

# ATLANTIS SYNTHESIZER and FILTER DELAY EFFECTS MODULE MANUAL

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# CREDITS

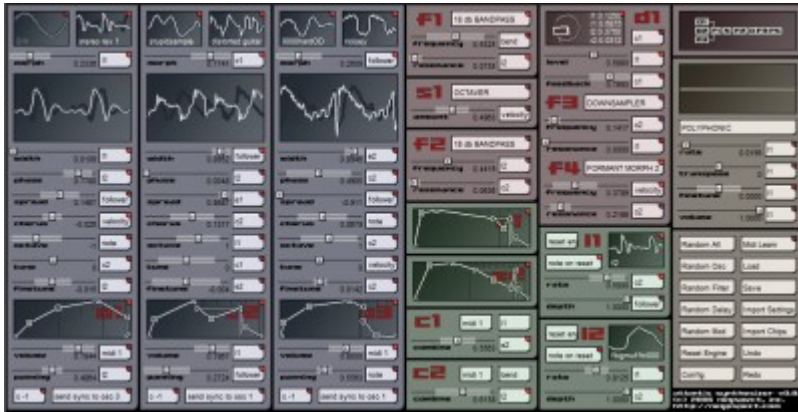
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# OVERVIEW



## Atlantis Synthesizer



## Atlantis Filter Delay

**Atlantis** is a unique synthesizer VSTi. It has nearly unlimited possibilities for creating new and exciting sounds! It is also a powerful effects module that can be used to process other audio.

3 true stereo morphing oscillators, with independant width, phase, spread, chorus, tuning, volume, envelope and panning feed into a pair of filters (with your standard algorithms and a lot of unique new favorites), a shaper (distortions and beyond), and a simple room modelling multitap filtered delay system with another pair of selectable filters. The routing of the filters and shaper can also be switched into a variety of configurations for further flexibility.

All the standard waveforms you would expect (sin, square, triangle, saw, noise)- and you can also import ANY waveform you like! Simply add a .wav file with the waveform you want to hear to the **c:\chips** folder - stereo or mono, any samplerate or bitdepth you like, and **Atlantis** will let you use it for oscillators and LFOs. Samples are upsampled into very high resolution wavetables.

Every slider parameter can be controlled by ANY modulator. LFOs, Envelopes, Midi Control Data, the current note, velocity, follower, or combinations of them can be used to modulate your sounds into expressive organic creations previously unheard by human ears.




What synth would be complete without selectable Polyphonic, Monophonic, Portamento and Arpeggio modes?

All that, it's fast and it sounds great, too? What the hell?!

# GUI BASICS

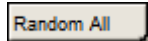
Although it may look intimidating at first, Atlantis is very intuitive once you grow accustomed to it's interface. There are a few basic elements to the interface itself:

## POWER BUTTONS

 **Power buttons** can be found in the top right of **waveform selectors**, **selection buttons**, **algorithm selectors**, **envelopes**, and the **delay unit**. They can be either on () or off ()

Click them to toggle the **power** for that item.

## PUSH BUTTONS



**Push buttons** generally click once to commit the described action. There are a few exceptions: the **osc sync buttons** and the **keyboard mode** button look like **push buttons** but they are actually **selection buttons**.

## SELECTION BUTTONS



**Selection buttons** are used to **select** an option and in most cases control the **power** for it as well.

Exceptions being buttons that control only **power**, such as **note on reset**, and some global options, or buttons that control only a selection, such as **keyboard mode** and **combiner input**.

Click on the **power button** () to toggle the **power**.


Click and a menu will pop up with your available choices.

Click and **drag vertically** to adjust the **selection**.

CTRL + **drag vertically** to finetune the **selection**.

## SLIDERS



**Sliders** are what it is all about. Their awesomeness may take a few minutes to sink in, but it is assured. They are used to set **parameters** and control the **modulation range** and **direction**. A numerical value is also displayed below them to assist in dialing in precise values. The **buttons** to the right of **sliders** () select and enable the **modulator** for this **slider**. **Modulators** can be:

- **note** that is currently playing
- **velocity** of current note
- **pitchbend**
- **Midi CC** mapped
- **envelopes** e1 or e2
- **LFOs** l1 or l2
- **combiners** c1 or c2, which combine other modulators.
- **follower** of the output of the device.

The **handle** (▣) shows the **parameter center** and the **modulation direction**, either forward (▣) or reverse (▣).

The highlighted **range** area (▣) shows the **range of modulation**. If the **modulator selection button power** (velocity) is on, a **blip** (▣) will represent the **current status** of the **modulated parameter**.

**Sliders** are manipulated in a variety of ways, get used to how they function immediately:

**Left Click/drag horizontally** to adjust the **parameter center**.

**CTRL+Left drag horizontally** to finetune the **parameter center**.

**SHIFT+Left Click** to **reset the parameter center**.

**Right Click/drag horizontally** to change the **parameter range** and **direction**. (▣) is **forward** and (▣) is **reverse**.

**CTRL+Right drag horizontally** to finetune the **parameter range** and **direction**.

**SHIFT+Right Click** to clear the **range** and **direction**.

## WAVEFORM SELECTORS



**Waveform selectors** are used to select **waveforms**, set their **phase**, and control the **power** of the **oscillator** or **LFO**. If an **LFO** is off, it holds its current value. If an **oscillator waveform** is off, it will not be mixed in. If both **oscillator waveforms** are off, the **oscillator** will not produce any sound.

**Click** on the **power button** (▣) to toggle the **power**.

**Left Click** and a menu will pop up with your available choices.

**Left drag vertically** to adjust the **waveform**

**CTRL+Left drag vertically** to finetune the **waveform** at a slower rate. A pop-up menu feature will be available in future versions.

**Right drag horizontally** to adjust the **phase**.

**CTRL+Right drag horizontally** to finetune the **phase**.

**SHIFT+Right Click** to reset the **phase**.

## ENVELOPE WINDOWS



At first, the **envelope windows** may seem confusing. They pack a lot of things into a small space. With a little practise they become second nature. Here's a breakdown of their parts:

**Power button** (☐) toggles the **power**. When it is off, the **envelope** acts as a **gate**. Click it to toggle.



**Scale** (I) each full vertical tick represents a **beat**, smaller ticks are subdivisions of a **beat**. These are tempo-synched to the host.

**Points**- there are 5 types of **points**: **regular points** (□), **loop start point** (⌂), **loop end point** (⌂), **release point** (⌂) and **end points** (⌂). The **envelope** will follow those **points** and **loop** between the **start** and **end** points until **release**.

The **release behaviour** is shown by the triangle between the **loop end point** and the



**release point** (⌂). When a release occurs, the volume fades to the release volume over an amount of time equivalent to the width of the triangle. To create a non-sustaining sound, set the amplitude of the **loop points** and **release point** to the bottom. To avoid release swells on patches with slow attack or deep dips in the **envelope loop**, set the **release point** to the bottom.

The **points** can be manipulated in a number of ways:

**Left click** on an open area to create a new **regular point**.

**Left drag** on a **point** to adjust amplitude and insert time.

**CTRL+Left drag** on a **point** to finetune amplitude and insert time.

**SHIFT+Left drag** on a **point** to adjust amplitude and timing without inserting time. This also will allow you to break the amplitude symmetry of loop points.



**CTRL+SHIFT+Left drag** on a **point** to finetune amplitude and timing without inserting time. This also will allow you to break the amplitude symmetry of loop points.

**Right Click** on a **regular point** to remove it.

## DELAY WINDOW





The **delay window** lets you control the **position**, **orientation** and **rotation** within, and the **size** of, the **delay room**. 2 stereo filtered **delays** are used to create anything from a doubling **delay** to a simple **reverb**. The **sizes** are measured in tempo-synched **beats**.

There are 2 parts to the interface, the **room display** () and the **tap lengths** (distance from the wall) (). Left signals are light, right are dark.

The **delay** can be manipulated in several ways:

Click on the **power button** () to toggle the **power**.


**Left drag** on a **tap length** () to adjust the tap length/distance from that wall. Values are in **beats**, tempo-synched to the host.


**CTRL+Left drag** on a **tap length** () to finetune the tap length/distance from that wall. Values are in **beats**, tempo-synched to the host.


**Left drag** on the **room** () to adjust the **orientation**.

**CTRL+Left drag** on the **room** () to finetune the **orientation**.

**SHIFT+Left click** on the **room** () to reset the **orientation** to normal.







**Right drag** on the **room** () to adjust the **rotation range** and **direction**. It is displayed as a curved arrow, pointing forward.

**CTRL+Right drag** on the **room** () to finetune the **rotation range** and **direction**. It is displayed as a curved arrow, pointing forward.

**SHIFT+Left click** on the **room** () to reset the **rotation range** and **direction**.

## ROUTING WINDOW



The **routing window** shows you the **signal flow** through the **oscillators** () , the **filters** () , the **shaper** () and into the **delay unit** (). If the **signal** is split and needs to be **combined** , it can be either an additive () or subtractive () action.

**Left drag vertically** to adjust **routing**.

**CTRL+Left drag vertically** to finetune **routing**.

## OSCILLOSCOPES



The **oscilloscopes** let you see what is going on. There is one for each **oscillator**, and one for the main **output**. The light line represents the left signal and the dark line represents the right signal.

For the **oscillators**, it reflects the settings of that **oscillator**, not **output** function.

On the main **output** ONLY, you can control some parameters:

**Left drag vertically** to adjust the amplitude zoom.

**CTRL+Left drag vertically** to finetune the amplitude zoom.

**Left drag horizontally** to adjust the time zoom.

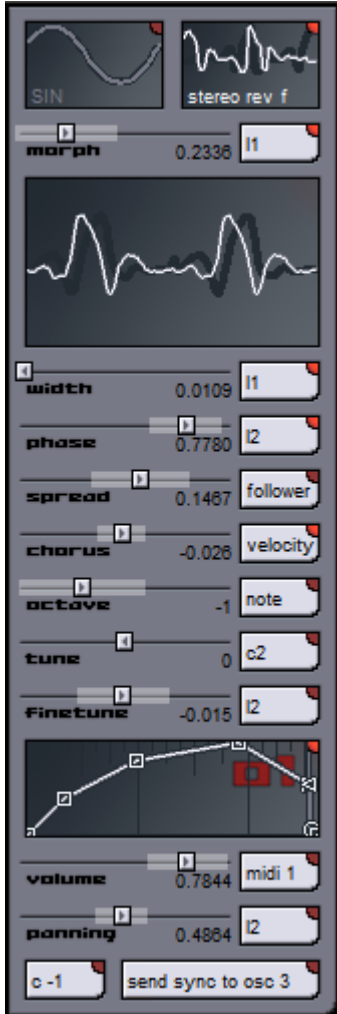
**CTRL+Left drag horizontally** to finetune the time zoom.



# PARAMETERS

Now that you know how to interact with the interface, you can learn what all of the parameters control. It's good to play with everything so you can get an idea of what it does. Have some fun, you'll be making great sounds in no time.

## OSCILATORS



**Oscillators** are where the sound is generated. A number of parameters can be adjusted to control the way in which it is generated before it is passed on to the **filters**, **shaper** and **delay**.

Use the **waveform selectors** to select **waveforms** and set the **phase** of each.

Two different **waveforms** (**SQUARE** and **TRIANGLE** , for example) can be morphed together in any amount with the **morph** slider. Both **waveforms** must be active (powered on) for any **morphing** to occur. **Morphing** really just mixes between the two **waveforms**. If both are off, the **oscillator** will not produce any **sound**.

The **width slider** pinches and stretches the **waveform**, so you can modulate the duty of any **waveform**, not just pulse. It can be a very expressive effect.

The **phase slider** adjusts the **phase** of the **morphed waveform**. This is useful for moving

the **width** function's centerpoint. It can be a very expressive effect.

The **spread slider** adjusts the **phase** difference between the left and right channels.

The **chorus slider** adjusts the **chorus** amount. The **chorus** functions by detuning the left and right channels from each other slightly.

The **octave**, **tune**, and **finetune** sliders adjust the coarse, medium and fine tuning of the **oscillator** pitch. **Vibrato** can be achieved by modulating them.

The **envelope window** lets you configure the **volume** envelope for the **oscillator**.

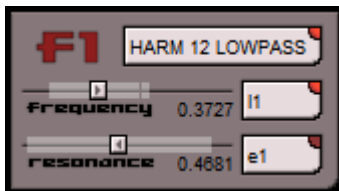
The **volume slider** lets you configure the maximum **volume** for the **oscillator**. **Velocity** is commonly routed here. **Tremelo** can be achieved by modulating it.

The **panning slider** lets you set the **panning** (left to right) of the **oscillator**. **Autopan** and similiar rotary effects can be achieved by modulating it. Panning uses a sinoid law.

The **drone** selection button lets you lock this oscillator to a specific note. This is very handy for some sync effects.

The **sync** selection button lets you send a stereo **sync pulse** to another **oscillator**. What this does is force another **oscillator** to reset its cycle position when the source **oscillator's** cycle position wraps around past 0. This can create some classic sounds.

## FILTERS



**Filters** take the audio and **process** it in different ways. **Atlantis** has a large number of great sounding filters for your use.

Select the **filter algorithm** and **power** with the **selection button**. **Atlantis** has many different **algorithms** for you to manipulate your audio streams with. Here's a breakdown of the **filter algorithms**:

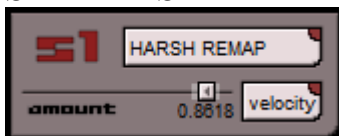
- **Lowpass** - decreases amplitude above **frequency**, **resonance** will feedback at **frequency**.
- **Highpass** - decreases amplitude below **frequency**, **resonance** will feedback at **frequency**.
- **Bandpass** - decreases amplitude above and below **frequency**, **resonance** will feedback at **frequency**.
- **Notch** - decreases amplitude at **frequency**, **resonance** will feedback at **frequency**.
- **Peak** - increases amplitude at **frequency**, **resonance** will feedback at **frequency**.
- **6, 12, 18, 24 db/o** - the slope of the filter, decibels per octave. Higher ratings produce sharper falloff.

- **Harmonic 12, 18, 24, 30** - these are very nice and unique stacked filters that are tuned to different octaves to produce stepped frequency response and pleasant resonant harmonics.
- **Formant Morph** - filter the audio to make vowel sounds. **Frequency** controls the vowel sound, **resonance** controls the depth
- **Phaser** - adjust the phase at the target **frequency**. **Resonance** controls the depth and feedback. Sweep the **frequency** for classic sounds.
- **Flanger** - slightly delays the signal and mixes it back. **Frequency** controls the amount of delay, **resonance** controls the depth and feedback. Sweep the **frequency** for classic sounds.
- **Flange chorus** - uses a flanger to produce a chorus sound. **Frequency** controls the rate of the chorus, **resonance** controls the depth and feedback. Note that **resonance** at center is minimal depth and feedback.
- **Flange vibrato** - uses a flanger to produce a vibrato sound. **Frequency** controls the rate of the vibrato, **resonance** controls the depth and feedback. Note that **resonance** at center is minimal depth and feedback.
- **Downsampler** - resamples the audio at a lower sample rate, produces audible aliasing for a lofi sound. **Frequency** controls the resample rate, **resonance** controls the mix between the downsampled and original signal.
- **AM ringer** - modulates the amplitude of the signal with a stereo offset sine wave. **Frequency** controls the frequency of the sine wave, **resonance** controls the mix between the modulated and original signal.
- **SID LPF** - Another Lowpass filter tuned to sound similar to the famous **SID** chip.
- **SID LPF + HPF** - Lowpass and hipass **SID** filters combined.
- **SID LPF + BPF** - Lowpass and bandpass **SID** filters combined. This is a classic sound.
- **SID LPF + HPF + BPF** - Lowpass, hipass and bandpass **SID** filters combined.
- **SID HPF** - Hipass **SID** filter.
- **SID HPF + BPF** - Hipass and bandpass **SID** filters combined.
- **SID BPF** - Bandpass **SID** filter.

Set the **frequency** target parameter with the **frequency slider**. This controls the center **frequency** of the **filter**.

Set the **resonance** parameter with the **resonance slider**. This controls the **depth** or **resonance**, depending on the **filter algorithm** selected.

## SHAPERS



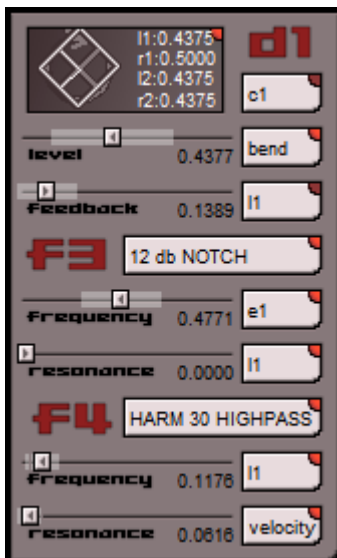
**Shapers** take the audio and **process** it in different ways. **Atlantis** has a number of great sounding shapers for your use.

Select the **shaper algorithm** and **power** with the **selection button**. **Atlantis** has many different **shaper algorithms** for you to manipulate your audio streams with. You can really get some dirty sounds if you are into that sort of thing. Here's a breakdown of the **shaper algorithms**:

- **Softclip** - a simple compressor with a fixed ratio. If the signal crosses the threshold specified by the **amount** slider, it is turned down by a fixed amount.
- **Distort** - distortion, remaps the signal to a squared off wave. The amount is controlled with the **amount** slider.
- **Fuzz** - an asymmetrical distortion. The amount is controlled with the **amount** slider.
- **Remap** - produces a smooth fuzz sound by mapping the signal to another waveform. The amount is controlled with the **amount** slider.
- **Harsh Remap** - produces a harsh FM sound by remapping the signal to a sine wave of variable frequency. **Amount** controls the frequency multiplier.
- **Bitimploder** - produces a distorted sound with audible aliasing by decreasing the amplitude resolution, similar to resampling at a lower bit depth. **Amount** controls the resolution.
- **Supersquash** - a simple compressor with a fixed threshold. If the signal crosses the threshold, it is turned down by a ratio specified by the **amount** slider.
- **Maxthresher** - clamps the signal at the max threshold, which is specified by **Amount**.
- **Soft Saturate** - a soft limiter that can smooths peaks evenly. **Amount** alters the threshold at which smoothing begins.
- **Tube Saturate** - the same as **Soft Saturate**, but with an asymmetrical balance to provide a tubelike response.
- **Octafuzz** - An octaver effect that adds lower harmonics and asymmetrical distortion. The amount is controlled with the **amount** slider.
- **Octaver** - A classic farty octaver effect. The amount is controlled with the **amount** slider.

Set the **amount** parameter with the **amount slider**. This does different things for different **algorithms**, but generally the more you add the more distorted the sound gets.

## DELAY



**Atlantis** has a very cool little filtered multitap delay unit. It works as a simple reverb or delay unit depending on your settings. How it works is this: Incoming audio is delayed, the left and right channels going out separately to the left and right walls of the room. When it hits a wall, it passes

through **filter3** and **feedback** towards the opposite wall. **Filter3 is in the feedback loop**, so you can dampen the signal, but be wary of accumulating **resonance**! The **delayed** and **filtered** signals are then **filtered** again through **filter4** and mixed with the original signal. This produces a really nice and versatile range of ambience that can do just about anything.

Use the **power** button to toggle the **power** for the **delay**. If the **power** is off, NO processing will occur.

Use the **room control** to adjust the rotation and orientation of the room. Think of it as a binaural microphone that you can rotate - you are listening from it's perspective. Have a look at the section on the **delay window** for more information.

Use the **tap lengths** to adjust the size of the room. The numbers are in **beats** and are tempo-synched to the host. Have a look at the section on the **delay window** for more information.

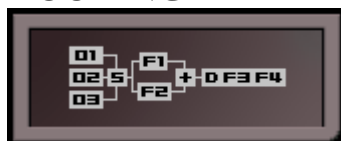
The **modulator selector** to the right of the **room control** selects and powers the **modulator** for the room rotation.

The **level slider** adjusts the mix of **delayed** signal to **input** signal in the output.

The **feedback slider** adjusts the feedback amount of the delay. Be wary of adding too much feedback, it can squeal like mad if you do.

**Filter3** and **Filter4** are controlled exactly like the **filters** described above. They will not function if the **delay** unit is off.

## ROUTING



**Atlantis** can perform the **filtering** and **waveshaping** functions in a variety of different ways so you can create all kinds of sounds. The routing window displays the current order of operations. The signal flows from left to right. In the above image, the **routing** is set so that the **oscillators** feed into the **shaper** and then the signal is split and fed **parallel** into the **filters**, which are **added** back together before flowing into the **delay unit**.

It is generally best to keep at least one **lowpass filter** behind the **shaper** if you are **distorting** the signal. This can really help you sculpt your sounds.

## LFO



The LFO module is a **low frequency oscillator** that produces a **modulator** signal to be used on any

of the **sliders**. It is important to note that in **modulators per voice** mode each voice has independent **LFOs** that can get out of sync with each other. **Modulator per voice** mode is toggled in the config dialog.

The **reset** button resets the phase of the **LFO** immediately.

The **note on reset** button toggles the note on behaviour of the **LFO**. If it is on, the **LFO** phase will be reset whenever a **note on** event occurs.

The **waveform selector** controls the waveform, phase and power of the **LFO**. If it is turned off, the **LFO** just produces the current value.

The **rate slider** determines the rate of the **LFO's** oscillation. It is measured in **beats** that are tempo-synched to the host.

The **depth slider** determines the amplitude of the **LFO's** output. In most cases you will just leave it full, but it can be used to control the amount of effect the **LFO** has on other parameters.

## ENVELOPES

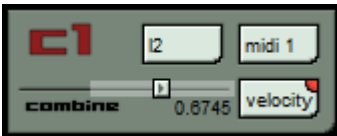


The **envelope** module is an **envelope** generator just like the ones in each **oscillator** module, except that it produces a **modulator** signal that can be used on any of the **sliders**. When a **note on** event occurs, the envelope starts, and loops between the loop points until a **note off** event occurs, at which point the release begins. At release, the volume fades to the release value and then follows the envelope normally.

More information about editing the envelope is available in the preceding section. It is important to note that when **modulators per voice** mode is off, the release will not occur until ALL notes are off.

When the **power** is off, the envelope works as a gate.

## COMBINERS

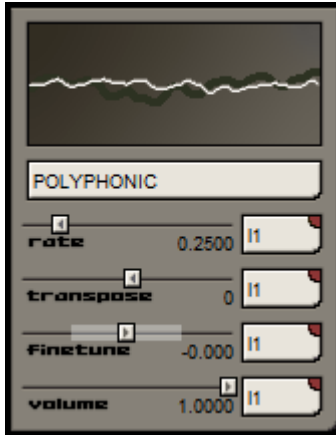


The **combiner** module is a special module that allows you to mix the signals of two **modulators** (**LFOs**, **envelopes**, **Midi CCs**, etc.) together to produce a new **modulator** signal.

The top two **modulator selectors** select the modulators to combine.

The combine **slider** controls the mix between the two **modulator** signals.

## GLOBAL



The global module controls various functions that affect the entire synthesizer, and shows the current output in the oscilloscope window.

The **keyboard mode** selector selects between **Polyphonic**, **Monophonic**, **Portamento** and **Arpeggio** behaviours. In **Arpeggio** mode, the synthesizer will step between all held notes, in the order that they were pressed. **Arpeggio Env** mode will retrigger the envelope on each new note.

The **rate slider** determines the **Portamento** or **Arpeggio** rate. The value is displayed in **beats**, which are tempo-synched to the host.

The **transpose slider** adjusts the tuning of the entire synthesizer, in full semi-tones. You can build a simple vibrato by modulating this. You can also route your pitchbender here to use it in a traditional manner.

The **finetune slider** adjusts the finetuning of the entire synthesizer. You can build a simple vibrato by modulating this.

The **volume slider** adjusts the volume of the entire synthesizer. You can build a simple tremolo by modulating this.

## FUNCTION BUTTONS



There are a bunch of buttons in the lower right that do all kinds of useful stuff.

The **random** buttons randomize various parameters of the synth.

The **reset engine** button resets all the filters and modules without altering any parameter settings. It's useful in the rare case that a filter has blown up, for example.

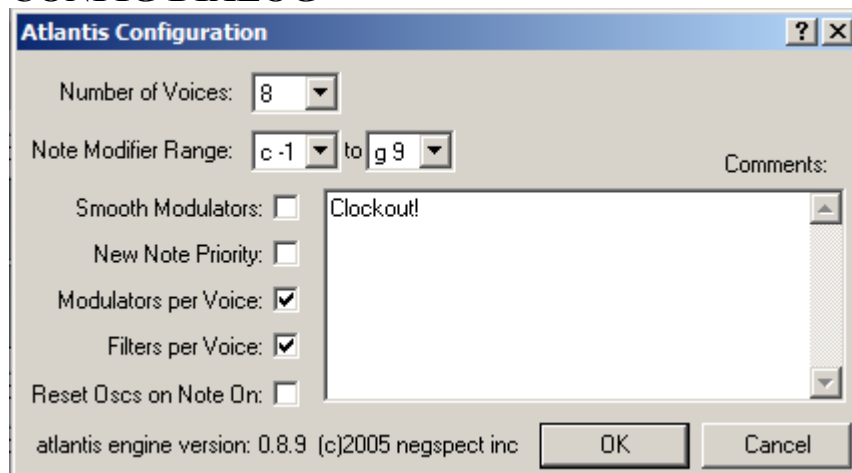
The **config** button brings up a dialog that lets you configure various important things about atlantis.

The **midi learn** button is used to train the synth to learn what **Midi CC** you would like to control a slider with. Simply click the **Midi Learn** button (it will light up), then click the modulator you would like to train (it will display midi ???), and then tweak the midi controller you would like to use. The controller will be assigned, **midi learn** will revert back to normal, and you're ready to start controlling things with midi. That's all there is to it.

The **load**, **save**, **undo** and **redo** buttons do just what you think they would do.

**NOTE:** The **import** functions are not implemented in the current version of **Atlantis**.

## CONFIG DIALOG



**Number of Voices** allows you to specify the polyphony of the **Atlantis** synthesizer.

**Note Modifier Range** determines the lowest and highest notes used to generate the **note modifier's** value. You can use the note modifier to modulate any parameter in the GUI.

**Smooth Modulators** smooths out modulator data, for example 7 bit midi CC data will be interpolated. It does add a small amount of lag.

When the **new note priority** button is on, if a new note arrives and there are no available voices, the oldest one will be cut off. If **new note priority** is off, the new note will be ignored.

The **modulators per voice** button is used to toggle the **per voice** nature of the **modulation signals**. When it is on, each voice has it's own **LFOs**, **envelopes**, etc. When it is off, a global set of **LFOs**, **envelopes**, etc. is used. When it is off, the **note** and **velocity** modulators produce averages of all current notes.



When the **reset oscs** button is on, the **oscillator phases** are reset when a **note on** event arrives. This produces a more uniform sound, when it is off, the oscillator phases behave in a more organic fashion.

You can write whatever you like in the **Comments** area. Poems, ASCII porn, whatever.

# FAQ

- I want more lfes!

What, there's not enough stuff on that screen for you? If you really need more modulators, you can set up an envelope loop to work similar to an LFO with retrigger set, or you can have your host send a MIDI CC.

- Pitchable noise?

Noise doesn't have a pitch. Map note to a filter cutoff to give your noise a tonal quality.

- o1/o2/o3 envelopes in shared mod/voice mode?

Each oscillator works per voice, regardless of mod/voice setting. Things would sound really really bad if they behaved otherwise.

- What about the chip files, how do they work? are they samples? how many samples in each?

**Atlantis** uses hi-resolution multilayer 32 bit wavetables internally. All you need to do to add some custom waveforms to the synth are drop .wav files in the folder **c:\chips**. **Atlantis** will automatically convert from 8, 16, 24 bit to the size and length that it needs using a high quality spline interpolation. The wav files should be only of a few cycles of the desired waveform. More than one cycle will raise the pitch by an octave. Dropping giant wav files will not force Atlantis to work as a sampler- it will just play the waveform really really fast. Stereo waveforms work great, **Atlantis** has a fully stereo signal path.

- What does BLIM mean?

BLIM means Bandwidth-Limited. It is a waveform constructed in such a way as to not contain very high frequency harmonics that would foldback and cause nasty aliasing sounds.

- I was trying to get a 'delayed vibrato', using the combiner with an LFO and an envelope, but the combiner is an adder, not a multiplier!

Here's what you do: have an env control the depth of the LFO. That's the only reason for the lfo depth knobs!

- Why is this pdf so shitty?

All pdfs are shitty. This one even moreso. Go read the manual online, it is guaranteed to be more up-to-date than this one: [http://jeremyevers.com/?page\\_id=15](http://jeremyevers.com/?page_id=15)

# HISTORY

- 0.8.9 - made Atlantis public