Tempo" on page 47

LOOP AND PHRASE GRAPHICS

Loops and phrases are displayed as a waveform superimposed on the geographic region where they are from.

CHAPTER 8 **Instruments**

OVERVIEW

This chapter provides a detailed overview of Ethno Instrument's world instrument sounds. For details about Ethno Instrument's additional loops and phrases, see chapter 9, "Loops and Phrases" (page 115).

Ethno Instrument provides over 875 instrument presets made up of over 26,000 samples.

Each preset is listed with its size, note range and key switches (KS), if any.

AFRICA

African Flutes

Flutes can be found all around Africa. These typical folk instruments soon became indispensable in traditional African music. Flutes are usually made of cane, bamboo, wood or metal — or even more eclectic material such as plastic tubing. They are open at both ends, 60 to 70 cm long, with 5 to 7 finger holes, a thumb hole at the back but no mouthpiece. Flutes are played by blowing obliquely across the top end of it.

Preset	Size	Note Range
Amajingu Flute hit	0.22MB	D4-D6
Amajingu Flute short	0.46MB	D4-D6
Amajingu Flute sus	1.65MB	D4-D6
Djafe Flute hit	0.13MB	F3-E5
Djafe Flute short	0.38MB	F3-E5
Djafe Flute sus	1.99MB	F3-E5
Horn Goat Flute hit	0.33MB	C4-A5
Horn Goat Flute short	1.17MB	C4-A5
Horn Goat Flute sus	2.39MB	C4-C6
Amajingu Flute KS (C3, C#3, D3)	5.0MB	D4-D6
Djafe Flute KS (C3, C#3, D3)	4.0MB	F3-E5
Horn Goat Flute KS (C3, C#3, D3)	6.0MB	C4-C6

African Guitars

African musicians use conventional acoustic guitars, but with their own musical touch.

Preset	Size	Note Range
Afro Steel Guitar	13.74MB	D1-F#3
Afro Steel Guitar hard	5.54MB	D1-F#3
Roots African Guitar	0.41MB	D2-E4
Tchad Nylon Guitar	5.11MB	A1-D4

African Large Drums

This is a unique collection of large drums (some more than two meters!) from different parts of Africa. The presets contain hundreds of single shots expertly played by a professional percussionist. These sounds were recorded with a close microphone configuration and within a huge theatre room. Think of these presets as an African version of the Japanese Taiko drum.

Preset	Size	Note Range
Beninese Drum-Close	21MB	C2-A4
Beninese Drum-Hall	24MB	C2-B4
Guinean Baga Drum-Close	48MB	C2-F5
Guinean Baga Drum-Hall	50MB	C2-B5
Guinean Baga Kobo Drum-Close	37MB	C2-D5
Guinean Baga Kobo Drum-Hall	43MB	C2-G5
Guinean Toma Drum-Close	28MB	C2-G#4
Guinean Toma Drum-Hall	30MB	C2-A4
Malian Drum-Close	42MB	C2-E5
Malian Drum-Hall	50MB	C2-A5
Tanzanian Drum-Close	31MB	C2-G5
Tanzanian Drum-Hall	34MB	C2-A5
Togolese Drum-Close	35MB	C2-D5
Togolese Drum-Hall	38MB	C2-F5
Zairian Drum-Close	35MB	C2-A#4
Zairian Drum-Hall	38MB	C2-B4

African Percussions

Percussion instruments are widely used throughout Africa. The variety of African percussion instruments is endless. One of the most popular is the Djembe.

Preset	Size	Note Range
Body Bells	9.91MB	C2-B2
Cruche	0.72MB	C2-E3
Djembe Modern Skin	3.44MB	C2-G2
Djembe Mozamb1	0.41MB	C2-F#3
Djembe Mozamb2	0.31MB	C2-D3
Fedounoum	0.28MB	C2-A2
Plastic Rain Stick	18.78MB	C2-C3
Rattle	5.04MB	C2-C#3
Roots Wood Djembe	3.02MB	C2-A2
Shekere	2.54MB	C2-C#3
Talking Drums	1.76MB	C2-D#3
Tchangoche	0.58MB	C2-A2
Wood Rain Stick	14.51MB	C2-F#2

Balafon

The *balafon* has existed ever since humans began beating tree trunks with a stick, but its exact origins remain uncertain. In its most basic form, it is an open framework made of wood, metal or bamboo. It can be found in many shapes and sizes across Africa. Twelve to 21 hardwood (rosewood or similar) keys, hardened by fire and graduated in order of size, cover gourd resonators. Its typical buzzing sound also comes from the lateral hole covered by a membrane of the gourds. It can be played solo or in an ensemble using rubber-tipped beaters, softwood or raffia midriff.

Other names for the Balafon: *Bala, Balo, Kponimbo, Madimba, Kundu, Marimba, Valimba, Endara, Shijimba, Silimba, Medzang, Dyomoro, Rongo, Mbira Mutondo, Mbila, Timbila, Balangui, Ambira, Akadinda, Kalanba, Ilimba, Baza, Dimba, Madimba, Dipela, Elong, Dzil*

Preset	Size	Note Range
Balafon 1	6.11MB	G2-E5
Balafon 1 -o	6.11MB	C2-G4
Balafon 1 clean	3.16MB	G2-E5
Balafon 2	6.49MB	G2-G5
Balafon 2 -o	6.49MB	C2-C5
Balafon 2 clean	4.84MB	G2-G5
Balafon 3	3.92MB	G2-C6
Balafon 3 -o	3.92MB	C2-C5
Balafon 3 clean	3.09MB	G2-C6
Guinean Balafon 1	11.53MB	G1-C5
Guinean Balafon 1 -o	12.10MB	C2-B4
Guinean Balafon 1 clean	7.42MB	G1-C5
Guinean Balafon 1 mute	2.16MB	G1-C5
Guinean Balafon 1 mute -o	2.16MB	C2-A4
Guinean Balafon 1 mute clean	1.59MB	G1-C5
Modern Balafon	0.42MB	C2-C5
Modern Balafon Oct	0.31MB	G1-C4
Mozambic Balafon	5.73MB	F1-A3
Mozambic Balafon -o	6.20MB	C3-G4
Small Balafon 1	4.03MB	C2-C4
Small Balafon 1 -o	4.03MB	C2-A3
Small Balafon 1 clean	2.52MB	C2-C4
Small Balafon 1 mute	9.0MB	D2-A#3
Small Balafon 1 mute -o	9.0MB	C2-G3
Small Balafon 1 mute clean	8.0MB	D2-A#3
Small Balafon 2	11.0MB	C#2-A#3
Small Balafon 2 -o	12MB	C2-A3
Small Balafon 2 clean	6.0MB	D#2-A#3
Small Balafon 2 mute	9.0MB	C#2-A#3
Small Balafon 2 mute -o	9.0MB	C2-A3
Small Balafon 2 mute clean	6.0MB	C#2-A#3

Bambou Sax

The *bambou sax* is a contemporary instrument combining the sax sound with natural materials.

Acoustically different from the conventional sax, the Bambou Sax is by definition made of bamboo but can also be made with different materials.

The instrument consists of a reed mouthpiece system coupled to a tube formed by cylinders of progressively wider bamboos. It uses a recorder fingering which pre-dates the conventional sax key system. Sometimes it has a large bell made from natural materials such as coconut or gourd.

Preset	Size	Note Range
Bambou Sax A# hit	0.16MB	A#2-D#4
Bambou Sax A# short	0.75MB	A#2-E4
Bambou Sax A# sus	3.08MB	A#2-D#4
Bambou Sax C hit	0.20MB	C3-A4
Bambou Sax C short	0.84MB	C#3-A#4
Bambou Sax C sus	3.15MB	C#3-D4
Bambou Sax F hit	0.62MB	F#2-C4
Bambou Sax F short	2.72MB	F2-G3
Bambou Sax F sus	2.38MB	F2-G3
Bambou Sax A# hit	0.16MB	A#2-D#4

Kora

The *kora* is considered to be one of the most melodic instruments in Africa. The traditional instrument of the griots, this harp-lute produces the signature sound of West Africa.

Slightly different from region to region, the Kora were traditionally made of 10-23 leather or gut strings divided into two groups, but for practical reasons and for a sharper sound, they have been replaced by nylon fishing lines. The resonator is a large hemispherical gourd (60-70cm) covered by hide that is placed on the ground to amplify the bass of the instrument. Its long neck has leather bands to attach and tune the strings.

Other names for the Kora: *Seron, Soron, Kolon-jo, Balangi, Kori* (harp-lute)

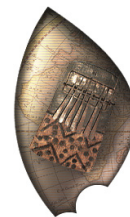| Preset	Size	Note Range
Kora 1	7.07MB	C2-C5
Kora 1 –o	6.96MB	C2-E5
Kora 1 hard	4.23MB	C2-C5
Kora 2	8.17MB	G1-C5
Kora 2 –o	8.07MB	C2-D5
Kora 2 hard	3.91MB	G1-C5

Ngoni Donso

The *ngoni* inherited its name from the Bambara name of an ancient traditional lute found throughout West Africa. Its strings, made of thin fishing line, are lashed to the neck with movable strips of leather, and fed over a fan-shaped bridge at the far end of the body. This construction, along with its drum-like body, is very similar to the modern banjo. Some believe the ngoni to be a possible African ancestor of the banjo.
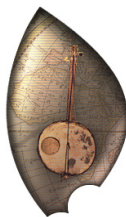
Preset	Size	Note Range
Ngoni 1 Bass	7.44MB	G1-G2
Ngoni 1 Bass -o	7.01MB	C2-A2
Ngoni 1 Bass short	0.60MB	G1-G2
Ngoni 1 Bass short -o	0.58MB	C2-A2
Ngoni 2 Medium	12.34MB	G2-C4
Ngoni 2 Medium -o	11.24MB	C2-C3
Ngoni 2 Medium short	0.57MB	G2-C4
Ngoni 2 Medium short -o	0.65MB	C2-A2
Ngoni 3 Medium	4.19MB	C3-C4
Ngoni 3 Medium -o	4.55MB	C2-G2
Ngoni 3 Medium short	0.46MB	B2-C4
Ngoni 3 Medium short -o	0.46MB	C2-G2
Ngoni 4 High	10.15MB	C3-G4
Ngoni 4 High -o	11.74MB	C2-C3
Ngoni 4 High short	0.83MB	C3-G4
Ngoni 4 High short -o	0.91MB	C2-C3
Ngoni KS (C1, C#1)	16MB	G1-E4
Ngoni KS -o (C0-G0)	29MB	C2-C3

Sanzas

Sanzas, also referred to as *thumb pianos*, are the instruments of those who travel by foot in Africa. These instruments produce sound by the individual vibration of up to 36 tuned *lamellae, or keys*, made from metal, wood, bamboo or other material. The sound is amplified by a calabash resonator, a soundbox or a plain board. The shape of the instrument varies slightly from region to region but most sanzas offer shell or metal buzzing devices to modify the sound. Sanzas are to be played by the two thumbs and sometimes an index finger. When played in an ensemble, this melodic instrument can produce complex polyphonic music. To its native players and listeners, the sanza notes do not represent a tone but instead represent a person or natural element.

Other names for the sanza: *Mbira* (thumb piano or lamellaphone), *Sanzi, Likembe, Kone, Kalimba, Lukembi, Mbila, Kasansi, Deza, Kisanji, Mboton, Timbrh, Agidigbo, Akpata, Ubo, Jidida, Prempensua, Gbelee, Bonduma, Kongoma, Kondi, Tom*

Preset	Size	Note Range
Congolese Sanza 1	10.47MB	G2-C5
Congolese Sanza 1 -o	11.78MB	C3-F4
Congolese Sanza 5 plates	7.67MB	C2-C5
Congolese Sanza 5 plates -o	7.53MB	C2-C4
Congolese Sanza 10 plates	10.40MB	E2-F4
Congolese Sanza 10 plates -o	10.34MB	B1-C4
Lydiean Sanza	4.76MB	G2-C5
Lydiean Sanza -o	4.56MB	C3-F4
Modern Sanza	17.08MB	G2-A4
Modern Sanza -o	18.48MB	C3-C5
Old Bass Sanza	10.33MB	C2-C5
Old Bass Sanza -o	16.42MB	D1-A4
Sanza Luba	5.0MB	B2-D#4
Sanza Luba -o	5.0MB	C3-D4

Valiha

The *valiha* is an instrument from Madagascar. It was formerly played by the aristocracy in sacred ceremonies. Valiha can appear in many different shapes, depending on the cane internodes and the wooden resonator. Ten to nineteen or more strings are attached to each end by a raffia binding traditionally made from the outer layer of cane. But more recently, these organic materials for the strings have been replaced by metal strings. Rectangular or triangular moveable bridges provides control over tuning.

Other names for the valiha: *Volo, Valeha, Baliha, Manibola, Betorky, Marovany*

Preset	Size	Note Range
Valiha	17.90MB	G2-C5
Valiha –o	18.77MB	C2-B3
Valiha hard	4.92MB	G2-C5
Valiha soft	4.84MB	G2-C5

ASIA

Bian Xhong & Qing

These 5,000 year old Chinese instruments consist of a collection of bells (typically from 6 to 65) of different sizes, sometimes hung on a wooden rack. *Bian zhong & qing* produce hollow sound of different pitches. They used to be made of clay and are now made of copper. As instruments for the Emperor, the Zhong are typically adorned with beautiful, hand-made carvings.

Preset	Size	Note Range
Bian Qing	8.24MB	C2-G3
Bian Qing –o	8.24MB	C2-C3
Bian Zhong high –o	15.79MB	C2-G3
Bian Zhong low –o	50.76MB	C2-B3

Chinese Percussions

The most traditional Chinese percussion is the *gong luo* from the 3rd century BC in China. Made of high-tin bronze hammered into a sifter shape, these instruments can be found in many varieties and tone qualities. For example, their central resonating area can be either flat or convex. Depending on the size, (from 8 cm to over 120 cm in diameter) and sometimes under different names, luo are used in weddings, funerals, temple ceremonies and theater instrumental ensembles.

Preset	Size	Note Range
Ban Gu	3.63MB	C2-A2
Cha	18.42MB	C2-D4
Gu 1 Bass	28.39MB	C2-C4
Gu 2 High	13.94MB	C2-C3
Luo – Gong	21.37MB	C2-E4
Misc Percussion	12.34MB	C2-D4

Er Hu

The *er hu* is a Chinese violin more than 500 years old. The most popular bowed instrument in today's Chinese music, the er hu is a vertical violin with two silk or metal strings, a small body and a long neck. The Bow is placed between the strings. There is a vertical post with a fingerboard, which goes through the sides of a resonator at its base. The Er hu's range spans about two octaves. It sounds like a violin but with a thinner tone. Some say the instrument has a "whining" tone color, while others say it is like a violin with a more "nasal" tone. The er hu is played while placed on the player's left upper thigh in front of his left hip. Another name for the er hu: *Nan-hu*

Preset	Size	Note Range
Er Hu FX	1.78MB	C2-D3
Er Hu Horse	4.85MB	E3-G#4
Er Hu Noisy vib	8.46MB	C#3-D6
Er Hu Stress	10.35MB	D#3-C5
Er Hu mute	0.13MB	D#3-A4

Gongs

Ethno Instrument provides perhaps the most comprehensive gong and gong-related percussion collection ever offered in a virtual instrument. Gongs are primarily East and South East Asian musical instruments. They are the shape of a flat metal plate, usually hit with a mallet. There are gongs of many different sizes, and this collection focuses on the most musical: small to medium-size gongs, from 5 inches to 26 inches in diameter. Depending on the model, multiple velocity layers are provided where appropriate.

In addition to the pristine quality of the recordings, the perceptual tuning of each sample was analyzed and carefully mapped, allowing the presets to be played around the keyboard. As a result, this collection serves as a much more versatile sound resource than a standard gong collection: sound textures vary from large metal bongs to magnificent and musical bell chimes.

Instruments are meticulously sorted by their original location: Burma, Cambodia, China, Indochina, Japan, Malaysia, Vietnam, and so on.

This collection of gong presets is so extensive, it opens a world of possibilities for metallic sonic textures ranging from the traditional to the heavily synthetic and processed.

Burmese

Preset	Size	Note Range
All Burmese Gongs	9MB	C1-G#1
Burmese Bell 7" C#4	1MB	C1-C6
Burmese Gong 21" 1 G2	2MB	C1-A5
Burmese Gong 21" 2 B1	2MB	C1-C6
Burmese Gong 26" 1 G#2	3MB	C1-C6
Burmese Gong 26" 2 F#2	3MB	C1-C6

Cambodian

Preset	Size	Note Range
All Cambodian Gongs	13MB	C1-D#4
Cambodian Gong 8" 1 F2	1MB	C1-C6
Cambodian Gong 8" 2 F2	1MB	C1-C6
Cambodian Gong 8" 3 F2	1MB	C1-C6
Cambodian Gong 8" 4 F2	1MB	C1-C6
Cambodian Gong 12" 1 D2	1MB	C1-C6
Cambodian Gong 13" 1 B1	1MB	C1-C6
Cambodian Gong 13.3" 1 E2	4MB	C1-C6
Cambodian Gong 14" 1 G1	1MB	C1-G#5
Cambodian Gong 15.5" 1 G#1	1MB	C1-C6
Cambodian Gong 15.5" 2 G#1	1MB	C1-C6
Cambodian Gong 17.7" 1 D2	1MB	C1-C6
Cambodian Gong 17.7" 2 D#2	1MB	C1-C6
Cambodian Gong 18" 1 G#2	1MB	C1-C6
Cambodian Gong 18" 2 E2	1MB	C1-C6
Cambodian Gong 18" 3 E2	1MB	C1-C6
Cambodian Gong 25" 1 B1	3MB	C1-C6
Cambodian Gong 25" 2 B1	1MB	C1-C6
Cambodian Gong 25" 3 B1	1MB	C1-C6

Chinese

Preset	Size	Note Range
All Chinese Gongs	13MB	C1-F3
Chinese Bell 7" 1 E4	2MB	C1-C6
Chinese Bell 8" 1 A#3	1MB	C1-C6
Chinese Bell 8" 2 A#3	1MB	C1-C6
Chinese Bell 10" 1 C#3	1MB	C1-C#6
Chinese Bell 10" 2 C#3	1MB	C1-C6
Chinese Gong 11" 1 G#2	1MB	C1-C6
Chinese Gong 11" 2 G#4	1MB	C1-C6
Chinese Gong 11" 3 G#4	1MB	C1-C6
Chinese Gong 11" 4 G#5	1MB	C1-C6
Chinese Gong 11" 5 D#4	1MB	C1-C6
Chinese Gong 12" 1 G#2	3MB	C1-C6
Chinese Gong 12" 2 G#2	1MB	C1-C6
Chinese Gong 12" 3 G#2	2MB	C1-C6
Chinese Gong 12" 4 G#2	1MB	C1-C6
Chinese Gong 14.5" 1 F#2	4MB	C1-C6

Indochinese

Preset	Size	Note Range
All Indochinese Gongs	16MB	C1-B3
Indochinese Gong 6" 1 G4	1MB	C1-C6
Indochinese Gong 11" 1 A2	2MB	C1-C6
Indochinese Gong 11" 2 A#2	1MB	C1-C6
Indochinese Gong 13" 1 E2	2MB	C1-C6
Indochinese Gong 13" 2 E2	1MB	C1-C6
Indochinese Gong 13" 3 E2	1MB	C1-C6
Indochinese Gong 14" 1 E2	1MB	C1-C6
Indochinese Gong 14" 2 E2	1MB	C1-C6
Indochinese Gong 17" 1 G#2	1MB	C1-C6
Indochinese Gong 17" 2 G#2	1MB	C1-C6
Indochinese Gong 18" 1 B1	3MB	C1-C6
Indochinese Gong 18" 2 C3	1MB	C1-C6
Indochinese Gong 18" 3 C3	1MB	C1-C6
Indochinese Gong 20" 1 D#2	4MB	C1-C6
Indochinese Gong 20" 2 D#3	1MB	C1-C6
Indochinese Gong 20" 3 D#2	1MB	C1-C6
Indochinese Gong 20" 4 D#2	1MB	C1-C6

Japanese

Preset	Size	Note Range
All Japanese Gongs	4MB	C1-C#2
Japanese Bell 4.7+5" A4-A#4	1MB	C1-C6
Japanese Bell 10" 1 F6	2MB	C1-C7
Japanese Bell 10" 2 D#4	1MB	C1-C6
Japanese Bell 10" 3 F6	1MB	C1-F8
Japanese Bell 10" 4 A#6	1MB	C1-C6
Japanese Bell 13" 1 A4	1MB	C1-C6

Malaysian

Preset	Size	Note Range
All Keantan Gongs	10MB	C1-F2
Kelantan Gong 18" 1 D2	2MB	C1-C6
Kelantan Gong 18" 2 D2	1MB	C1-C6
Kelantan Gong 18" 3 D2	1MB	C1-C6
Kelantan Gong 18" 4 D2	1MB	C1-C6
Kelantan Gong A 10" 1 A#3	2MB	C1-C6
Kelantan Gong A 10" 2 A#3	2MB	C1-C6
Kelantan Gong B 10" 1 G#4	2MB	C1-C6
Kelantan Gong B 10" 2 G#4	2MB	C1-C6
Kelantan Gong B 10" 3 C#6	1MB	C1-C7

Vietnamese

Preset	Size	Note Range
All Vietnamese Gongs	11MB	C1-C#3
Nha-Trang Gong 12" 1 E2	2MB	C1-C6
Nha-Trang Gong 13" 1 F#2	2MB	C1-C6
Nha-Trang Gong 13" 2 F#2	1MB	C1-C6
Nha-Trang Gong 14" 1 C2	2MB	C1-C6
Nha-Trang Gong 15" 1 A#1	3MB	C1-C6
Nha-Trang Gong A 16" 1 C#2	1MB	C1-C6
Nha-Trang Gong A 16" 2 C#2	1MB	C1-C6
Nha-Trang Gong A 16" 3 C#3	1MB	C1-C6
Nha-Trang Gong B 16" 1 G#1	2MB	C1-C6
Nha-Trang Gong B 16" 2 D#3	1MB	C1-C6
Vietnamese Gong 15" 1 E2	1MB	C1-C6

Xtra Gongs / Bonus Chinese Gongs

Preset	Size	Note Range
All Bonus Chinese Gongs	2MB	C1-A1
Chinese Gong Mid1 C#3	1MB	C1-C6
Chinese Gong Mid2 F3	1MB	C1-C6
Chinese Gong Shaking C#3	1MB	C1-C6

Xtra Gongs / Bonus Japanese Gongs

Preset	Size	Note Range
All Bonus Japanese Gongs	8MB	C1-F2
Japanese Bell Hi F6	3MB	C1-C7
Japanese Gong Energy E1	3MB	C1-C6
Japanese Gong Mid A+B C#3 D#3	1MB	C1-C6
Japanese Gong Shaking C#2	3MB	C1-C6
Japanese Gong Soft A3	1MB	C1-C6

Xtra Gongs / Bonus World Gongs

Preset	Size	Note Range
World Bell Hi Open 1	1MB	C1-D#1
World Bell Hi Open 2	2MB	C1-F1
World Bell Hi Open 3	3MB	C1-D#1
World Bell Hi Open 4	2MB	C1-F1
World Bell Hi Open 5	1MB	C1-D#1
World Bell Hi Open 6	1MB	C1-D#1
World Bell Hi Open 7	2MB	C1-E1
World Gong Dry	2MB	C1-F#1
World Gong Low	1MB	C1-D#1
World Gong Ridestyle	1MB	C1-D#1
World Gong Shaking 1+2	1MB	C1-D#1
World Gong Small 1	4MB	C1-G1
World Gong Small 2	2MB	C1-D#1
World Gong Small 3	4MB	C1-B1

Koto

The *koto* is a thirteen-string zither. This Japanese instrument is about two meters long and it is made of paulownia wood. It is plucked using picks on the thumb and first two fingers of the right hand. The left hand modifies pitch and tone. Koto are used in an ensemble in gagaku or as a solo instrument. In Ethno Instrument there are two different kotos: a thirteen-string version and a very rare seventeen-string version.

Preset	Size	Note Range
Koto 1 fingered	75.31MB	G0-G3
Koto 1 picked	86.80MB	G0-G3
Koto 1 sweep	20.05MB	G0-G3
Koto 1 trem	10.62MB	G0-G3
Koto 2 fingered	86.72MB	C2-C5
Koto 2 picked	63.23MB	C2-C5
Roots Koto picked	19.46MB	C2-C#5
Roots Koto picked -o	17.31MB	C2-A3
Roots Koto sweep	18.46MB	C2-C#5
Roots Koto sweep -o	18.46MB	C2-A3
Roots Koto trill	13.07MB	C2-C#5
Roots Koto trill -o	13.07MB	C2-A3
Koto 1 KS (C0, C#0, D0, D#0)	39.0MB	A#0-F3
Koto 2 KS (C1, C#1)	34.0MB	C#2-G4
Roots Koto KS (C1, C#1, D1)	13.0MB	C2-C5

Liu Qin

A small pipa, the *liu qin* is a four string instrument which sounds like a mandolin. It is played with a piece of spectrum, and it is traditionally used in folk songs and local Chinese opera. More recently, the liu qin has also became a solo instrument.

Preset	Size	Note Range
Liu Qin harmonics	2.64MB	C3-C5
Liu Qin roll	17.22MB	F#2-G#5
Liu Qin sus	5.43MB	F#2-G5
Liu Qin sus hard	3.02MB	F#2-G5
Liu Qin KS (C2-D#2)	12.0MB	G2-G5

Pipa

The *pipa* is a Chinese four-string instrument with thirty frets and a pear-shaped body. This instrument from the lute family is at least 2,000 years old. The Pipa is held upright and played with five small plectra attached to each finger of the right hand. It has a wide dynamic range and a remarkable expressive power.

Preset	Size	Note Range
Pipa Arpeggio	6.32MB	A1-C5
Pipa Bend	3.78MB	G1-G4
Pipa FX	1.04MB	C2-F2
Pipa Hammer	3.19MB	G1-G4
Pipa roll	25.06MB	G1-G5
Pipa strum	4.63MB	A1-B4
Pipa strum triple	4.73MB	A1-B4
Pipa sus	8.64MB	G1-G5
Pipa sus triplet	3.98MB	G1-G5
Pipa KS (C0-G#0)	12.0MB	A1-E5

Shakuhachi

The *shakuhachi* flute is a traditional Japanese instrument with five holes: four on top and one below for the left thumb. The attacks and articulations of sounds while playing a shakuhachi can only be generated by blowing. The instrument has five basic notes: Ro, Tsu, Ré, Tchi, Ri (D, F, E, A and C, respectively). It has a range of two octaves plus a major third. The twelve chromatic sounds may be generated by a very specific technique called *Meri-Kari*. These sounds are more quiet than the five basic notes. The shakuhachi flute is considered to be an instrument that does not have precise tuning.

Isshakausansun-high

Preset	Size	Note Range
Isshakausansun blow	11.87MB	G3-A5
Isshakausansun blow –o	10.30MB	C2-F3
Isshakausansun hit	1.32MB	F#3-G#5
Isshakausansun hit –o	0.90MB	C2-E3
Isshakausansun mod	20.94MB	F#3-G#5
Isshakausansun mod –o	22.41MB	C2-F3
Isshakausansun sus	29.66MB	E3-C6
Isshakausansun KS (C2-D#2)	14.0MB	E3-G#5

Nishakuyonsun-bass

Preset	Size	Note Range
Nishakuyonsun blow	11.99MB	G2-C5
Nishakuyonsun blow –o	10.40MB	C2-F3
Nishakuyonsun hit	2.25MB	G2-C5
Nishakuyonsun hit –o	1.17MB	C2-F3
Nishakuyonsun mod	21.71MB	G2-C5
Nishakuyonsun mod –o	20.78MB	C2-F3
Nishakuyonsun sus	31.76MB	G2-C5
Nishakuyonsun KS (C2-D#2)	17.0MB	G#2-B4

Shakuhachi

Preset	Size	Note Range
Shakuhachi blow	19.32MB	D3-E5
Shakuhachi blow –o	18.37MB	C2-F3
Shakuhachi hit	1.78MB	D3-E5
Shakuhachi hit –o	1.16MB	C2-F3
Shakuhachi mod	11.63MB	D3-D#5
Shakuhachi mod –o	9.94MB	C2-F3
Shakuhachi sus	24.47MB	D3-E5
Shakuhachi KS (C2-D#2)	17.0MB	D#3-E5

Shamisen

The *shamisen* is a three-string lute from Japan. This instrument comes from the pleasure districts in the 17th century and it is used in traditional performances: kabuki and bunraku. From 1.1 to 1.4 meters long, shamisen are made from one wood, such as red sandalwood. Their head is covered with cat or dog skin. The pegs are traditionally made of ivory and the strings are made of silk.
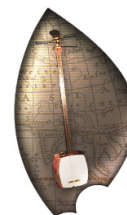
Preset	Size	Note Range
Shamisen fingered	26.24MB	D2-D5
Shamisen picked	25.47MB	D2-C5
Shamisen picked hard	7.25MB	D2-C5
Shamisen picked vib	9.91MB	D2-C5
Shamisen picked vib hard	3.72MB	D2-C5
Shamisen slide	4.04MB	C2-C5
Shamisen KS (C1-F1)	63.0MB	C2-D5

Taiko

Taiko drums, the renown Japanese large percussion ensemble, are one of the most popular and recognizable "large" percussion sounds in all of today's commercial and cinematic music. Ethno Instrument provides both Taiko loops and single-shot instrument presets.

The instrument presets are mapped so that you can mix and match different microphone settings (including close mics and hall/far mics). Some presets are deeply multi-sampled with more than fifty velocity layers. The level of realism is perhaps the best every achieved in a multisampled instrument.

Preset	Size	Note Range
Taiko 1 mic 1	44MB	C2-D#4
Taiko 1 mic 2	44MB	C2-D#4
Taiko 1 mic 3	44MB	C2-D#4
Taiko 2 mic 1	44MB	C2-D#4
Taiko 2 mic 2	44MB	C2-D#4
Taiko 2 mic 3	44MB	C2-D#4
Taiko Mastered	8MB	B1-D#4
Taiko Reverb mic 1	46MB	C2-D#4
Taiko Reverb mic 2	46MB	C2-D#4
Taiko Reverb mic 3	45MB	C2-D#4

Thai Drums

While not as well known as Taiko drums, *Thai Drums* provide similar Asian flavor and mystique. Two presets are provided: close-mic and far-mic (hall).

Preset	Size	Note Range
Thai Drum-Close	32MB	C2-C#5
Thai Drum-Hall	35MB	C2-F5

AUSTRALIA

Aborigen Percussions

The history of Aborigen percussion instruments is closely linked to the Aborigen way of life. For example, *bullroaders* are thin tear-shaped pieces of wood attached to a long cord. Bullroaders are then spun on their own axis and held by the cord to produce an erie whirring sound. Some think that they used to be the Aboriginal "bush telephone" (long distance call). Others believe that they were used in secret Aboriginal ceremonies. Iron wood *clapsticks* are traditionally used to accompany the haunting sound of the *didgeridoo*. Today they are used all over the world as an ancient percussion instrument.

Preset	Size	Note Range
Aborigen Perc Bass	0.79MB	C2-D3
Aborigen Perc Frame	1.25MB	C2-A3
Aborigen Perc Log	0.55MB	C2-E3
Aborigen Perc Rattle	0.88MB	C2-E4
Aborigen Perc Shaker	0.78MB	C2-F4

Didgeridoo

The *didgeridoo* originates from the Northern coastline of Central Australia. This slightly flaring wooden tube about 1.5 metres long is hollowed out by natural termites from the trunk of one of the small trees of the region. It is then cut and cleaned. The outside is refined by scraping, and then it is painted with traditional designs. The very specific sound of the didgeridoo is a low-pitched drone with frequency around 70 Hz depending on the length and flare. It used to accompany songs and illustrate traditional stories about ancestors and animals.

Preset	Size	Note Range
Didgeridoo FX	1.70MB	C2-F4
Didgeridoo Fake Horn	2.60MB	A1-E3

Jaw Harp

The *jaw harp* is one of the oldest instruments in the world. Some of its varieties were used by lovers to communicate and more generally as a coded language. The jaw harp is held in the mouth and plucked with the finger. Changing the shape of the mouth changes the pitch.

Preset	Size	Note Range
Jaw Harp C#	0.87MB	C2-G3
Jaw Harp D	1.01MB	C2-G3
Jaw Harp D#	0.59MB	C2-G3
Jaw Harp E	0.69MB	C2-F3
Jaw Harp F	0.47MB	C2-E3
Jaw Harp FX	1.95MB	C2-B4

Native Flute

Native flutes or *didjes* are made from tree trunks. They can be found in many sizes and shapes. *ORKS forks* are didjes with two hollow branches going into one trunk. This instrument can even be played by two people at the same time.

Preset	Size	Note Range
Native Flute 1	2.61MB	C2-C4
Native Flute 2	1.37MB	C2-C4
Native Flute Licks	1.34MB	C2-E3

Oceanian Drums

These drums originate from Polynesia and other areas of the southern Pacific rim and offer additional unique percussive flavors to the Ethno Instrument collection. Both close and far micing techniques are employed, and they are recorded such that they can be used in tandem with each other.

Preset	Size	Note Range
Kanak Drum-Close	33MB	C2-D#5
Kanak Drum-Hall	38MB	C2-F5
New Guinean Drum-Close	21MB	C2-G4
New Guinean Drum-Hall	21MB	C2-G4
Oceanian Drum 1-Close	38MB	C2-B4
Oceanian Drum 1-Hall	36MB	C2-B4
Oceanian Drum 2-Close	17MB	C2-F4
Oceanian Drum 2-Hall	17MB	C2-F4
Oceanian Drum 3-Close	33MB	C2-B4
Oceanian Drum 3-Hall	35MB	C2-C#5
Polynesian Drum-Close	38MB	C2-D#5
Polynesian Drum-Hall	41MB	C2-G#5

CELTIC

Bag Pipes

Bagpipes are traditional celtic instruments. They can be found in several varieties: Great Highlands pipes (the largest and most notorious), Scottish small pipes (a quieter sound), North Umbrian, Irish, Uilleann or Union pipes (the most advanced version of the instrument with regulators and two octaves instead of only one). The bag of these very loud instruments is inflated by the mouth. There are up to three drones and a chanter. For the Scottish bagpipes, it is pitched in B-flat, although the music is written in A.

Preset	Size	Note Range
Bag Pipes mid	1.30MB	G2-G#3
GH Pipes grace dwn	3.54MB	G3-G4
GH Pipes grace up	3.99MB	G3-G4
GH Pipes sus	7.81MB	G3-A#4
GH Pipes wild	2.96MB	G3-G4
North Umbrian Small Pipes	13.87MB	C3-C5
Scottish Small Pipes grace	7.20MB	G2-G3
Scottish Small Pipes sus	7.84MB	G2-A#3
Small Bombarde	1.93MB	G2-G3
Uillean Pipes	18.70MB	D3-A#4
GH Pipes KS (C3-D#3)	5MB	G3-A#4
Scottish Small Pipes KS (C2, C#2)	3MB	G2-A#3

Celtic Guitars

The arrival of the fingerstyle guitar in Celtic music is quite recent (20th century), even though Celtic music itself is six centuries old. Most Celtic music is played the key of D, G or related cross-keys because of the presence of modal and fixed key diatonic instruments such as simple flutes, celtic harps, bagpipes or hammered dulcimers. So Celtic guitar players developed several strategies to adapt: tunings that allow the instrument to favor the keys D, G and A, or tunings that offer a wider range or a fuller sound in D.

Preset	Size	Note Range
Guitar in D	24.63MB	D1-D4
Guitar in E	15.44MB	E2-A#5
Guitar in E hard	7.16MB	E2-A#5
Guitar in E soft	8.29MB	E2-A#5
Twelve Strings	11.51MB	E1-G#4
Twelve Strings hard	5.15MB	E1-G#4
Twelve Strings soft	6.36MB	E1-G#4

Celtic Percussion

Percussion instruments from Ireland, Scotland, Wales and Brittany, are the heartbeat of Celtic traditional music. Most are easy to play and don't require much musical education, even though Celtic music often involves complicated rhythms. One of the most popular, a traditional Irish drum called the *bodhran*, is a round wooden frame covered with a stretched animal skin.

Preset	Size	Note Range
Bodhran Hits	2.90MB	C1-D#3
Bodhran Licks	4.21MB	C1-G#2
Bones	0.96MB	C2-A#2
Clogs	1.84MB	C2-F#3
Pipe Snare Drum	1.38MB	C2-B2
Spoons	0.35MB	C2-A2
Tenor Drum	2.88MB	C2-D3

Fiddle

The *fiddle* is a traditional Celtic instrument. This relative from the Italian native, called the modern violin, is one of the most favorite instruments in Celtic music. In comparison with the conventional violin, it has a shorter neck and fingerboard. The fiddle also produces less volume.

Preset	Size	Note Range
Fiddle marc long	2.82MB	G2-F5
Fiddle marc short	1.87MB	G2-F5
Fiddle marc vib	2.54MB	G2-F5
Fiddle slides	3.27MB	C3-A3
Fiddle sus	7.38MB	G2-E5
Fiddle turns	3.22MB	C3-C4
Fiddle KS (C2-F2)	15MB	G2-F5

Harmonica

Originally from ancient China (3,000 BC), the *harmonica* was introduced in Celtic music in the late 19th century. A harmonica consists of a comb generally made of wood or plastic, two brass reed plates, and two nickel covers. Celtic music uses the diatonic Harmonica, which has ten holes that provide one or two different notes, depending on whether the player is blowing or drawing (inhaling). The diatonic harmonica covers three octaves, but only the middle octave is complete. The harmonica is actually designed so that it should have the tonic and dominant chords in the lower register.

Preset	Size	Note Range
Harmonica 1	3.17MB	G3-C5
Harmonica 2	5.02MB	C3-C6

Harp

The *Celtic harp* originated in the 11th century. This instrument remains quite unchanged, although some medieval harps were slimmer than their modern counterparts. Celtic Harps generally consist of a softwood soundboard and gut or nylon strings. This traditional Celtic instrument inspired the concert harp, which features increased tension on the strings, a greater range of notes, and pedal mechanisms.

Preset	Size	Note Range
Celtic Harp 1	13.77MB	C1-D6
Celtic Harp 2	14.96MB	C1-G5
Celtic Harp 2 hard	9.95MB	C1-G5

Penny Whistle

The *penny whistle* and *low whistle* are very popular in the Celtic music. The younger of the two, the low whistle, was first made in the 1970's from aluminium tubing. It is as long as a flute, which means that it is twice as long as a the penny whistle. Both whistles are tuned in D but an octave apart: a small D for the penny whistle. G is often the highest pitch used: the larger low whistles play from G downwards. The most popular models are not tunable.
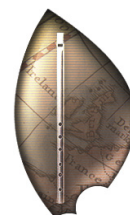
Preset	Size	Note Range
Low Whistle	2.94MB	C2-G4
Penny Whistle Grace	4.01MB	C3-C5
Penny Whistle Rolls	3.22MB	C3-C5
Penny Whistle Sus	8.32MB	C3-E5
Penny Whistle KS (C2, C#2, D2)	7MB	C3-E5

EASTERN EUROPE

Balalaika

The *balalaika* is a stringed instrument from Russia often used in traditional Russian folk songs and melodies. It is believed to have been inspired by an instrument imported by the Mongols of Central Asia during the 12th Century invasions.

The balalaika is easily recognizable, thanks to its triangular body and three strings (sometimes six strings in pairs). It can be found in six sizes. Small ones have nylon strings (formerly gut) on the lower pegs and a wire string on the top peg. The model most commonly used as a solo instrument is the *prima,* which is tuned E-E-A. On a prima, the left thumb frets notes on the bottom string where it is used to form chords. The index finger is used to sound notes. A plectrum is used on the larger sizes.

Preset	Size	Note Range
Balal. trem chords fingered	5.67MB	C2-B3
Balal. trem chords picked	5.39MB	C2-B3
Balalaika chords Major	2.32MB	C2-B3
Balalaika chords Minor	1.14MB	C2-B3
Balalaika mute metal	2.07MB	A3-A5
Balalaika mute nylon	1.97MB	E3-A4
Balalaika sus metal	6.98MB	A3-A5
Balalaika sus nylon 1	3.50MB	E3-A4
Balalaika sus Nylon 2	2.41MB	E3-A4

Balalaika trem metal	5.17MB	A3-A5
Balalaika trem nylon	3.79MB	E3-A4
Balalaika Chords KS (C1-D#1)	11MB	C2-B3
Balalaika KS (C1-F#1)	31MB	E3-A5

Balkanish Instruments

Balkan music is a fusion of multiple cultures and influences of a large region, with Slavic, Rom (gypsies) and Ottoman influences. Balkan music is usually performed by brass bands and urban orchestras using accordion, violin and woodwinds. Each region has developed its own style.

Ethno Instrument provides a small set of conventional Balkan instruments played by traditional Balkanish artists.

Preset	Size	Note Range
Balkanish Accordion	1.19MB	G#1-C4
Balkanish Double Bass	1.98MB	F0-E2
Balkanish Saxophone	1.33MB	G#2-C#5
Balkanish Violin	8.62MB	G2-C5
Balkanish Violin hard	4.00MB	G2-C5

Balkanish Voices

Balkanish Voices capture the unique, microtonal — and even percussive — characteristics of traditional Balkan vocal performance, sung by an accomplished native singer from the region. Both near and far micing techniques were employed during the recording sessions for these samples, to provide flexibility in placing the vocalizations within a mix. You will find dozens of vocal phrases (that do not contain words), spanning the entire keyboard, suitable for many types of music. Use Ethno's very high quality time stretching to match any tempo.

Preset	Size	Note Range
Balkanish Voices	15MB	G0-D7

Cymbalum

With origins in Persia, the *cymbalum* became popular with Romanian musicians around the 19th Century. This relative to the hammered dulcimer consists of strings stretched over a trapezoidal sounding board. It is usually set on a stand in front of the musician, but it may also be carried by the musician when it is smaller. In this case, it is held by a strap around the player's neck. Regardless of size, the cymbalum is played by striking two beaters (hammers). Its range depends on the number of strings. For example, the large concert cymbalum from Hungary is comparable in pitch range to a small piano.

Other names for the cymbalum: *cymbalom, cimbalom, tsymbaly, tsimbl or santouri* (depending on the country)

Preset	Size	Note Range
Cymbalum mute	49.38MB	A0-A5
Cymbalum mute hard	23.06MB	A0-A5
Cymbalum sus	469.84MB	A0-A5
Cymbalum sus hard	61.83MB	A0-A5
Cymbalum trem	76.06MB	A0-A5
Cymbalum v2 Chinese Stick	14MB	A0-A5
Cymbalum v2 Nail Octave 1	12MB	A0-C3
Cymbalum v2 Nail Octave 2	6MB	B0-C3
Cymbalum v2 Nail Octave 3	6MB	A0-C3
Cymbalum KS (C0-F#0)	130MB	A0-A5

☛ Ethno Instrument's Cymbalum presets have been substantially extended for Version 2, with more samples, more playing techniques, and a wonderful new keyswitch (KS) preset.

INDIA

Dilruba

The *dilruba* originates from the northern region of India, with a history that stretches back only about 200 years (relatively young compared to other instruments from India, such as the sitar). *Dil* means *heart* and *rubha* means *enchanter*, so the name literally means "that which enchants the heart," an appropriate name for such a magical instrument.

The dilruba is considered to be a mixture of two instruments: the sitar and the sarangi, with a medium sized sitar-like neck with 20 heavy metal frets and 12-15 metal strings, which are bowed like a violin. In spite of the sitar-style fret layout, the strings are not pulled to produce *meend* (glissando). In fact, the strings rarely touch the frets as they are played.

The soundboard is a stretched piece of goatskin similar to what is found on a sarangi. Sometimes the instrument has a gourd affixed to the top for balance or for tone enhancement.

Preset	Size	Note Range
Dilruba sus	17MB	A2-G4
Dilruba vib	13MB	A2-G4
Dilruba KS (C2, C#2)	13MB	A2-G4

Electric Sitar

The *electric sitar* is a natural evolution of this traditional Indian instrument. Very present in the Indian folk music, it produces a very specific whirring sound and has accurate string intonation, thanks to its buzz bridge. Tunable in many ways, the electric sitar provides thirteen sympathetic strings and can be played as accompaniment.

Preset	Size	Note Range
Electric Sitar	6.49MB	E2-C6
Hybrid Sitar	7.85MB	E2-C6

Harmonium

The *harmonium* is one of India's most popular instruments. The instrument was originally inspired by models brought to India by Christian missionaries in the 15th Century. It is a smaller floor-model version of the occidental harmonium, without the pedals and with a rear air-pumping unit and smaller number of keys.

Harmoniums consist of banks of brass reeds, a pumping apparatus, stops for drones, and a keyboard. The harmonium's timbre is similar to an accordion, but it actually works more like a set of bagpipes, with the ability to create a continuously sustained sound. If a harmonium has multiple sets of reeds, the second set of reeds is often tuned an octave lower and can be activated by a stop, which means each key pressed will play two notes an octave apart. Professional harmoniums feature a third set of reeds, usually tuned an octave higher. In addition, many harmoniums feature an octave coupler, a mechanical linkage that opens a valve for a note an octave below the note being played, and a scale changing mechanism, which allows one to play in various keys.

The Indian harmonium is played with one hand. The other hand is used to pump air. The harmonium is generally a solo instrument or an accompaniment instrument for vocalists.

Preset	Size	Note Range
Harmonium –o	38.09MB	C1-E5
Harmonium Bass –o	8.91MB	C2-G2
Harmonium mute	26MB	F#1-B4
Harmonium plain	39MB	F#1-B4
Harmonium KS (C1, C#1)	26MB	C2-B4

Indian Flute

Indian flutes are one of the oldest musical instruments in India. The first models were found 2,000 years ago. Flutes may be seen in many sacred pictures of Lord Krishna and Saraswati, goddess of music. They used to be the favorite instruments of shepherds and remain a favorite of folk musicians. Mostly made of bamboo, Indian flutes can be found in different sizes, varying from eight to twenty inches in length, uniformly bored with six to eight holes arranged in a straight line.

Preset	Size	Note Range
Flute Indouh blow	0.15MB	B2-A#4
Flute Indouh sus	9.00MB	B2-A#4
Indian Flute v2 blow	37MB	G3-G5
Indian Flute v2 sus	37MB	G3-G5
Indian Flute v2 sus -o	37MB	G3-G5
Indian Flute v2 vib	19MB	G3-G5
Indian Flute v2 vib -o	19MB	G3-G5
Pondichery Flute blow	0.22MB	C3-F4
Pondichery Flute sus	3.71MB	C3-F4
Flute Indouh KS (C2, C#2)	5MB	B2-A#4
Indian Flute v2 KS (C2, C#2, D3)	37MB	G3-G5
Indian Flute v2 legato	177MB	G3-G5
Pondichery Flute KS (C2, C#2)	3MB	C3-F4

Indian Percussions

Percussion instruments are very important in Indian traditional and classical music. Indian percussion instruments are made of metal, burnt clay (*tabla*) and wood (*dholak*). They can be played with palms and fingers (ghatam, tabla) but also with canes, such as for the *dhol*. This instrument is played with a cane switch called the *thilli* for treble and a curved cane stick for bass. One of the most widely known Indian percussion instruments is the *tabla*. Another famous Indian percussion instrument is the *ghatam*. This instrument from the south of India consists of an earthen pot.

Indian Percussions

Preset	Size	Note Range
Angklungs 1	0.44MB	C2-G2
Angklungs 2	0.33MB	C2-G2
Bass Tabla	0.60MB	C2-A3
Baya	0.96MB	C2-D5
Ghatam	0.73MB	C2-A3
Idakka	0.49MB	C2-C4
Indian Jaw	5.72MB	C2-D3
Mridangam	0.44MB	C2-C3
Tabla	0.38MB	C2-G3
Tabla Special	3.21MB	C2-D3
Thavil	0.24MB	C2-B2

Indian Percussions v2

Preset	Size	Note Range
Bass Dholak	24MB	C0-D3
Bass Udoukkai	2MB	C2-A3
Chanda	8MB	C2-D4
Dholak	47MB	C1-A5
Dholki	36MB	C1-A5
Ela Thalam (Jaldra)	4MB	C2-A4
Ghatham	19MB	C1-G#4
Khanjeera	4MB	C2-C4
Morsing	11MB	C2-A4
Nagra	9MB	C2-D4
Pakavaj	44MB	D0-G5
Parai Bass	3MB	C2-D#4
Parai Top	5MB	C2-G#4
Pumbai	6MB	C3-F3
Salangai	3MB	C2-F4
Tabla	108MB	F#1-A6
Thavil	16MB	C2-F4
Udukkai	2MB	C3
Urumi	5MB	C1-G5
Yeddakai	3MB	C3-D3

Chanda

The Chanda is a cylindrical wooden drum two feet in length and about a foot in diameter. Both sides of the chanda are covered with skin. Although the chanda has two faces, only one surface of it is beaten. The drummer suspends the chanda from his neck, such that it hangs more or less vertically and with two sticks held in both the hands. He then strikes the upper parchment. It is an important percussion instrument used in *Kathakali*, *Koodiyattam* and related forms of dances. The same instrument is known as the chanda in certain areas of Karnataka (South India) and it is used in *Yakshagana*, which is a folk dance-drama. The sound produced by the chanda is very loud.

Dholak / Bass Dholak

The Dholak is a folk instrument known throughout the Indian continent, made of wood in the form of barrel. The two mouths are fixed with hide and beaten with sticks or hands.

The Bass dholak is one of the most widely utilized drums in the folk music of India. It has also found a permanent home in most of the recording and broadcast environments. Applications range from dance music, such as bhangra and garba, to devotional bhajans and keertans. It is not used for classical music, where the tabla and pakhavaj reign supreme.

Dholki

The bass head of the Dholki is designed more like a tabla head, with multi layered skins, but with the paste on the inside of the bass head. But on the treble head side, there is visible paste applied on the outside of the head, similar to the talba, giving this drum a pleasing, high-pitched tone reminiscent of a high-pitched tabla drum, although not as resonant. The combination of the bass and treble tones is very pleasing. The dholki is most commonly used in folk, filmi, bhajan and keertan settings.

Ghatam

Found in south India, the ghatam is an earthen pot held with its mouth to the belly of the player, who strikes it with palms and fingers.

Jaldra and Salangai

These instruments are the Jaldra or Ghungroo Dancer's ankle bells of India.

Khanjeera

The Khanjeera is a small and deep-framed drum found in southern India. It has no jingles and is covered with crocodile or iguana skin.

Mirdhangham

Mridanga, which means *body of clay*, is the most ancient of all percussion instruments. It is commonly used in south India as accompaniment to vocal and instrumental performances.

The mridangam is a hollowed out block of wood about 60 cm in length. It has the shape of a barrel, with a bulge slightly to one side. The right face is smaller than the left, which is called the *tappi* and has two lamina. The outer layer is a flat ring of leather attached to a plate known as the pinnal. Tuning the drum is done by striking the right pinnal with a hand, a wooden block, or any object.

Varieties of tone can be obtained from different parts of the instrument in various ways. In the south, the mridangam is the only drum used in classical music recitals, except in Nagaswaram recitals.

Morsing

The morsing consists of a "tongue" of springy metal that is supported within a circular ring of iron, which forms a frame. The tongue is slightly curved at the free end and protrudes beyond the ring at the other end.

The instrument is held between the thumb and forefinger of the left hand and the narrow portion is inserted into the mouth. The curved end of the tongue is plucked with the forefinger of the right hand. The cavity of the mouth serves as the resonator and the performer can produce a variety of sounds by opening his mouth wider, by controlling his breath, and by manipulating his tongue.

Nagra

Nagra are kettledrums often used in pairs. The smaller female and the larger male drum, made of earth, wood or metal, are beaten with sticks varying in size from a few inches to several feet in diameter. This instrument is of Persian origin.

Parai / Tappatai

The Parai is a large, circular, open drum usually played with drumsticks. The word itself has migrated to India from Persia.

Phakwaj

The Phakwaj is a North Indian instrument.

Pumbai

The Pumbai is similar to the chanda but varies in size and timbre.

Tabla

The tabla consists of two drums: the *bayan*, played with the left hand, and the *dayan*, played with the right hand. Bayan is made of either clay or copper, while dayan is usually hollowed out of a block of wood. Both are covered with skin fastened to leather hoops, which are stretched over the body of the drum by means of leather braces.

Sound is produced by striking the center with the full hand or the tip of the fingers while pressing the bass of the palm onto, and simultaneously sliding it over, the drum head.

This instrument is capable of producing almost all the patterns of rhythms that a musician can conceive of.

Thavil

The thavil is a barrel shaped percussion instrument from South India. It is used in folk music and Carnatic music, often accompanying the nadaswaram. The thavil and the nadaswaram are essential ingredients of traditional festivals and ceremonies in South India.

The thavil consists of a cylindrical shell hollowed out of a solid block of wood. Layers of animal skin (water buffalo on the right, goat on the left) are stretched across the two sides of the shell using hemp hoops attached to the shell. The right face of the instrument has a larger diameter than the left face, and the right drum head is stretched very tightly, while the left drum head is kept loose to allow pitch bending.

The instrument is either played while sitting, or hung by a leather strap from the shoulder of the player. The right head is played with the right hand, wrist and fingers. The player usually wears thumb caps on all the fingers of the right hand, made from hardened glue. The left head is played with a stick made from the wood of the portia tree. It is not uncommon for left-handed players to use the opposite hands, and some nadaswaram groups feature both a right- and a left-handed thavil players.

Udukkai / Bass Udukkai

Udukkai is a portable drum, which can be carried easily under the arm. It is found all over India with different names. The udukkai has a unique feature: the pitch of the drumbeats can be varied while playing, which gives a melodic flavor to rhythmic beats. Indian literature, sculptures and temple inscriptions provide a wealth of information about many ancient instruments of India, including the Udukkai.

Urumi

The Urumi is a drum instrument for which two hemispherical drums are attached together. It can can be played at very high speeds, depending on the player's experience.

Indian Violin

Violin is an integral part of Karnatic music. It is one of only several foreign instruments adopted by traditional Indian music. Though it is a western instrument, in southern India it is tuned in the Indian style. The violin is remarkable for its smooth sweeps from one end of the string to the other. It is held in a position between the right hand and the chest. The left hand moves freely and the fingers of the player have a range of two and a half octaves. The tone of the strings and the facility to play the embellishments peculiar to Indian music have made the violin irrevocably Indian.

Preset	Size	Note Range
Indian Violin pizz	31MB	B2-G4
Indian Violin sus	100MB	B2-A4
Indian Violin vib	48MB	C3-B4
Indian Violin KS (C2, C#2, D2)	33MB	B2-B4
Indian Violin legato	182MB	B2-B4

Jaladarangam

Jaladarangam literally means *water-waves*. This instrument consists of a series of porcelain cups filled to various levels with water and arranged in a semicircular placement. The size, thickness and material of the cup, along with the amount of water in it, determines its pitch. The cups are laid out and the player, squatting in the center of the semicircle, strikes them with thin bamboo sticks. The Persian version of this instrument is called the *kasat*.

Preset	Size	Note Range
Jaladarangam mute	30MB	C3-D5
Jaladarangam sus	76MB	C3-D5
Jaladarangam KS (C2, C#2)	29MB	C3-D5

Khombu

The *Khombu* is an elongated cylindrical instrument with a diameter that increases with length.

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Preset	Size	Note Range
Khombu	19MB	C2-F5

Magudi

The *Magudi* is a polyphonous wind instrument. A bottle gourd attached to a double cane pipe is cut into reeds. While one of the pipes gives the basic tonic, which it produces in a constant drone, the other pipe is able to play the tune. This pipe has finger holes that can be stopped just as in a flute. The wind that enters is blown out through the other end of the bottle gourd. Its sound is melancholy and is normally tuned to the scale of the South Indian *Punnagavarali*, a kind of Mishra Bilaskhani Todi of Hindustani music.

Preset	Size	Note Range
Magudi Fx	5MB	C2-A5
Magudi mute	9MB	D3-A3
Magudi mute -o	9MB	D3-A3
Magudi sus	9MB	D3-A3
Magudi sus -o	9MB	D3-A3
Magudi vib	8MB	D3-G#3
Magudi KS (C2, C#2, D2)	5MB	D3-A3

Nadhaswaram

The *nadhaswaram* is a south Indian instrument. It is also called the *Nagaswaram*.

This is a wood wind instrument of approximately two to two and half feet of length. It is a double-reed Instrument with twelve holes. This Instrument is considered to be well-suited for open air performances.

Preset	Size	Note Range
Nadhaswaram mute	19MB	A2-A4
Nadhaswaram sus	97MB	C1-A4
Nadhaswaram vib	28MB	A2-A4
Nadhaswaram KS (C2, C#2, D2)	32MB	A2-A4
Nadhaswaram legato	150MB	A2-A4

Santoor

The *Santoor* is a trapezoidal box with eighty-seven metal strings placed parallel across the box, in twenty-nine sets of three strings each. Ragas are played by striking the strings with wooden strikers.

Preset	Size	Note Range
Santoor sus	46MB	G2-G4
Santoor vib	82MB	G2-G4
Santoor KS (C2, C#2)	23MB	G2-G4

Sarod

The *Sarod* is one of the most popular stringed instruments of northern India. It is mainly a solo instrument. However, in recent years, owing to its deep and rich tone, which blends easily with other instruments, the sarod plays an important role in the composition of modern Indian orchestras. The sarod is played with a plectrum held in the right hand while the fingers of the left hand are used for stopping the strings and playing the notes.

Preset	Size	Note Range
Sarod sus	60MB	D2-B3
Sarod vib	32MB	D2-B3
Sarod KS (C1, C#1)	20MB	D2-B3
Sarod legato	147MB	D2-B3

Shank

The *shank* is a completely natural instrument, made out of a big shell.

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Preset	Size	Note Range
Shank Bass Tones	3MB	C3-F4
Shank Sharp Tones	2MB	C2-E3

Shenai

The *Shenai* is basically a northern Indian oboe. The instrument has a wooden body with a brass bell. The reed is attached to a brass tube, which is wrapped in strings.

Preset	Size	Note Range
Shenai Fx	2MB	C3-E4
Shenai stac	29MB	D3-A4
Shenai sus	44MB	D3-A4
Shenai sus -o	44MB	D3-A4
Shenai vib	29MB	D3-A4
Shenai KS (C2, C#2, D2)	22MB	D3-A4

Sitar

The *sitar* is a plucked string instrument with frets that is played with both hands. It is the most favored Indian classical string instrument. The sitar's body is generally carved out of cedrela tuna or teak wood. Structurally, the sitar consists of: a base (tumba), a hemispherical hollowed gourd that acts as resonating chamber; a stem (dand), a semi-rounded wooden structure with the upper surface functioning as the finger board, joined to the base by a shoulder (gulu); and finally a second gourd for balance and to heighten resonance. The tuning pegs are situated at the front of the instrument. There are two types of sitars. One is smaller, with only eleven strings, to enhance playing speed. The larger version has thirteen sympathetic strings tuned to the notes of the raga, with three playing strings to cover three octaves tuned MA SA PA, and a fourth one reaching a bass octave tuned SA (*kharaj*); 3 rhythm strings (*cikari*) are tuned SA SA GA. The smaller sitar uses strings tuned MA SA GA PA with two only (*cikari*) tuned in SA. It does not reach the bass octave.

Preset	Size	Note Range
All Sitar –o	109.35MB	B0-F#4
Sitar Bass-5th string	19.39MB	C2-B2
Sitar DA sus	42.01MB	F#2-F#4
Sitar RA sus	46.57MB	F#2-F#4
Sitar Rhythm	1.75MB	C2-F2
Sitar Sympathetic string	2.70MB	C2-F2
Sitar Tonic notes	12.58MB	C2-G2
Sitar slide	26.04MB	G2-F#4
Sitar v2 Fx	3MB	C3-C5
Sitar v2 stac	27MB	D#2-D4
Sitar v2 sus	73MB	D2-D4
Sitar v2 sus -o	73MB	D2-D4
Sitar v2 vib	18MB	D#2-D4
Vee-Hoc Sitar	27.62MB	C2-C4
Sitar v1 KS (C2, C#2, D2)	29MB	F#2-F#4
Sitar v2 KS (C1, C#1, D1)	32MB	D2-D4

Tambura

The *tambura* is the classical drone lute of Indian music. This instrument shares an ancestor with the sitar: the *tambur* (a smaller version of the tambura). But the tambura and tambur are quite different. Like the Sitar, the tambura body is carved out of cedrela tuna or teak wood, while its main resonator is made of a pumpkin. But that is where the similarities end. The hollowed neck of the tambura is used as "central" resonator. The tambura has four strings (up to thirteen for the sitar) tuned PA SA SA SA (dominant, tonic, tonic, tonic of the lower octave). It can play the raga scale with its harmonics. The fretless Tambura produces a special drone effect.

Preset	Size	Note Range
Tambura	5.82MB	C2-D3
Tambura –o	5.82MB	C2-A2

Veena

The *veena* has seven strings. Of them four are main strings that pass over the frets and are attached to the pegs of the neck. The other strings are used as side strings for rhythmic accompaniment. These strings pass over an arched bridge made of brass. They lie flat over the top of the body and are secured to the main bridge.

Preset	Size	Note Range
Veena Fx	2MB	C3-B3
Veena stac	31MB	B1-G3
Veena sus	73MB	B1-B3
Veena vib	29MB	C2-G3
Veena KS (C1, C#1, D1)	33MB	B1-B3
Veena legato	133MB	B1-B3

INDONESIAN-GAMELAN

Gamelan is the general word to describe Javanese orchestras. They mainly consist of tuned metal gongs, gong-chimes and metallophones. A complete gamelan orchestra includes drums, xylophone, flute, Rebab (2-stringed fiddle) and often singers. Gamelans have a very long history. Created by the Gods in Javanese mythology and made with a special alloy, gamelans are regarded as a living spirit and are respected as such. For example, they are inaugurated and given a name in a naming ceremony. Beautifully decorated, gamelans are frequently given poetic names.

Each gamelan is different: they are never even tuned to exactly the same pitch. These slight differences create a shimmering sound when they are played together with other gamelans.

Gamelans are mostly made of bronze but can also be made of iron or bamboo.

Gamelans come in several different forms with very specific roles: those composed of keys and those which are gongs and chimes.

The most basic instrument composed of keys is the *saron*. It consists of metal bars or keys placed horizontally on a wooden base. Some have incorporate resonators. The saron, or variations of it, are played with wooden mallets. This so-called "loud" instrument usually plays the main melody.

Another keys instrument is the *gender*, which consists of keys suspended on twine over bamboo tubes. These "soft" instruments accompany the singers.

And finally, there is the *gambang*, a xylophone with 21 wooden keys. Played with two beaters in octaves, it acts as a decorative element. Along with the gender, gambang play the *cengkok*, a pattern that compliments the main tune.

The gong and *gong-chime* instruments are different sets of mostly bulbous gongs. Like the instruments with keys, their roles are very specific.

The *bonang barung* are struck with a stick wrapped in a cord. It generally plays off beat.

The *kenongs*, a larger version of the bonang barung, punctuate the piece and are very important for its timing. The largest instrument of a gamelan is the gong. Hung vertically, it is used at the start and the end of a section, and, more generally, to punctuate the piece. the larger versions (*ageng*) can be up to one meter in diameter.

Bonang

Preset	Size	Note Range
Bonang Barung –o	61.95MB	C2-B3
Bonang Barung 1	32.67MB	C2-E4
Bonang Barung 2	28.24MB	C2-D#4
Bonang Barung Simple	3.57MB	C2-A2
Bonang Parenus –o	3.58MB	C2-A3
Bonang Parenus 1	0.90MB	C3-G4
Bonang Parenus 2	2.49MB	C3-C4

Drums

Preset	Size	Note Range
Kendhang Ageng –big	4.87MB	C2-A3
Kendhang Ciblon –sml	7.50MB	C2-C4

Gong

Preset	Size	Note Range
Gong	24.02MB	C2-C#3
Gong –o	24.02MB	C2-E2
Large Gong	85.71MB	C2-C3

Kenong

Preset	Size	Note Range
Kenong 1	13.33MB	C2-C4
Kenong 1 –o	13.33MB	C2-F2
Kenong 2	9.43MB	C2-C4
Kenong 2 –o	9.43MB	C2-F2
Kenong 3	3.26MB	C2-A2
Kenong 4	3.78MB	C2-A2
Small Kenong	1.87MB	C2-G2

Lamellophone

Preset	Size	Note Range
Gambang	28.10MB	C2-F#5
Gambang –o	32.69MB	C2-G#3
Gender	106.51MB	A#1-G4
Gender –o	106.26MB	C2-B3
Saron	30.55MB	G2-C4
Saron –o	29.10MB	C2-A2

MIDDLE EAST-MEDITERRANEAN

Arabic Voices

These *Arabic Voices* presets provide idiomatic nuances and authentic phrasing. In addition, they do not contain any words, so they can be used in any musical situation. Use Ethno's very high quality time stretching to match any tempo.

Preset	Size	Note Range
Arabic Voices 1	13MB	C1-G#6
Arabic Voices 2	16MB	C1-C#8

Baglamas

The *baglama* is a small, long-necked lute which appeared in Greece in the 19th Century. It is typically used in an ensemble with the bouzouki and the tzouras. These three instruments play a Turkish-influenced form of Greek music, the *Rembetiko*, a sort of urban blues which was often heard in cafés.

Preset	Size	Note Range
Baglamas 1 Chords	1.39MB	C1-B4
Baglamas 1 pizz	0.93MB	C3-C#6
Baglamas 1 sus	4.84MB	C3-C6
Baglamas 1 trem	4.93MB	C3-C5
Baglamas 2 chords	8.18MB	C1-B3
Baglamas 2 sus	5.90MB	C3-D5
Baglamas 2 sus hard	3.30MB	C3-D5
Baglamas KS (C0-F0)	41MB	C3-C#6

Bouzouki

The *bouzouki* is a long-necked lute with a pear-shaped body. This instrument remained quite anonymous until the 1920's, when it reached a much wider audience with the urban Greek blues, the *Rembetiko*. Inlaid with mother-of-pearl, its body is flat on the front. There are three main types of bouzouki, determined both by the number of strings (three and four pairs) and by the instrument's origin. The *tetrachordo* bouzouki is the youngest and most popular version (originating after World War II). With its sharp metallic sound, it must be played with a plectrum.

Preset	Size	Note Range
Bouzouki 1 pizz	1.62MB	C2-F5
Bouzouki 1 sus	24.84MB	C2-G5
Bouzouki 1 sus hard	11.97MB	C2-G5
Bouzouki 1 trem	8.08MB	C2-F5
Bouzouki 2 Chords	17.76MB	C1-B4
Bouzouki 2 Chords Sus4-Dim	8.37MB	D#1-D3
Bouzouki 2 Chords trem	18.23MB	C1-B4
Bouzouki 2 sus	16.68MB	C2-B4
Bouzouki 2 sus hard	9.50MB	C2-B4
Bouzouki 2 trem	14.61MB	C2-D4
Bouzouki KS (C0-G0)	77MB	C1-G5

Electric Bouzouki

The *electric bouzouki* is the amplified version of the traditional long-neck Greek lute used in Rembetiko music.

Preset	Size	Note Range
El. Bouzouki Gliss	3.74MB	C2-E4
El. Bouzouki sus	6.47MB	C2-F5
El. Bouzouki trem	6.13MB	C2-F5
El. Bouzouki KS (C1, C#1, D1)	16MB	C2-F5

Lute

The *lute* is the ancestor of every fretted instrument. Early versions of this typical Arab instrument had four strings that were struck with a quill or a plectrum. In the 15th Century, the lute reached its current form with six "courses" (pairs of strings) that are plucked with the fingers. Lute bodies were generally made of pinewood and have a glued bridge with strings tied to it. The frets in gut are tied around the neck and fingerboard.

Preset	Size	Note Range
Jubus	4.10MB	E2-C5
Tunisian Lute	1.06MB	A1-C3
Tunisian Lute trem	5.39MB	A1-C3
Tunisian Lute KS (C1, C#1)	3MB	A1-C3

Maghreb Violin

The *Maghreb violin* is indispensable in the modern Arab ensemble. The conventional violin has been completely adapted to the Arab musical ideal in regards to tuning (to G, d, g, d') and playing technique.

Other names: *kaman* or *kamanja*

Preset	Size	Note Range
Maghreb Violin + Strings	13MB	C-1-G8
Maghreb Violin lick	6.15MB	G2-C5
Maghreb Violin short	2.08MB	G2-C6
Maghreb Violin sus vib	11.76MB	G2-C6
Maghreb Violin KS (C0-D#0)	21MB	A0-G8

Mandolin

This unique mandolin has an extended range from G2 to D6. All presets are chromatically sampled (every half tone) across the entire tonal range with two velocity layers. Several playing techniques are included:

■ Two picked-note programs with fast attack and full, slower attack.

■ Flammed-note programs with a softer articulation, suitable for chord playing and faster flourishes, as well as for smoothing out tremolo notes.

■ A Tremolo preset with typical mandolin tremolo notes.

■ Flageolets, fret noises and a large selection of effects and other noises.

Preset	Size	Note Range
Mandolin Flageolet	2MB	C2-C7
Mandolin Fretnoises	2MB	C2-C4
Mandolin Glass	11MB	C1-D6
Mandolin Noises 1	8MB	G0-G#6
Mandolin Noises 2	4MB	C1-E4
Mandolin Pick Flam	11MB	C1-D6
Mandolin Pick FstAttack	11MB	C1-D6
Mandolin Pick SlwAttack	11MB	C1-D6
Mandolin Tremolo	11MB	C1-D6
Mandolin KS (C1-F#1)	48MB	C2-C7

Mediterranean Lira

The *Lira* is a traditional Greek instrument used in Mediterranean folk music. It is a small, three-stringed instrument with a limited tonal range played with a bow. The presets for this instrument provide extensive articulations, including regular unlooped notes, legato unlooped notes, staccato, pizzicato, tremolo, glides and effects.

Preset	Size	Note Range
Lira 1 Legato	4MB	C2-C4
Lira 1 Marcato	4MB	C2-C4
Lira 1 Marcato Drill	4MB	C2-C4
Lira 1 Plucked	2MB	C2-C4
Lira 1 Plucked Drill	4MB	C2-C4
Lira 1 Staccato	3MB	C2-C4
Lira 1 Sustain	4MB	C2-C4
Lira 1 Tremolo	3MB	C2-C4
Lira 2 Legato	6MB	C3-C5
Lira 2 Marcato	5MB	C3-C5
Lira 2 Marcato Drill	5MB	C3-C5
Lira 2 Plucked	5MB	C3-C5
Lira 2 Plucked Drill	5MB	C3-C5
Lira 2 Staccato	3MB	C3-C5
Lira 2 Sustain	6MB	C3-C5
Lira 2 Tremolo	3MB	C3-C5
Lira Combi Legato	9MB	C1-C5
Lira Combi Marcato	8MB	C1-C5
Lira Combi Plucked	7MB	C1-C5
Lira Combi Staccato	5MB	C1-C5
Lira Combi Sustain	9MB	C1-C5
Lira Combi Tremolo	6MB	C1-C5
Lira FX	6MB	C1-C6
Lira Glides	2MB	C2-A3
Lira 1 KS (C0-F0)	17MB	C2-C4
Lira 2 KS (C2-F2)	25MB	C3-C5
Lira Combi KS (C0-F0)	42MB	C1-C5

Middle East Flutes

Middle East flutes are very famous all around the World for their very soft and sometimes hypnotic sound.

Preset	Size	Note Range
Arabic Flute blow	0.34MB	C3-G4
Arabic Flute sus	3.44MB	C3-G4
Cheap Recorder blow	0.22MB	C3-E4
Cheap Recorder sus	4.09MB	C3-E4
Egyptian Flute blow	0.23MB	B2-C#4
Egyptian Flute sus	4.60MB	B2-C#4

Middle East Percussion

Percussion instruments are very important in music from the Middle East. There are many kinds.

A traditional instrument of the Berbers in the Atlas mountains (Morocco), the *bendir* is a drum made of wood and covered with goatskin. It also features two strings stretched across the underside, which produce a distinctive distorted percussive sound. Another very famous percussion instrument of the Middle East is the *darbukkah* (*derbouka* or *tablah*). This instrument is a conical or vase-shaped hand-drum. It may be made of pottery or metal. The darbukkah is played with the fingers.

Preset	Size	Note Range
Bendir 1	8.79MB	C2-C3
Bendir 2	7.92MB	C2-D3
Daires	1.07MB	C2-A2
Darbuka	1.09MB	C2-G3
Oriental Tambourin	4.59MB	C2-A4
Sistres	4.27MB	C2-C4

Middle East Santur

The *Santur* is a trapezoid-shaped instrument with 72 strings and a three-octave range. It was recorded with two types of mallets: *Santur 1* (hard mallets) and *Santur 2* (soft mallets). Included are a large assortment of glissandos and effects, both tonal and percussive.
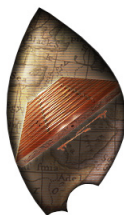
Preset	Size	Note Range
Santur 1	8MB	C2-C5
Santur 2	9MB	C2-C5
Santur Clusters	3MB	C2-G4
Santur Hits	6MB	C1-A5
Santur Keyrolls	2MB	C2-F3
Santur Plectrum Glisses 1	6MB	C1-G5
Santur Plectrum Glisses 2	3MB	C1-D3
Santur Sticks Glisses	4MB	C2-A4

Oud

The *oud* is the most important musical instrument for Arabs. It can be found in its most primitive form over 3,500 years ago in Persia and Egypt, where it was used by Egyptians in the era of the Pharaohs (the *al oud* or *thin wood*). The oud features a pear-shaped sound box with a short and crooked elbow, although its shape and dimensions may vary from region to region. It can have up to seven strings (formerly only two), although most common types have five or six strings. Originally made of gut, strings are now made of plastic, as is the plectrum, which used to be made of cherry tree cortex or the horns of animals. In Arabic music, the oud is the only instrument that can play and transform the makams, which are the different music levels. A *makam* is composed out of a four-stringed "four notes" and from a five-stringed "five notes" which alternate. Their number varies from country to country. In modern times, no one composes with a large amount of makams because the resulting music is too complicated. Played as a solo instrument, oud is accompanied by song.

Preset	Size	Note Range
Oud 1 sus	4.65MB	C2-C5
Oud 1 trem	3.92MB	C2-D3
Oud 2 sus	8.48MB	E1-G#3
Oud 2 sus hard	4.49MB	E1-G#3
Oud 2 trem	4.19MB	E1-G#3
Oud KS (C0, C#0, D0, D#0)	14MB	C1-C4

Persian Voices

These *Persian Voices* presets provide idiomatic nuances and authentic phrasing. In addition, they do not contain any words, so they can be used in any musical situation. Use Ethno's very high quality time stretching to match any tempo.

Preset	Size	Note Range
Persian Voices	10MB	C1-D5

Saz

The *saz* is long necked lute (a chordophone). It is the most important instrument of Turkish folk music. Some say it is the poetic heart of the Turkish people. Quite similar to an oud, the saz is plucked with the fingers of the right hand. It is very common to use a plastic plectrum to strum the strings. The soundboard may also be hit with the right hand to add rhythm.

Preset	Size	Note Range
Saz sus	4.24MB	C2-G4
Saz trem	1.73MB	C2-D3
Saz KS (C1, C#1)	7MB	C2-G4

Tzouras

The *tzouras* is the smallest of the Greek long-necked lutes with a pear-shaped body. It has three strings tuned D-A-D. The first and the second strings usually play the melody, while the third string produces a drone. The tzouras is traditionally played with the bouzouki and baglama in the urban Greek blues style called the *Rembetiko*.

Preset	Size	Note Range
Tzouras 1 pizz	1.13MB	D2-G5
Tzouras 1 sus	5.88MB	D2-G5
Tzouras 1 trem	9.63MB	D2-G5
Tzouras 2 chords	7.49MB	C1-C4
Tzouras 2 strums	5.43MB	F1-B3
Tzouras 2 sus	12.34MB	D2-E4
Tzouras 2 sus hard	6.63MB	D2-E4
Tzouras 2 trem	5.67MB	C#2-A#4
Tzouras 2 trem hard	2.22MB	C#2-A#4
Tzouras 1 KS (C1, C#1, D1)	18MB	D2-G5
Tzouras 2 KS (C0, C#0, D0, D#0)	16MB	C1-A#4

OCCIDENTAL

Accordions

The first *accordion* was made in 1829 by Cyrill Demian in Vienna. It was one of the many inventions of the 19th century with free reeds driven by a bellows. Accordions today feature a body in two (generally) rectangular parts, separated by a bellows. Each part of the body has a keyboard with buttons, levers or piano-style keys. Accordions vary widely in their internal materials, construction, mechanics, and tone color.

Preset	Size	Note Range
Acc-Bajan 1	23.67MB	G1-C6
Acc-Bajan 2	22.54MB	G1-C6
Acc-Bajan Bass	4.04MB	D#1-D#2
Acc-Bass Hoch	4.83MB	E1-D#2
Acc-Bass Tief	17.53MB	G1-E5
Acc-Bassoon	16.08MB	C2-E6
Acc-Clarinet	15.41MB	G1-E5
Acc-Harmonium	20.03MB	C1-E5
Acc-Master	17.67MB	C2-E6
Acc-Musette	16.93MB	C2-E6
Acc-Violin	23.67MB	G1-C6
Acc-Bass KS (C1, C#1)	4MB	D#1-D#2
Acc-KS (C0-G0)	60MB	C1-E6

Acoustic Bass

The modern double bass finds its ancestors in what was called the *violone* more than in either of the better known violin or viol families. In fact, in the beginning of the 17th Century, a new member of the violone family was created: the *violon da gamba sub-bass* was a five-stringed instrument tuned DD EE AA D G, and it was over 8 feet tall (a monster that was difficult to play and to bow). Today, the modern standard orchestral double bass is only three-quarters of the size of this original instrument. The strings are now made of steel, instead of gut. In the 19th Century, the tuning for the four-stringed instrument (FF-sharp BB E A) became popular for soloists.

Preset	Size	Note Range
Acoustic Bass 1 vib	6.78MB	F0-G2
Acoustic Bass 1 vib hard	3.71MB	F0-G2
Acoustic Bass 2	6.42MB	E0-G2
Acoustic Bass 2 hard	2.51MB	D#0-G2

Banjo

The origins of the *banjo* are not well known. This instrument might have been brought to America from Africa, via the West Indies. It is in the early 17th Century that the ancestors of the banjo (*banjar, bangie, banjer, banza*) were first played by slaves in America. These instruments were made from gourds, wood, and tanned skins, and they had hemp or gut strings. Tuned in fifths, like the mandolin, the banjo changed in the beginning of the 19th Century when steel strings were invented.

Preset	Size	Note Range
Banjo 1	5.11MB	E2-C6
Banjo 1 bright	2.80MB	E2-C6
Banjo 1 dark	2.65MB	E2-C6

Concertina

A *concertina* is a free-reed musical instrument, like the various accordions and the harmonica. It has a bellows and buttons typically on both ends. When pressed, the buttons move in the same direction as the bellows, unlike accordion buttons, which move perpendicularly to it. Also, each button produces one note, while accordions typically can produce chords with a single button. State-of-the-art sampling techniques were used to record these presets, including round-robin and keyswitch programming.

Preset	Size	Note Range
Concertina	34MB	C2-B5
Concertina Sforzando	13MB	C2-B5
Concertina Staccato	30MB	C2-B5
Concertina no RS	23MB	C2-B5
Concertina KS (C1, C#1, D1)	48MB	C2-B5

Dobro

The *Dobro*® resonator guitar is an American instrument created in the mid 1920's. The Dobro trademark is owned by Gibson. Other guitars of this type are called *resonator* or *resophonic* guitars. Resonators may be made of wood or metal. These square-necked guitars are played horizontally with a *steel* (a bar). Resonators are often used for bluegrass music or the blues.

Preset	Size	Note Range
Dobro	8.62MB	E2-G5
Dobro normal	3.63MB	E2-G5
Dobro slides	4.99MB	E2-G5

Jumbo Bottleneck

The *jumbo bottleneck* is an oversized guitar slide made from a bottleneck. While squeezing the strings, it produces a very specific sound.

Preset	Size	Note Range
JumBottleneck	6.52MB	E2-G5
JumBottleneck hard	1.62MB	E2-G5
JumBottleneck soft	4.90MB	E2-G5

Piano Bastringue

Also referred to as *honky tonk piano*, this instrument is a detuned acoustic piano.

Preset	Size	Note Range
Piano Bastringue	15.02MB	A-1-C7

SOUTH AMERICA

Ande Flute

The Ande flute is a wooden flute from the Andes mountain region in South America. These folk flutes were played by shepherds.

Preset	Size	Note Range
Ande Flute blow	0.11MB	A2-G4
Ande Flute sus	3.48MB	A2-G4

Cuatro

The *cuatro* is a four-string instrument from the guitar family. Its primitive version is first found in the 15th Century in South America and the West Indies. Today, the cuatro is played in ensembles in Columbia, Jamaica, Mexico, and Surinam. It accompanies singing (calypso singers), dancing and, in Puerto Rico and Venezuela, even religious music.

Preset	Size	Note Range
Cuatro	29.67MB	G2-G#4
Cuatro hard	3.76MB	G2-G#4
Cuatro soft	5.51MB	G2-G#4

Equatorian Drum

Preset	Size	Note Range
Equatorian Jivaros Drum-Close	24MB	C2-A4
Equatorian Jivaros Drum-Hall	27MB	C2-A4

Latin Panpipe

This exceptional panpipe instrument from Bolivia was recorded with meticulous recording technique. All samples have been seamlessly looped and contain many velocity layers for a natural and expressive sound.

Preset	Size	Note Range
Latin Panpipe	25MB	G1-E4
Latin Panpipe Cool	11MB	G1-E4
Latin Panpipe Hard	14MB	G1-E4

Latin Percussion

Latin percussion instruments are numerous and popular world-wide. Here is a brief explanation of some of the latin percussion instruments included in Ethno Instrument:

Agogo
The *agogo* is a set of cowbells played that has to be played with a stick. The bells are tuned to different pitches.

Berimbau
The *berimbau* is a typical instrument from Brazil generally used in capoera dance. This instrument, with its prehistoric ancestor, used to be made by slaves from Africa. The berimbau consists of a wooden neck with a single string and a hollowed gourd resonator, and it is played like a percussion instrument.

Bongos
The bongos are a pair of small Afro-Cuban drums of different pitch, affixed to one another, and played with the hands.

Claves
Claves (Cuba and Latin America) are a pair of hardwood cylinders, about seven inches long, that are struck with each other.

Conga
The *Conga* is a long single-headed, Latin-American drum. Played with the hands, it is often played with 2 or 3 other congas tuned to different pitches.

Cuica
The *cuica* is a friction drum from Brazil often used in the Samba. A stick is rubbed by the thumb and the forefinger thanks to a damp sponge or a piece of leather.

Guiro
The *Guiro* is a dry gourd that has to be scraped with a stick to produce the sound.

Maracas
Maracas are made from gourds or calabash shells, and filled with dry seeds. Usually played in pairs, they are from the Caribbean countries.

Pandeiro
The *Pandeiro* is a Brazilian instrument that looks like a large tambourine. Used in samba and bossa nova, it has a drier sound.

Timbales
Timbales are a pair of single-headed drums tuned to different pitches. Mounted on a stand, they are played with sticks of wood.

Latin percussion presets

Preset	Size	Note Range
Agogos	1.17MB	C2-D3
Berimbau	2.14MB	C2-A#3
Bongos 1	0.71MB	C2-G4
Bongos 2	0.21MB	C2-C#3
Cabassa	0.65MB	C2-F#2
Chekere	0.75MB	C2-C#3
Claves	0.09MB	C2-F2
Congas 1	0.32MB	C2-F3
Congas 2	0.23MB	C2-A#2
Cowbells 1	1.07MB	C2-G#3
Cowbells 2	0.16MB	C2-A2
Cuicas	0.45MB	C2-B2
Guiros	0.35MB	C2-B2
Maracas	0.08MB	C2-F2
Pandiero	0.10MB	C2-D#2
Shakers 1	0.20MB	C2-G#2
Shakers 2	0.20MB	C2-G#2
Shakers 3	0.16MB	C2-G#2
Shakers Rolls	3.75MB	C2-G#2
Small Surdo 1	0.55MB	C2-D#3
Small Surdo 2	0.54MB	C2-G2
Surdo	0.72MB	C2-B2
Timbales 1	0.54MB	C2-C#3
Timbales 2	0.91MB	C2-C#3
Timbalitos	0.69MB	C2-A#2

South American Electric Bass

The electric bass in the South American music has a percussive role. Some bass patterns are even prevalent in the music, similar to the Brazilian samba.

Preset	Size	Note Range
Brazil Bass	1.99MB	C1-D4
Cuba Bass	2.49MB	C1-C4

Tango Accordion

One of the most favored instrument of the tango, the popular dance style originated from Buenos Aires, is the accordion. In tango orchestra, the accordion is often played along with violin, piano, and string bass.

Preset	Size	Note Range
Tango Accordion 1	3.57MB	C1-G4
Tango Accordion 2	3.96MB	C1-G4
Tango Accordion 3	5.61MB	C1-G4
Tango Accordion Mix	7.53MB	C1-G4

SPANISH-GYPSY

The *Spanish-Gypsy* category covers music, dance and a wide range of instruments. Gypsy orchestras are mainly composed of guitars, singers and percussion (with claps) and play many different styles, such as flamenco or sevillana. Both styles are a dance style as well as a music style.

In traditional flamenco, the *hodo*, a melancholy cante, is performed by a *cantador* or a *cantora* (respectively male or female singer). They are accompanied by the *tocaor* (the guitar player). The percussion instruments are generally played by the *cajon*, the *castanets* and the dance steps.

The guitar was invented in Andalucia, so it is very natural that the instrument has such an important place in the music from this region. Some forms gypsy music played by guitar are considered to be a variety of jazz, thanks to great names such as Django Reinhardt (for the *Gerome* and *Marura* styles). Another legendary name from the music of this region is the guitar player Paco de Lucia (*Flamenco*).

Flamenco Guitar

Preset	Size	Note Range
Spanish Guitar	21.79MB	E1-E4
Spanish Guitar fingered	10.00MB	E1-E4
Spanish Guitar picked	7.26MB	E1-E4
Spanish Nylon Guitar	11.47MB	E1-A4

Flamenco Percussions

Preset	Size	Note Range
Cajon 1	0.64MB	C2-E4
Cajon 2	0.91MB	C2-B4
Cajon 3	0.39MB	C2-G#3
Castanets	0.84MB	C2-B4
Flamenco Steps	0.68MB	C2-C4

Gypsy Jazz Guitars

Preset	Size	Note Range
Gerome Arch-Top	7.51MB	E2-G5
Gerome Harmonics	1.81MB	E2-G5
Maruha	12.67MB	E1-C5
Maruha hard	5.99MB	E1-C5
Maruha slap	2.41MB	E1-C5

WEST INDIES

Requinto

The *requinto* is a six-string small guitar (18% smaller than a standard one) from Mexico. (It may also come from Spain). This higher-pitched version of the guitar is played in the "trio romantico" with two other guitars.

Preset	Size	Note Range
Requinto fingered	26.77MB	B1-F#5
Requinto fingered hard	14.98MB	B1-F#5
Requinto picked	38.01MB	B1-F#5
Requinto picked hard	12.95MB	B1-F#5
Requinto short	1.05MB	B1-F#5

Steel Drums

The *steel drum* (or *pan*) is a very young and quite unique instrument. This skillfully hammered 55-gallon oil drum is tuned to cover the full chromatic range of notes. Originating in the 1930s in Trinidad, the steel-drum used to make the "call" to collect gangs for a fight. Steel drums are now one of the most favored instruments in the carnival. There are even competitions of steel bands. Bands can have up to 100 musicians and up to 300 pans.

Preset	Size	Note Range
Steel Drums	19.99MB	C3-F4
Steel Drums –o	20.23MB	C2-F3
Steel Drums hard	1.82MB	C3-F4
Steel Drums medium	2.22MB	C3-F4
Steel Drums soft	1.72MB	C3-F4

West Indies Bass

Because rhythm is the heart of West Indian music, the electric bass is a major item of the style. The basic rhythms are inspired by African and South American roots.

Preset	Size	Note Range
West Indies Bass	3.97MB	C1-C4
West Indies Bass long	3.56MB	C1-C4
West Indies Bass short	0.41MB	C1-C4

WORLD SYNTHS

The goal of these soundbanks is to provide basic synth tools for ambient/world music.

Ambient Chords
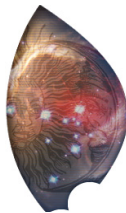
Preset	Size	Note Range
Amazona 1	10.5s	1.76MB
Amazona 2	7.5s	1.27MB
Amazona 3	9.9s	1.66MB
Amazona 4	11.4s	1.93MB
Amazona 5	9.0s	1.51MB
Amazona 6	6.8s	1.15MB
Amazona 7	8.94MB	C-1-F#4
Aurora Borealis 1	7.1s	1.20MB
Aurora Borealis 2	13.2s	2.22MB
Aurora Borealis 3	9.8s	1.65MB
Aurora Borealis 4	17.9s	3.02MB
Aurora Borealis 5	7.2s	1.21MB
Drop the Moon	9.6s	1.61MB
Eden Star	9.7s	1.63MB
Grand Canyon	8.4s	1.41MB
Impression 1	11.3s	1.90MB
Impression 2	11.0s	1.85MB
Impression 3	7.5s	1.26MB
Jazz Forest 1	12.5s	2.11MB
Jazz Forest 2	9.7s	1.63MB
Jazz Forest 3	12.1s	2.03MB
Jungle Mood	4.2s	0.70MB
My Intension	8.1s	1.36MB
Paradisisak	6.4s	1.07MB
Sequencing Pad 1	13.3s	2.23MB
Sequencing Pad 2	9.2s	1.54MB
Sequencing Pad 3	11.7s	1.96MB
Sound Stack 1	6.5s	1.09MB
Sound Stack 2	4.7s	0.80MB
Sound Stack 3	10.1s	1.69MB
Space Pad	13.6s	2.29MB
Trumble Pad	6.4s	1.08MB
Vibrating Chord	4.2s	0.70MB
Wait in Space	14.2s	2.39MB

Analog Mood
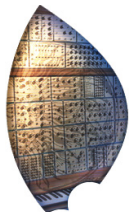
Preset	Size	Note Range
Analog Atmosphere	7.06MB	C-1-G8
Brassy Mood	6.35MB	C-1-G8
Bright Analogic	13.61MB	C-1-G8
Chamber Machine	4.56MB	C-2-G8
Closering	8.15MB	C-2-C8
Crystaline	5.35MB	C-1-G8
Custom Pad	13.75MB	C-1-G8
Deep'n Woody	7.63MB	C-1-G8
Ethereal Pad	5.94MB	C-1-G8
Forest Strings	5.35MB	C-1-G8
Hybrid Lead Pad	5.03MB	C-2-G8
Indian Mood	4.18MB	C-1-G8
Kilimandjaro	8.52MB	C-1-C8
Linear Pad	5.90MB	C-1-G8
Lost Impression	5.35MB	C-1-G8
Modulating Pad	5.13MB	C-2-G8
Ominous Pad	5.35MB	C-1-G8
Phasing Pad	4.12MB	C-1-G8
Poly Soft Synth	3.99MB	C-2-G8
Pure Analog Full	3.25MB	C-2-G8
Pure Classic Pad	6.26MB	C-1-G8
Saturn Pad	12.95MB	C-2-G8
Sincerity	2.87MB	C-1-G8
Space Phaser	4.01MB	C-2-G8
Square Mood	7.60MB	C-1-C8
Technoid Pluck	4.91MB	C-1-G8
Tribal Q	4.29MB	C-1-G8
Typical Jupiter	4.00MB	C-1-G8
Xpand Noisy	5.14MB	C-1-B7
Xpand Sine	2.13MB	C-1-B7

World Voice Pads

Preset	Size	Note Range
Addiction	6.67MB	C-2-G8
Analog Power Choir	9.08MB	C-1-C8
Analog Whisper	7.38MB	C-1-C8
Choirs Machine	3.61MB	C-2-C8
Fairlight Mood	17.97MB	C-1-G8
Formant Choir	9.44MB	C-1-G8
Mars Destination	15.77MB	C-1-G8
Mellow Mood	13.26MB	C-1-G8
Planet 5	12.88MB	C-2-G8
Strings Machine	4.14MB	C-2-G8
Sweep Moon	16.55MB	C-1-G8
Tunnel Choirs	14.92MB	C-1-G8
Vocoded Island	9.92MB	C-1-G8
Vox Populi	6.71MB	C-2-G8
VP Ensemble	4.08MB	C-2-G8

XTRA PERCUSSIONS

This sound bank includes percussion instruments are common to many geographic regions and/or musical styles. It also includes those which could not be otherwise classified.

XTRA WORLD VOICES

This sound bank provides dozens of exotic and evocative world vocal phrases. They do not contain any words, so they can be used in any musical situation. Use Ethno's very high quality time stretching to match any tempo.

Preset	Size	Note Range
Misc. Voices 1	13MB	C1-G#6
Misc. Voices 2	10MB	C1-D5

Preset	Size	Note Range
Belltree	2.39MB	C2-D3
Chimes 1	25.31MB	C2-F4
Chimes 2	28.65MB	C2-G4
Crecels	0.36MB	C2-E3
Foot Perc.	0.83MB	C2-B5
Hand Clap	0.46MB	C2-F4
Kutuwappa	1.20MB	C2-G3
Olive Bell	0.27MB	C2-A2
Tambells	1.49MB	C2-G3
Tambourine 1	0.63MB	C2-B3
Tambourine 2	1.43MB	C2-B3
Tombass	0.37MB	C2-E3
Triangle 1	0.39MB	C2-C4
Triangle 2	1.12MB	C2-C4
Waterbells	4.35MB	C2-C4
Windchimes	23.24MB	C2-G3
Woodblock	0.27MB	C2-F3

Loops and Phrases

OVERVIEW

This chapter provides a detailed overview of Ethno Instrument's world loops and phrases. For or details about Ethno Instrument's instrument presets, see chapter 8, "Instruments" (page 75).

Ethno Instrument provides over 7,600 loops and phrases.

AFRICA

591 loops/phrases

Folder		Number of loops or phrases
Balafon		15
Bara Drum		29
CarribeAfrican		
	Bikuktsi	24
	Hi Life	6
	Jakadon	5
	Juju	7
	Muju Ba	4
	Sabar	7
	Soukouss	6
Cruche		24
Djembe		
	Djembe Modern	65
	DJembe Regular Fast	34
	Djembe Regular Medium	61
	Djembe Unusual	27
Drums & Shaker		27
Fedounoum		16
Guinean Tambourin		30
Kalimba bass		18
Kora (p)		37
Roots Mix Misc (p)		7
Talking Drums		20
Tchango Tche		30
Voices (p)		
	Roots Choirs	9
	Solo Voices	77
	Words and co	10

ASIA

414 loops/phrases

Folder		Number of loops or phrases
Er Hu (p)		16
Isshakausansun-Flute (p)		81
Japanese Taiko		
	120 Dragon Claw 4_4	29
	130 Airstrike 4_4	24
	140 Operation Action 3_4	24
	182 Closer Still 6_8	27
	One-shots for Loop Endings	16
Mongol Khomus		23
Mongol Topshur (p)		22
Nishakuyonsun-Flute (p)		78
Shakuhachi (p)		74

AUSTRALIA

420 loops/phrases

Folder	Number of loops or phrases
Didgeridoo	
080 Bpm	25
093 Bpm	27
100 Bpm	22
108 Bpm	39
120 Bpm	39
130 Bpm	39
140 Bpm	38
150 Bpm	23
Didgeridoo Loops	18
Jaw Harp	53
Native Flute (p)	
093 Bpm	18
100 Bpm	22
108 Bpm	20
120 Bpm	17
130 Bpm	20

CELTIC

481 loops/phrases

Folder	Number of loops or phrases
Bag Pipe (p)	28
Bodhran	85
Bombarde (p)	34
Celtic Guitar (p)	88
Celtic Harp Glisses (p)	10
Concertina (p)	92
Guitar 6 Strings (p)	58
Guitar 12 Strings (p)	15
Irish Flute (p)	26
Mandolin (p)	18
Violin (p)	27

EASTERN EUROPE

453 loops/phrases

Folder	Number of loops or phrases
Accordion (p)	86
Balkanish Voices (p)	80
Bass	44
Guitar	28
Percussion	13
Sax (p)	82
Strings (p)	13
Violin (p)	67
Voice (p)	40

INDIA

1,154 loops/phrases

Melodic (p)

Folder		Number of loops or phrases
Bulbul Tarang		13
Dilruba		36
Do Tara		
	Alap	9
	Melody	9
	Rhythm Pattern	11
Flute 1		
	080	22
	090	9
	110	16
	120	35
Flute 2		29
Magudi		12
Mandolin		21
Nadhaswaram		20
Pungi		20
Rawanhattha		14
Santoor		
	Major	5
	Minor	17
	Raga	20
Shenai		20
Sitar 1		
	Alap	6
	Major	4
	Minor	10
	Raga	12
Sitar 2		38
Sitar 3		15
Veena		
	Licks	12

Raga		
	Bairagi	10
	Hansadhwani	7
	Shivranjani	13
	Sohni	3
Veena v2		31
Violin		12
Voices		
	Child	51
	Female	33
	Male	25
	Old Man	27

Percussions

Folder	Number of loops or phrases
Bass Dholak	11
Bass Tabla	
4'4	23
Fills	14
Bass Udukkai	15
Chanda	11
Dholak	6
Dholki	10
Elathalam	2
Ghatam	
4'4	17
Fills	7
Triplet	5
Ghatam v2	37
Idakka	
4'4	21
Fills	4
Triplet	11
Khanjeera	6
Mirdhangham	9
Mridangam	
4'4	20

Fills	6
Triplet	3
Nagra	6
Parai	7
Pumbai	6
Salangai	1
Tabla	
4'4	19
Fills	7
Triplet	6
Thavil	
4'4	16
Fills	2
Triplet	8
Voice-Male	34
Thavil v2	
Mono	7
Stereo	9
Urumi	5
Voice-Male	34
Yedakkai	10
Indian Roots Session	
Dholak	13
Indie Tablas	20
Katak	11
Miscellaneous	33

MIDDLE EAST-MEDITERRANEAN

845 loops/phrases

Folder		Number of loops or phrases
Arabic Voices (p)		
	Egyptian Diva	42
	Traditional Men Voices	34
	Traditional Old Women	21
	Young Woman Voices	23
Arabic Voices v2 (p)		155
Baglamas (p)		12
Baglamas Solo (p)		12
Bouzouki Rumba (p)		24
Bouzouki Solo (p)		24
Bouzouki Traditional (p)		22
Clarinet (p)		81
Cumbus (p)		20
El. Bouzouki (p)		19
Lyre (p)		44
Mediterranean Drums		28
Mediterranean Percussions		43
Oriental Violin (p)		25
Oud (p)		16
Persian Voices (p)		51
Roots Maghreb Percussion		37
Saz (p)		11
Synth Arabic (p)		17
Tunisian Lute (p)		57
Tzouras (p)		6
Tzouras & Saz (p)		21

OCCIDENTAL - ACCORDION (P)

263 loops/phrases

Folder		Number of loops or phrases
Adon Olam Am		15
Astrid 3'4 Am		5
Baimir Cm		7
Bouree		
	3'4	7
	3'8	10
Choson Kale Dm		20
Cochinchine		10
Di Grine Dm		11
Donodona		11
Fandogo Basque 3'4 Am		11
Findjam 3'4 Am		13
Gigue 2'4 C-G		8
Laride 6'4 Am		7
Laride Am		14
Mazurka 3'4 G		14
Papirosen Am		13
Polka		23
Pripitchik 3'4 Dm		4
Revenant 3'4 Am		17
Rondeau		15
Tarantelle 2'4 Am		10
Tumbalalaika Dm		8
Um Az Der Em		10

SOUTH AMERICA (P)

664 loops/phrases

Folder			Number of loops or phrases
Berimbau			43
Bossa Nova			
	Bass		
		Bass 120 BPM	41
		Bass 140 BPM	58
	Drums		41
	Guitars		
		Guitar 120 BPM	41
		Guitar 140 BPM	48
		Guitar 140 BPM Chromatic	48
Cajon Loops			
	Cajon Fast		43
	Cajon Slow		23
Latin Drum Loops			
	Bossa		18
	East Side		4
	Salsa		5
	Samba		10
	Songo		5
	West Side		4
Latin Percussions			
	Agogo		18
	Bongo – Bell		42
	Claves		15
	Conga		62
	Guiro		9
	Latin Djembe		17
	Mix Latin Loops		24
	Shaker		2
	Tambourine		10
	Triangles		33

SPAIN-GYPSY

661 loops/phrases

Folder		Number of loops or phrases
Andalousian Guitar (p)		42
Cajon		
	100 Bpm	36
	112 Bpm	20
	119 Bpm	20
	133 Bpm	11
Castanets		19
Double Cajon		14
Flamenco Musical Kits (p)		
	Alegria Guitars (G)	11
	Alegria Voices (G)	4
	Buleria Guitars (A)	9
	Buleria Voices (A)	10
	Farongo Guitars (G)	10
	Farango Voices (G)	6
	Rumba Guitars	67
	Rumba Voices	35
	Sevillana Guitars	17
	Sevillana Voices	16
	Tanguillo Guitars	15
	Tanguillo Voices	6
Flamenco Steps		26
Flamenco Words Man (p)		73
Guitar Body Loop		25
Guitar Rumba (p)		
	Rumba 100 Bpm	48
	Rumba 130 Bpm	48
Guitar Tanguillo (p)		
	Tanguillo 100 Bpm	24
	Tanguillo 130 Bpm	24
Gypsy Hand Clap		25

URBAN INDIAN

95 loops/phrases

Folder	Number of loops or phrases
070-074 BPM	16
080-086 BPM	25
090-100 BPM	32
140+ BPM	22

WEST INDIES

521 loops/phrases

Folder		Number of loops or phrases
Biguine		29
Carnival-Zouk		48
Cuba		
	Chekere – Bells	22
	Conga	17
	Cuban Salsa	33
	Guaguanco	7
	Roots Cuban	22
	Tambour Bata	23
	Tumbaes Piano-Bass	17
	Voices	22
Jamaica		42
Kompa		18
Martinique		53
Trinidad		36
Tumbele		19
West Indies Bass		46
Xtra Fills		
	Drum Fills	34
	Percussion Fills	33

WORLD VOICES

886 loops/phrases

Folder		Number of loops or phrases
Africa		
Roots Choir		9
Roots Mix Misc (p)		3
Solo Voices		77
Words and co		10
Arabic Voices (p)		
Egyptian Diva		30
Traditional Men Voices		24
Traditional Old Women		21
Young Woman Voices		23
Eastern Europe (p)		40
Flamenco Words Man (p)		73
India		
Melodic Voices (p)		
	Child	51
	Female	33
	Male	25
	Old Man	27
Voice-Male		34
V2 Voices (p)		
Arabic Voices		155
Balkanish Voices		80
Misc. Voices		120
Persian Voices		51

☛ These World Voices loops and phrases are the same as found elsewhere in the Ethno Instrument sound library.

XTRA PERCUSSIONS

233 loops/phrases

Folder	Number of loops or phrases
Bongo	34
Conga Fast Tempo	25
Conga Mid Tempo	52
Kutu Wappa	45
Shaker	30
Shaker & co	28
Tambourine	7
Triangle	12

APPENDIX A Credits

We would like to thank the following musicians and producers for their invaluable contributions to the creation of Ethno Instrument:

MUSICIANS
Clem Mounkala: guitar, sanza & kora

Barnabe Matsiona: flutes, bambou sax, sanza & percussion

Mr. Bataju: harmonium, tambura, sitar

Adama Konde: balafon

Aboubacar: balafon

Gan Guo: chinese violin

Shoko Conver: koto & shamisen

Daniel Lifermann: shakuhachi

Petia Jaquet: balalaika

Justin Breedhou: electric sitar

Iuri Morar: cymbalum

Jean Phillipe Winter: sitar

James Bribounia: flutes

JM Rohart: accordion

Thierry Fanfant: bass

Jean-Philippe Fanfant: drums

Bago Balthazar: percussion

David Mirandon: percussion

Sebastien Jeannot: synth sound

Patrick Chartol: electric and acoustic bass

PRODUCERS
Francky Moulet: part of Africa & India

Tom Meadows: part of Asia, Australia, India, Celtic & Occidental

Alain Parmentier: part of Celtic, Eastern Europe, Spanish & Middle East

Jean Marc Miro: part of Middle-East

Yassman: part of South America

Nicolas Zontos: part of Middle East - Mediterranean

Roger Fixi: Indonesia & part of West Indies

Eric Kroczynski (www.ekoloopz.com): Urban Indian Loops

Microtonal Tuning

Ethno Instrument opens the door for you to the world of authentic microtonal tuning.

WHAT IS MICROTONAL TUNING?

Generally speaking, *microtonal tuning* refers to music based on scales that use tonal intervals not found in the Western system of twelve equal intervals to the octave.

Traditional world music is typically microtonal in nature, due to its extensive use of the entire range of possible intervals in a wide variety of musical palettes and forms. Having emerged as an essential component of oral lore, traditional tonal scales use natural intervals which are not only the most resonant, they are also the most directly identifiable, and therefore the easiest to sing, play, and faithfully reproduce.

JUST INTONATION

Just intonation refers to any musical tuning in which the frequencies of notes are related by ratios of whole numbers. Almost all microtonal scales are based on just intonation systems: consonant pitch intervals that each culture, ethnic group, village or even individual musicians intuitively develop, building a musical vernacular of their own.

ETHNO INSTRUMENT TUNING SCALES

Jacques Dudon is a luthier and musical researcher who works on modeling indigenous tonal systems. Jacques provided the Ethno Instrument development team with a cutting-edge collection of scales produced entirely in just intonation, with advanced microtonal qualities such as differential coherence, harmonic fusion, synchronous beating, and fractal consistency. These are the scales you see in Ethno Instrument's Tuning menu (Figure 6-21 on page 53).

For your convenience, the scales are presented in two sub-menus: 1) a geographical sub-menu organized by region, based on both general and localized chromatic characteristics, and 2) a second sub-menu, which sorts the scales into groups that share similar characteristics.

Even though Ethno Instrument's tuning scales are categorized by geographical location, many of them can be effectively applied to instruments or musical styles from other — even distant — geographical areas. So feel free to experiment. For example, an Indonesian slendro scale or a Thai heptaphone scale might sensibly work with a music of African influences.

SCALE MAPPING

In addition to these systemic transversalities, keep in mind that, depending on the chosen tonic, every scale contains several modes that can also be relevant to a wide range of musical cultures.

IMPORTING SCALE PRESETS

In addition to Jacques Dudon's scales, Ethno Instrument allows you to import your own microtuning and mapping presets in Scala format. For more information about the Scala file format, visit:

http://www.huygens-fokker.org/scala/scl_format.html

To import a Scala scale document into Ethno Instrument, so that it appears in the Tuning menu (Figure 6-21 on page 53), drag and drop the Scala

document from your computer desktop onto the
Tuning section of the Ethno Instrument window
(Figure 6-20 on page 53).

The Huygens-Fokker Foundation scale archive
Over 4,000 scales in the Scala format have been
gathered by Manuel Op de Coul from the Huygens-
Fokker Foundation and are available for free
download from the Scale Archive here:

http://www.huygens-fokker.org/scala/downloads.html#scales

CREATING YOUR OWN SCALE PRESETS
Scala scale files are human readable ASCII or 8-bit
character text files. Therefore, you can create your
own very easily with any simple text editor. For
complete details, visit:

http://www.huygens-fokker.org/scala/scl_format.html

This URL provides complete instructions and
examples for creating your own Scala scale files,
which you can then import into Ethno Instrument
as described above.

Troubleshooting

OVERVIEW

ETHNO INSTRUMENT FAQ

When installing Ethno Instrument, should I install those huge .ufs files?
Ethno Instrument ships with 21 gigabytes (GB) of included sounds. All of these sounds are stored in the .ufs files, so to use Ethno Instrument, you must also install those files on your hard drive. You can place them on any available drive. The faster the hard drive, the better, as sounds will load faster.

Where should I put my Ethno Instrument "Ethno 2.ufs" files? Can I change their location later?
It doesn't matter where you put the Ethno. ufs files on your hard drive. The only thing that matters is that there are Mac OS X aliases or Windows shortcuts to them, with exactly the same names, in the same folder or directory as Ethno Instrument plug-in itself. Those locations are:

Mac
<startup disk>/Library/Application Support/MOTU/Ethno

Win
<startup disk>\Program Files\MOTU\Ethno Instrument

When I try to copy the ".ufs" files to my hard drive, I get an error message and it won't copy successfully. What should I do?
First, make sure that you have enough free disk space; the Ethno 2.ufs files are around 7 GB each, for a total of 21 GB. Next, check the format of your hard drive. The Ethno 2.ufs files cannot be copied to a FAT32 formatted hard drive, as the FAT32 format has a 4 GB file size limit.

For Macs, you should copy the Ethno 2.ufs files to a hard drive formatted as *Mac OS Extended* (also called HFS+) or *Mac OS Extended (Journaled)*. To check the format of your drive, go to /Applications/ Utilities and launch Disk Utility. Select the drive from the list on the left, and check the *Format* item in the info strip along the bottom of the window. *Mac OS Extended (Journaled)* is the default drive format for Mac OS X.

For Windows, you should copy the Ethno 2.ufs files to a hard drive formatted as NTFS. To check the format of your drive, go to My Computer, right-click the drive, and choose *Properties*. In the Properties window, check the *File system* item. NTFS is the default file system for Windows XP and later.

When I try to choose a preset, the preset menu is empty. Why is it empty?
If the preset menu is empty, then Ethno Instrument has lost the location of the Ethno 2.ufs files. This are the files in which Ethno Instrument stores all of its sounds. If this happens, quit your host application. Search your hard drive for *Ethno 2.ufs*. When you find it, make a Mac OS X alias or Windows shortcut for it, place the alias or shortcut here:

Mac
<startup disk>/Library/Application Support/MOTU/Ethno

Win
<startup disk>\Program Files\MOTU\Ethno Instrument

Make sure that the alias is renamed to *Ethno 2.ufs* with no extra text. (Its name must exactly match the Ethno 2.ufs file name.)

Then repeat these steps with the Ethno *2.ufs1* and *Ethno 2.ufs2* files.

How do I make Ethno Instrument work in my sequencer?
Ethno Instrument is an audio instrument plug-in. You will call up Ethno Instrument in your sequencer on an audio track, aux track, or instrument track, depending on how your sequencer handles virtual instruments. Always use a mono track if you have the choice. Ethno Instrument provides mono or stereo output, depending on how you configure the track output.

To get MIDI into Ethno Instrument, you need a MIDI track (or instrument Track). The MIDI or instrument track must be record-enabled in order to receive MIDI from an external source into Ethno Instrument. For complete setup details, see chapter 5, "The Ethno Instrument Plug-in" (page 25).

I have an instrument sound chosen in the part list, but I don't hear anything.
If you are playing notes from an external controller, make sure the MIDI track or instrument track in your host software is record-enabled. For other MIDI troubleshooting tips, see "MIDI trouble-shooting" on page 130.

Ethno Instrument's MIDI activity LEDs are flashing, so it's receiving MIDI data successfully, but I still don't hear any sound.
Be sure you are playing within the instrument's note range. If you are not sure what the note range is, try playing some notes through the entire range of the keyboard. If you still don't hear any sound, it's time to check audio. See "Audio trouble-shooting" on page 131.

When I play on my keyboard, there's a delay before I hear a note.
In order to get the fastest possible response from Ethno Instrument, you'll need to set the sample buffer of your audio hardware driver to a low number. Experiment with this setting to get the best response and computer performance. For complete details, see "Managing latency" on page 26. Also refer to the section in chapter 5, "The Ethno Instrument Plug-in" (page 25) that refers to your host software.

How do I get Ethno Instrument to send each part to a different audio output?
Each part can be assigned to a separate output via the Expert Mode button. See "Outputs" on page 70.

Why am I unable to import samples into Ethno Instrument?
Ethno Instrument does not import other sounds. It only plays the sounds that are included (in the .ufs file). If you would like to import and play sounds from other libraries, use MachFive, MOTU's universal sampler, which has extensive sample import capabilities.

When I move the cutoff frequency knob for the Filter, nothing happens.
Make sure the envelope depth in the filter section is set to a value where you can actually hear the envelope. For example, if you have set the depth to a value of 1 and the attack of the envelope is 0.00, the filter will have no effect at all. See "Env (Envelope Depth)" on page 51.

Why is the output of Ethno Instrument distorted?
It is possible for Ethno Instrument to output more than unity gain. This can happen if you layer presets, or in some cases, if you use filter resonance that adds gain. Keep an eye on the output level of the Ethno Instrument track and attenuate that signal if it gets too hot.

How do I record the audio output of Ethno Instrument?

Some sequencers, such as Digital Performer and Logic, have a freeze function that renders the output of Ethno Instrument as an audio file. If your sequencer doesn't have this feature, bus the output of the Ethno Instrument track to another audio track, and record the audio output of Ethno Instrument onto that track. Here is a step by step procedure for Pro Tools:

1 Create a new stereo audio track (not the one where Ethno Instrument is used) and name it *Record Ethno.*

2 Route the Ethno Instrument track to an unused bus (e.g.: Bus 1-2).

3 Choose Bus 1-2 as the input pair for your *Record Ethno* track.

4 Record-arm the *Record Ethno* track, and start recording.

If you wish to hear Ethno Instrument while recording, select *auto-input monitor* in the Operations menu.

That's it! Ethno Instrument audio output will be recorded into the new track.

Everything is working fine, except that intermittently, samples don't play for no apparent reason. Why?

Check your polyphony setting for the part. If you're sure the part has more than enough voices, make sure that all of the notes being played actually fall within the instrument's note range, as most instruments do not play the entire range of the keyboard. Next, check how many samples have you loaded into Ethno Instrument. As a general rule of thumb, you shouldn't load more than about 70% of the total amount of RAM your computer has (±10%). For example, if your computer is equipped with 1 GB, don't load more than around

700 MB of samples into Ethno Instrument. Consult chapter 8, "Instruments" (page 75) for the size of each preset.

☛ Note to Mac OS X users: because of Mac OS X's built-in memory management features, there is potentially an unlimited amount of "virtual RAM", but when Mac OS X runs out of real RAM, it starts caching the overflow to disk. This can wreak havoc on Ethno Instrument performance. Unfortunately, Mac OS X doesn't provide any means for applications to know — or report to the user — that it has run out of real RAM, so there is no way for Ethno Instrument to alert you if Mac OS X is caching Ethno Instrument samples to disk. Therefore, if you are loading lots of presets, you need to keep an eye on how much RAM they use up. There are third-party utilities available that can help you keep tabs on your RAM usage.

What do I do if I have projects which use the DXi version of Ethno Instrument version 1?

Ethno Instrument version 2.0 and later does not have a DXi version; Windows users should instead use the VST, AAX or RTAS plug-in or the standalone Ethno Instrument application.

If you have projects that use the DXi version of Ethno Instrument, before installing Ethno Instrument version 2.0 or later, follow these steps to transition from the DXi version to another format (VST, in this example):

1 Open any project files that use DXi instances of Ethno Instrument.

2 Open the DXi instance of Ethno Instrument and save a multi.

3 Create a new VST instance of Ethno Instrument.

Load the combi file from the DXi instance into the VST instance.

IMPROVING PERFORMANCE

See "Conserving CPU resources" on page 26 and "Managing latency" on page 26 for tips on how to to get the best performance from Ethno Instrument.

GENERAL TROUBLESHOOTING

Troubleshooting is always simplest and most effective when the exact problem can be specified clearly and concisely. If you are surprised by an error message or by seemingly erratic behavior in the program, take a moment to jot down the relevant details: exactly what the error message said (including any error ID numbers), what actions were done on-screen just before the problem occurred, what kind of file you were working with, how you recovered from the problem, and any unusual conditions applying during the occurrence of the problem. This may not enable you to solve the problem at once, but will greatly aid in isolating the problem should it reoccur.

If the problem you are encountering seems inconsistent, try to determine what the necessary pattern of actions are that will cause it to occur. Genuine bugs in application software like Ethno Instrument are almost always consistent in their manifestation: the same set of actions under the same conditions invariably brings about the same results. Determining the exact cause of a bug often requires experiments which replicate the problem situation with one factor changed: choosing a different (smaller) preset, opening Ethno Instrument in a different host application, etc.

If the problem is truly inconsistent, then it is likely to be a hardware problem: a faulty hard drive, a failing computer motherboard, a loose connection, etc.

Isolate the problem…
One of the best troubleshooting techniques is to try to isolate the problem. If you can whittle down a complicated setup or scenario to a much simpler case, chances are you'll zero in on the problem more quickly. For example, you could try running Ethno Instrument in a different host application to see if the problem persists. If it does, it may have to do with the actual samples, presets, and/or performances being used.

Simplify your setup…
One of the most common causes of problems is a conflict with other software in the system. Run Ethno Instrument by itself, with no other plug-ins or virtual instruments, and see if the problem you are having still happens.

Check the 'Read Me First'…
It's human nature to blow right past the Read Me First, but you'll probably be glad you took the time. If you experience problems with Ethno Instrument, check the Read Me notes that ship with the current version you are using.

If you cannot open a particular Ethno Instrument project or session in your host application…
First try opening other existing files, or a new file, to be sure Ethno Instrument is working at all. If other files work fine, try temporarily removing the Ethno Instrument plug-in, or disable audio in your host application. If other files also exhibit similar behavior, then you know that the problem is not specific to one file.

MIDI TROUBLESHOOTING

The most important tool for tracking down MIDI input problems is the MIDI Activity LEDs for each part. If there is a hardware problem, or if your channel assignments are wrong, the problem should be apparent by looking at the MIDI LEDs.

In order for external MIDI to get to Ethno Instrument, the MIDI track or Instrument track must be record-enabled. A quick test to determine whether MIDI is reaching the track is to hit record and tap a few notes on your controller. If no MIDI appears in the track, check that your controller and

MIDI interface are set up properly. If MIDI data does show up in the track, and your sequencer uses a separate MIDI and audio track for virtual instruments, make sure the MIDI track output is assigned to Ethno Instrument and is assigned to a part that has a preset sound ready to go.

If Ethno Instrument is unable to play any MIDI data…

Does your host software receive MIDI data from your MIDI controller? Does MIDI play back successfully to other MIDI instruments? If the answer is no to either question, double-check your cable connections and MIDI controller settings. See if your controller registers in the MIDI system management software on your computer, if any (Audio MIDI Setup on Mac OS X).

If you are trying to play Ethno Instrument from your MIDI controller, make sure that the Ethno Instrument MIDI track or instrument track in your host software is record-enabled.

Often only A/B tests will reveal the source of the problem. It may be necessary to switch your MIDI cables, and if possible, to try using a different MIDI interface or synthesizer for input/output. The easiest way to test if MIDI data is actually getting to Ethno Instrument is to look at the MIDI activity LEDs in the Parts section.

AUDIO TROUBLESHOOTING

In order for audio to be heard from Ethno Instrument, the output of the audio, aux, or instrument track in your host software must be sent to an output that is connected to speakers or headphones. Can you play back any pre-recorded audio? That's always a good way to check that the rest of the audio system is set up correctly. In some cases, a sequencer requires an available voice for Ethno Instrument playback. Make sure all outputs and voice assignments are correct for the Ethno Instrument track.

If you still don't hear sound, check the following things:

■ Make sure the volume is turned up on the part you are playing, as well as Ethno Instrument's global volume setting.

■ Make sure that the appropriate faders are up in your host application.

■ Make sure you have cables connected to the correct plugs on the outputs of your audio hardware.

PREVENTING CATASTROPHE

Keep up-to-date backups of your Ethno Instrument projects, so that you always have copies of the most recent work you have done. *Almost any software problem is survivable as long as you have kept backups of your work.*

Keep plenty of free space on your hard drives. This will prevent the computer from running out of disk space.

TECHNICAL SUPPORT

We are happy to provide customer support to our registered users. If you haven't already done so, please take a moment to complete the registration card in the front of the manual and send it in to us, or visit motu.com to register on line. When we receive your card, you'll be properly registered for technical support.

Registered users who are unable, with their dealer's help, to solve problems they are encountering with Ethno Instrument may contact our technical support department in one of the following ways:

■ Technical support phone: (617) 576-3066

■ Online: http://www.motu.com/techsupport

■ Web site (for information, tech support database and downloads): www.motu.com

Technical support is staffed Monday through Friday 9 AM to 6 PM, Eastern Time.

If you decide to contact technical support, please have your Ethno Instrument manual at hand, and be prepared to provide the following information to help us solve your problem as quickly as possible:

■ **The serial number of the program.** This is printed on the cardboard page (at the front of the manual) which holds the registration card. (If you purchased Ethno Instrument as an upgrade, your manual won't have this cardboard page. Instead, MOTU will have notified you separately of your serial number.) Be sure to retain this page in the manual for your reference. You must be able to supply this number to receive technical support.

■ **The version of Ethno Instrument you are working with.** This is displayed in the lower right corner of the Ethno Instrument window.

■ **The system software** you are using to run the computer.

■ **The host application software** you are using to run Ethno Instrument.

■ **A brief explanation of the problem**, including the exact sequence of actions which cause it, and the contents of any error messages which appear on the screen. It is often very helpful to have brief written notes to refer to.

■ **The pages in the manual** which refer to the parts of the program which you are having trouble with.

We're not able to solve every problem immediately, but a quick call to us may yield a suggestion for a problem which you might otherwise spend hours trying to track down.

Our technical support telephone line is dedicated to helping registered users solve their problems quickly. In the past, many people have also taken the time to write to us with their comments, criticism and suggestions for improved versions of our software. We thank them. If you have features or ideas you would like to see implemented in our music software, we'd like to hear from you. Please visit motu.com/suggestions, or write to the Ethno Instrument Development Team, MOTU Inc., 1280 Massachusetts Avenue, Cambridge, MA 02138.

Although we do not announce release dates and features of new versions of our software in advance, we will notify all registered users immediately by mail as soon as new releases become available. If you move or otherwise change your mailing address, please send us a note with your change of address so that we can keep you informed of future upgrades and releases.

Symbols

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