

SPAT

REVOLUTION

ESSENTIAL

QUICK START GUIDE

Essential **SPAT Revolution** concepts

SPAT Revolution is an object-based mixing environment designed to let users easily create any kind of sound scenery for 2D and 3D render. This can be done using three different kinds of spatialization technologies :

- **Channel-based** with various panning laws and methods
- **Ambisonic / HOA** encoding and decoding
- **Binaural** synthesis for headphone spatial audio delivery

Channel-based defines a stream type where each audio channel is intended to be played back on a specific speaker of an arrangement. Think of stereo recording : we use two microphones, each one meant to be played on one precise speaker.

Ambisonic is a way to describe a sound scenery without attaching it to a specific speaker system in an encoded manner. We can either record ambisonic with dedicated microphones, or synthesise an ambisonic scene from channel-based recordings. As an ambisonic scene can't be simply listened to, it works in two-steps : we first encode channel-based audio to ambisonic to create our spatialization. Then, we decode ambisonic to a specific speaker array. Remember we cannot monitor an ambisonic stream without decoding it on channel-based. From a stream type delivery perspective, it allows to send a production render in a speaker system agnostic way to be decoded down the road.

Binaural is a way to listen to a 3D audio render on headphones on the 2 audios channels. Like ambisonic, binaural can either be recorded, using dummy heads or sets of microphones placed inside the ear of someone, or, it can be synthesized in post-production. Of all the spatial audio technologies, binaural is the most accessible, and it is the easiest way to share an immersive audio content to someone.

SPAT Revolution handles the above spatial technologies with its oriented-object mixing engine. Inside SPAT, each source is considered as an object, static or dynamic, and each object has a set of parameters we call metadata. This metadata includes, for example, the position of the object, its acoustic properties, its perceptual factors and much more.

“Room” is the module where all the magic happens. A **Room** is defined by two things : the spatial audio method “stream type” it uses to render audio, and the properties of the acoustic simulation, the reverberation signature. The source-objects are simply connected to this room and its position takes an intuitive spin in the 3D UI environment with many other parameters.

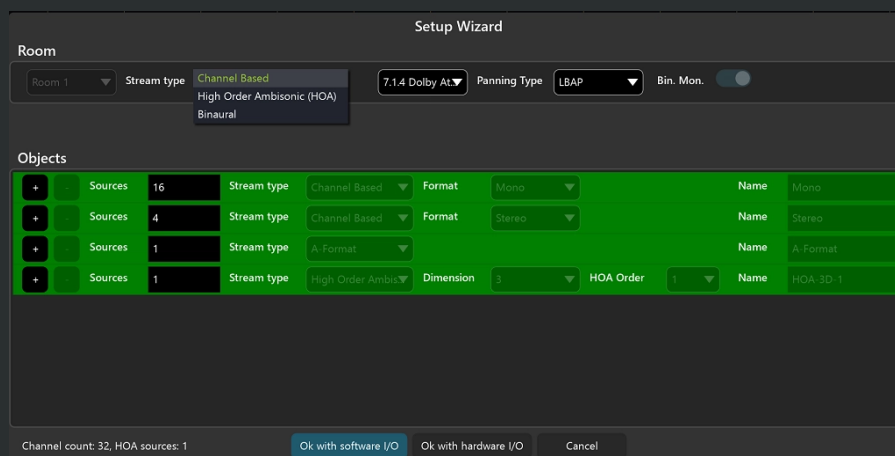
The source-objects are fed from input. One of the strong concepts of SPAT Revolution is that you can acquire audio either by using physical or virtual hardware input, like your audio interface, or a software input, from a DAW to integrate into your workflow. We call this last ones “Local Audio Path and is associated with the FLUX:: Audio Pipe technology

1. How to create a session

SPAT Revolution opens up on a welcome page. This page allows you to quickly create a new session, open a session, or choose from the recent session you've been working on.



If you are planning to use SPAT Revolution in conjunction with a DAW on a single computer, we strongly recommend you start with one of our templates. You can access them directly from the welcome home page. Various templates (DAW and SPAT session duo session) for all the major DAWs are offered.

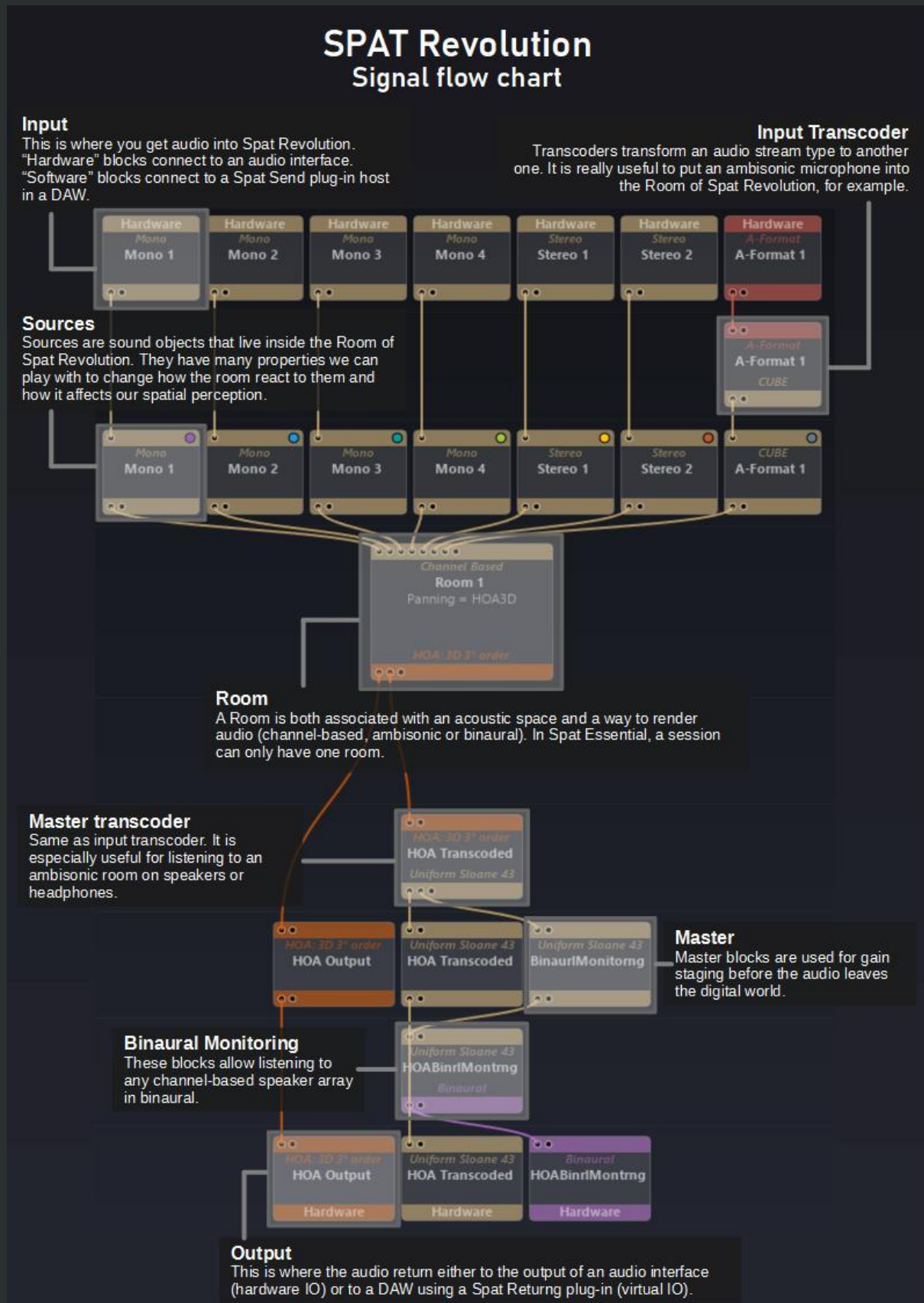


The session creation starts with a setup wizard window that will help you configure your session. The first line lets you configure the room stream type you want to use, the speaker arrangement and the panning type. Channel-based rooms have a binaural monitor automatically included for you to preview an arrangement you may not have the monitoring system for.

All the lines below are for the object-source you want. For each line, you can specify source quantity, stream type and format like Mono, Stereo, or a A-Format input for example. You can create as many lines as you need to set up your mix session with various formats.

Once you are done, you can either choose to create the session without any hardware inputs attached to them (for software patching), or you can create an associated input and output hardware blocks. The later gives you a matrix to finish the patch of your session. You can always go back to the setup wizard to modify the session.

Typical signal path of a session, shown as a diagram block.



2. Block modules object types:

2.1. Input

This is where you get audio into SPAT Revolution. “Hardware” blocks connect to an audio interface. “Software” blocks connect to a Spat Send plug-in hosted in a DAW via the local audio path mode.

2.2. Input transcoder

Transcoders transform an audio stream type into another type. It is used for example to decode an ambisonic microphone or source into the **Room** of SPAT Revolution.

2.3. Sources-Objects

Sources are audio objects that live inside the Room of SPAT Revolution. They have many parameters (metadata) beyond the actual position. An example of this are some parameters involvingspatial perception.

2.4. Room

A Room is both associated with an acoustic space (reverb) and a method to render the object-based audio mix (channel-based, ambisonic or binaural). In SPAT Essential, a session can only have one room (multi-pass needed to deliver various formats).

2.5. Master transcoder

Same as input transcoder. It is especially useful for listening to an ambisonic room output stream onto speakers or headphones. It serves as well to deal with various ambisonic conventions (sorting and normalization for ambisonic).

2.6. Master

Master blocks are used for gain staging before the audio leaves the monitoring and output modules.

2.7. Binaural monitoring

These blocks are used to listen to any channel-based speaker array in binaural. Virtualizing the speaker arrangement on headphones.

2.8. Output

This is where the audio returns either to the output of an audio interface (Hardware IO) or to a DAW using a SPAT Return plug-in via the local audio path mode.

Note: In SPAT Essential, you can only manually manage input and output blocks. All others are created automatically and managed by the Setup Wizard.

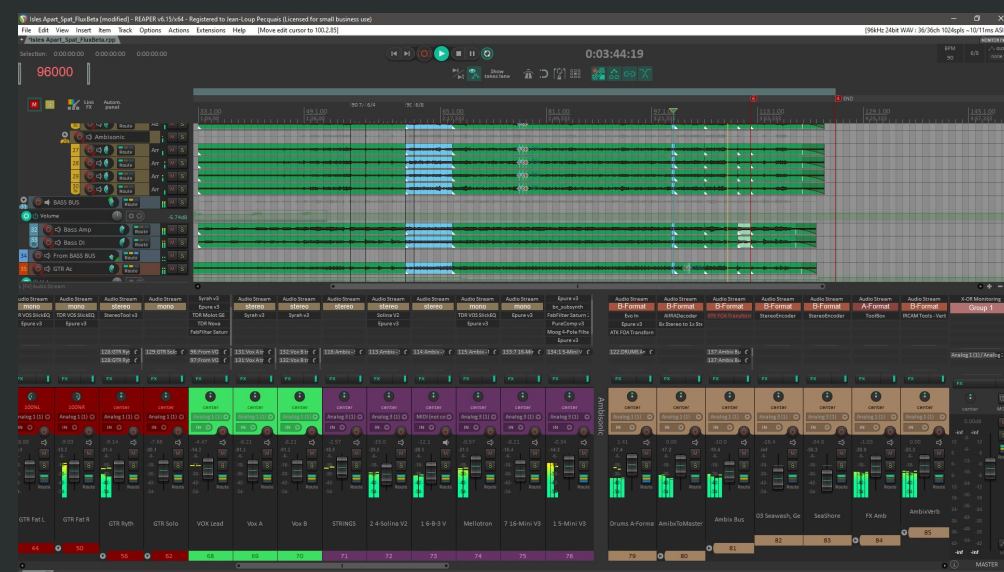
3. How to set up software I/O via the local audio path mode?

SPAT Revolution comes with three (3) plug-ins: Spat Send, Spat Return, and Spat Room. Their primary function is to allow the control of SPAT Revolution objects from a DAW, using automation lines. The plug-ins use OSC (Open Sound Control) to send or receive remote information to or from SPAT Revolution. This can be used locally between the applications or on a network of multiple computers

The SPAT Send and SPAT Return plug-ins also have another function, called “local audio path” (LAP). This proprietary technology, developed by FLUX:: Immersive, allows to send/return audio and automation data from one application to another on qualified DAW with proper routing. When using LAP, the Send plug-in sends the audio to SPAT Revolution and appears as a software (virtual) input block inside the software setup page. On the other hand, the Return plug-in in LAP mode appears as a software output block. Such a connection between two softwares hosted by the same computer is described as a local connection.

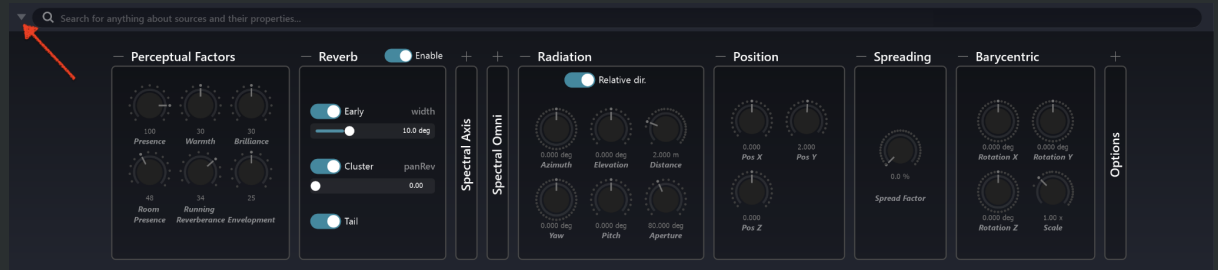
Because our plug-ins exist in many formats (VST, AAX, AU), you can theoretically create a local connection between any DAW supporting one of these formats and SPAT Revolution. But beware, each DAW has different core behaviors and limitations on the number of channels track support, some, therefore, makes the whole routing process more difficult and some instabilities can derive from them. Again, don't hesitate to look at our templates to know how to deal with a specific DAW. For some extreme cases, other alternatives for cable free virtual audio routing can be considered for single computer setups.

If you need to use a DAW with SPAT Revolution, but don't have any preferences about which one to use, we recommend you to use our custom personalization of REAPER, called [ReaVolution](#). It has been developed to provide a smooth deployment for immersive creations between REAPER and SPAT Revolution, while smoothing out some rough edge in the REAPER workflow. More informations can be found on our [Online User guide](#)



4. Source-object parameter panel

In the SPAT Revolution room, a lot of parameters exist to control for each source. These parameters are placed at the bottom of the 3D view. The triangle allows to expand this panel and see the selected source or sources parameter. (This applies to multi-select sources as well and with then act as a trim factor to each source)



4.1. Perceptual Factor

Presence changes the prominence of the direct sound perceived by the listener.

Warmth parameters will make a source sound fuller impacting the low frequency if you boost it, or thinner if you lower it.

Brilliance parameter will make a source sound brighter impacting the high frequency if you boost it, or darker if you lower it.

Room Presence changes the prominence of reverberation tail perceived by the listener when reverb is enabled

Running Reverberance changes the quantity of reverberation perceived by the listener while the source is playing. This parameter work in duet with the “PanRev”

Envelopment changes how much the listener feels surrounded or immersed by the ambient sound. This parameter work in duet with the “Early Width”

4.2. Reverb

This panel allows to deactivated specific part (Early, Cluster, Tail) of the acoustic simulation reverb for the selected sources

Early width parameter will spread the early reflection generated by the source.

Cluster Pan Rev parameter will relocalize the cluster closer to the source.

4.3. Radiation

Azimuth, Elevation, Distance parameters allow to move the source using a spherical coordinate system. **Yaw, Pitch** changes the direction of the source, **Aperture** it's directivity. The higher it gets, the more the room will have a bigger response and generate more reverberation

4.4. Position and Barycentric

X,Y,Z parameters allow to move the source using Cartesian coordinate mode where

Barycentric rotation X, Y, Z and scale only works on multichannel or multi-selected sources in order to manipulate the source around the center of mass.

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