

HEAVYOCITY
P R E S E N T S

V A S T

IMPULSE ENGINE

HEAVYOCITY
RAW INSPIRATION™

VAST

IMPULSE ENGINE USER MANUAL

Welcome to VAST

Welcome to VAST, your gateway to unparalleled audio manipulation. This expressive designer tool transcends conventional boundaries, allowing you to transport your sound to a completely different and impossible space. With a rich array of intuitive controls, VAST offers an expansive palette of innovative reverbs, unique rhythmic echoes, and unconventional effects—an ultimate playground for creative experimentation and sonic exploration. Where sound is your canvas, shape your sonic space with VAST.

System Requirements

VAST is a 64bit plug-in available in the following formats:

For MacOS (10.15.7 Catalina or later):

- VST3, AU, and AAX

For Windows (10 or later):

- VST3 and AAX

Any host that supports any of these formats will be able to load and run VAST.

While we cannot test every host and environment, we have tested the plugin in the following host programs:

- Bitwig
- Cubase
- Digital Performer
- Live
- Logic
- Pro-Tools
- Wavelab

Installation & Activation

Installation

You can install VAST via the Heavyocity Portal.

To install and activate VAST, you will need to have done the following:

- create an account at Heavyocity.com
- download and install the latest version of the Heavyocity Portal software (you can download this from <https://heavyocity.com/heavyocity-portal/>)
- purchase the plugin

After installing the Portal (or if you have the Portal already installed) make sure you are signed in with your Heavyocity account.

If it isn't already there, add the product to the Portal by clicking **REGISTER NOW** at the bottom of the portal interface and follow the instructions there.

After successfully registering VAST, click on the **INSTALL** button next to VAST in the **MY PRODUCTS** section. This will download and launch the installer.

Follow the instructions on the installer.

Activation

Without activation, VAST will run in demo mode with the following limitations:

- Sessions are limited to 15 minutes of audio processing time, after that point the plugin will mute itself and control over the plugin will be blocked.
- Offline processing is disabled. If you try to do an offline render while in demo mode, the output of the plugin will be muted.

To activate:

1. Open the plugin in your host of choice.
2. Click on the **Activate** button on the header message box.
3. If that isn't visible, click on the menu icon to the top left of the interface and select **Activate**.
4. A window will appear where you sign into your Heavyocity account.
5. Once signed in, VAST will locate your license on your account.

Congratulations! You can now use VAST without limitations.

Note that you may need to restart the plugin instance for activation to take effect. It often works without a restart, but this cannot be guaranteed on older systems or if you have multiple instances running at once.

If you get any error messages, try the steps again. If the error persists, check the FAQ at Heavyocity.com before contacting support.

Product Overview

VAST was designed based on an idea Heavyocity first explored with the ASCEND instrument: a creative convolution-based effect.

If you are unfamiliar with convolution, it is an audio effect that uses files called *Impulse Responses*, which are like digital fingerprints of audio processes. Impulse Responses (IRs) are very good at capturing complex echoes and tonal properties but cannot capture non-linear processes like distortion. These strengths and limitations have led to convolution being used as a realistic reverb effect and for speaker simulations, but this has restricted exploration of the effect as a creative tool.



1 Viewing an Impulse Response in VAST

Impulse responses can be created in a variety of ways, but they are ultimately just audio files. So why not load anything into a convolution? We designed VAST with this in mind. That isn't to say VAST cannot do reverb (it's very good at that), but we wanted it to do more than reverb, and take reverb to new places.

As such, VAST includes options like reverse and tempo-sync, which aren't always seen in convolution reverbs. The factory library of impulse responses also explores unique textures and rhythms.

Advice on Getting Started

To acquaint yourself with the plugin, we suggest exploring the factory presets, especially the Creative Textures presets.

With a preset loaded, try exploring the different effect modules and their controls. If you have used other mixing plugins before, these modules and controls should be familiar to you.

You can also load other impulse responses from the factory library and see how they change the sound.



2 The VAST Interface

Because of the nature of convolution as an effect, the input level and source character will have a huge impact on how the effect sounds. Settings that sound similar on guitar could sound very different on bass.

Presets

The best way to get acquainted with VAST is to check out the factory presets.

To open a preset, click on the preset name display at the top of the interface.

A selection of presets will appear in a dropdown menu. Click on one to load it.



3 The Preset Menu

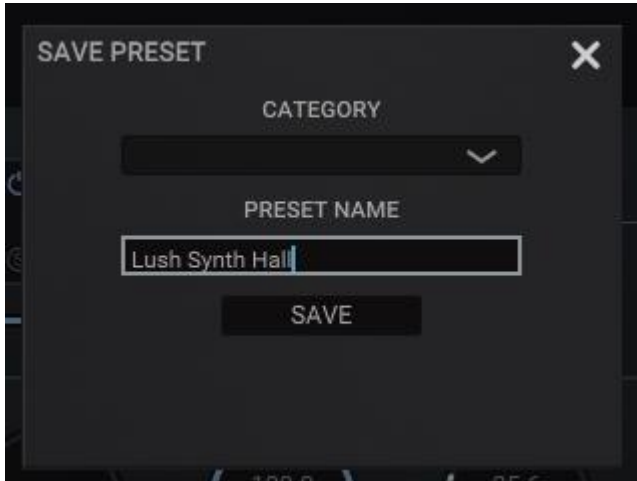
You can also cycle through presets using the left and right arrow buttons beside the preset menu.

Saving presets

After using VAST for a while, you will likely want to create your own presets for using in multiple sessions.

To save a preset:

1. Open the preset menu by clicking on the preset name display.
2. Select Save.
3. The *Save Preset* window will appear.



4. Enter a category name for the preset (this is optional, if you leave this blank the preset will save in the top-level directory for user presets)
5. If you have saved presets before, the category name section will contain options for categories that have already been created.
6. With the category set, enter a name in the *Preset Name* text entry box.
7. Click the *SAVE* button to save the preset.
8. If a user file with the same name already exists, you will be asked if you want to overwrite the file. Click *SAVE* again to confirm or change the name/category to avoid overwriting the file.

Factory presets cannot be overwritten, saving a preset with the same name will create a copy in the user presets folder.

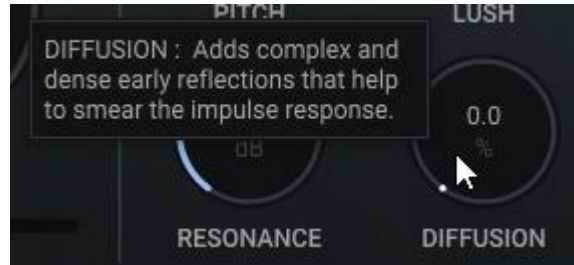
To view the user preset files, click on the *Show in Folder* option in the preset menu.

Editing sub-folders in the user preset folder will alter the categories displayed in the preset menu. Be aware that editing these folders while using VAST can cause undefined (and likely bad) behaviour.

Tooltips

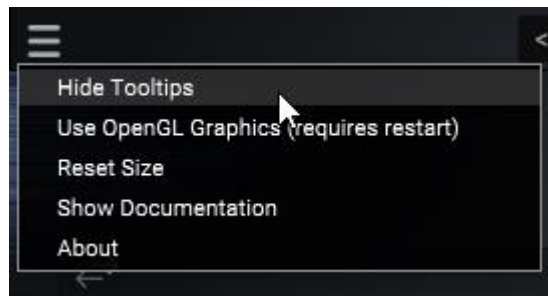
Every control in VAST has a tooltip that tells you what the control does.

Hover over a control for a short moment and the tooltip will appear with a description of that control.



4 The Diffusion Knob Tooltip

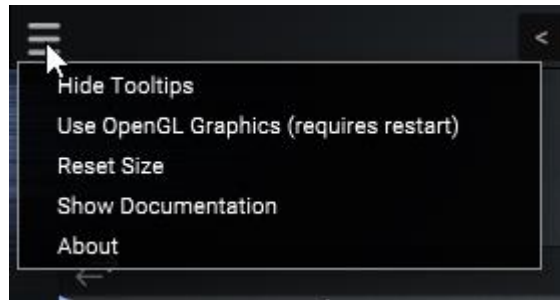
If you want to hide tooltips, click on the main menu icon to the top left and select *Hide Tooltips* (you can always switch this back later if you need to)



5 How to Hide Tooltips

The Main Menu

The main menu is accessed by clicking on the three-line icon in the top left corner of the interface. It contains options for plugin behaviour and accessing information.



6 The Main Menu

The options available in this menu are as follows:

- **Show/Hide Tooltips:** as described in the Tooltips chapter, this option toggles the visibility of tooltips on or off.
- **Use CPU/OpenGL Graphics:** selects the graphics mode for the plugin. The optimum choice will automatically be made when you first load the plugin based on your system. However, if you have UI problems or just want to try new things, you can try a different rendering mode here. Note that this requires a restart of the plugin and/or host.
- **Reset Size:** resets the window size to the plugin's original default size.
- **Show Documentation:** opens a browser window showing you the location of the plugin documentation (including this manual).
- **About:** opens the about screen, which can be used to see your installed version number and activation status.
- **Activate:** this option is only visible if you haven't registered and activated the plugin. It will also appear when your license needs updated. This function of this is described in the Activation chapter.

Effect Modules

VAST has multiple effects built in. They were all designed to complement the main convolution effect.



7 The VAST Effect Chain

There are 7 effect modules:

- EQ
- Gate
- Compressor
- Delay
- Convolution
- Dry/Wet Mix
- Output

Clicking on an effect module will display its controls in the lower control area.

All of the effect modules (except the Output module) can be re-ordered any way you want. To move an effect's position in the effect chain, just click on the effect and drag it to the desired position.



8 Reordering Effects

To move the Dry/Wet Mix knob, click and drag on its label.

At the top of each module is a power button that toggles the effect on or off.

The bottom left of module is where you'll find a solo button. Clicking on this will isolate the effect module's processing.

Note that only one module can be soloed at a time, and the solo state is not saved or recalled with presets.

Below 5 of the effect modules is a slider. This will control either the mix or intensity of the effect. For example: on the Delay it controls the Mix parameter, but on the Gate it controls the Ratio.

The Output module is an exception here. Since it contains three different effects, the control below the module is for quickly toggling the output reverb on or off.

Convolution

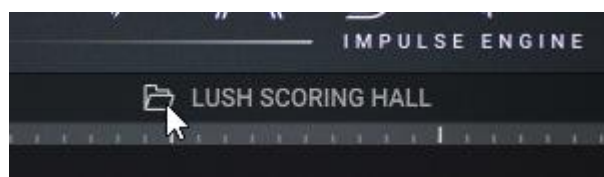
This is the core effect of the instrument. Not only is it a state-of-the-art convolution engine, but it also contains a few additional effects and parameters to animate and elevate the core convolution engine.

Loading an Impulse Response

There are two main ways to load an impulse response into the convolution effect:

- Drag and drop any **.wav** or **.aiff** file onto the waveform display.
- Via the factory library browser

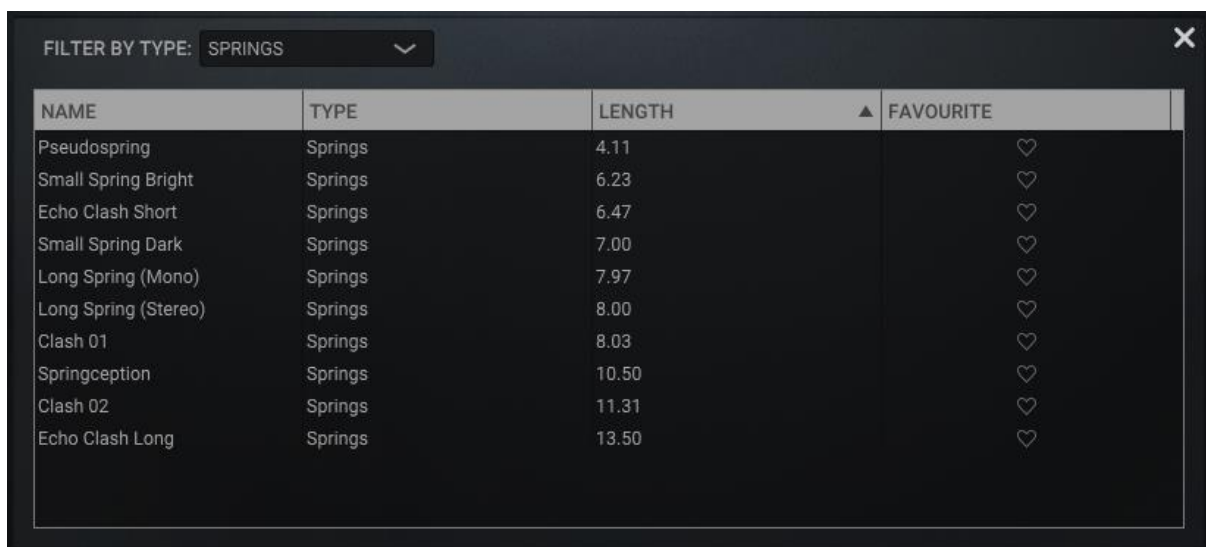
You can open the factory library browser by clicking on the Impulse Response name, or by double-clicking on the Impulse Response waveform.



9 Opening the IR Browser

In the factory library browser, you can browse through over 200 impulse responses.

To make things easier to digest, it is possible to filter the browser by type using the dropdown menu. You can also reorder the browser by clicking on the headings.

A screenshot of the 'IR Browser' interface. At the top, there is a dropdown menu labeled 'FILTER BY TYPE: SPRINGS'. Below it is a table with columns for NAME, TYPE, LENGTH, and FAVOURITE. The table lists several impulse responses, all of which are of type 'Springs'. Each row has a heart icon in the 'FAVOURITE' column. A close button (X) is in the top right corner.

NAME	TYPE	LENGTH	FAVOURITE
Pseudospring	Springs	4.11	♡
Small Spring Bright	Springs	6.23	♡
Echo Clash Short	Springs	6.47	♡
Small Spring Dark	Springs	7.00	♡
Long Spring (Mono)	Springs	7.97	♡
Long Spring (Stereo)	Springs	8.00	♡
Clash 01	Springs	8.03	♡
Springception	Springs	10.50	♡
Clash 02	Springs	11.31	♡
Echo Clash Long	Springs	13.50	♡

10 The IR Browser, filtered to show just the Springs.

Double-click on an impulse response to load it.

Click on the heart icon to mark an impulse response as a favourite.

To close the browser, click on the **X** icon.

Editing an Impulse Response

The waveform display is not only for decoration, but it also contains a number of editing controls.

You can change the display style from an amplitude-based *waveform* to a frequency-based *spectrograph* by clicking on the switch above the waveform display. Each view has its advantages and disadvantages for editing, so switch back and forth as needed, or just leave it on the setting you like best.

You can edit the start and end points of the impulse response by clicking and dragging on the flags that flank the waveform display.



11 Editing the Start and End Points of an Impulse Response

To the top left of the waveform display there is a double-arrow icon. Clicking on this will reverse the impulse response.

To the top right of the waveform display is a readout for the impulse response's tempo. When you load an IR, the plugin will try to calculate its tempo based on its length. However, this isn't always accurate, so you can edit the tempo here. Double-click to edit the bpm manually.



12 Editing the IR Source BPM While Viewing the Spectrum

Convolution Controls

Clicking on the CONV effect module will display additional controls for editing the impulse response.



13 The Convolution Controls

- **SIZE:** Sets the size (length) of the impulse response.
- **TEMPO SYNC:** Toggles tempo sync on or off. When active VAST will match the length of the impulse response to the host tempo.
- **PRE-DEL:** Sets the amount of delay before the convolution signal.
- **PITCH:** Transposes the impulse response, moving the resonant frequencies up or down.
- **RESONANCE:** Removes resonant peaks from the impulse response. These peaks are automatically detected when the impulse response is loaded.
- **LUSH:** Adds modulation and movement to the sound.
- **DIFFUSION:** Adds complex and dense early reflections that help to smear the impulse response.
- **FADE IN:** Applies a fade-in to the impulse response.
- **FADE OUT:** Applies a fade-out to the impulse response.
- **HIGH WIDTH:** Controls the width of the stereo image in the high frequencies.
- **LOW WIDTH:** Controls the width of the stereo image in the low frequencies.
- **GAIN:** Controls the output level of the convolution effect before the MIX parameter.
- **MIX:** Blends between the dry and the processed signal.

EQ

The EQ effect is a 5-band parametric equalizer. It can be used to control the tone and timbre of the sound to help it fit in the mix.



14 The EQ

The EQ is the only effect that changes the upper display area to a frequency plot which not only displays the input and output frequency spectrums, but also lets you control the EQ bands in a more intuitive click-and-drag manner.

To the top left of the EQ display is a menu. It contains options to *RESET* the EQ, or load automatic settings based on the loaded impulse response (*Get IR Resonances*).

Each band has the same four controls:

- **BAND ON/OFF:** Toggles the band on or off.
- **FREQ:** Sets the central frequency of the band.
- **Q:** Sets the Quality (Q) factor for the band. Higher values give a narrower bandwidth.
- **GAIN:** Sets how much the band should boost or cut the given frequency.

The high and low bands have an additional control:

- **MODE:** Clicking on the band shape will open a menu to select the mode of the band. Choose between a shelf or two different filter types.

Note that selecting a filter will disable the gain control for the band. Selecting the 6dB filter will also disable the Q control.

Finally, there is one master control:

- **AMOUNT:** Scales all of the EQ bands to easily reduce the overall intensity of the EQ effect.

Gate

Traditionally a gate is used to automatically mute a mixer channel when its level drops below a certain point. When used in conjunction with a reverb it becomes a lot more of a creative effect.



15 The Gate Controls

The main controls of the gate are as follows:

- **THRESHOLD:** Sets the point the input level must pass in order to open the gate.
- **RATIO:** Controls the ratio of the input level to output level. In other words: this sets the intensity of the gate.
- **ATTACK:** Sets the time it takes for the gate to react to the input signal increasing in level.
- **RELEASE:** Sets the time it takes for the gate to react to the input signal decreasing in level.

In the left part of the control layout are controls that affect how the gate's detection system works:

- **DETECTOR SOURCE:** Selects which signal the level detection part of the effect should listen to. This is also known as the *KEY* or *SIDECHAIN*. The *TEMPO* options will select an internal LFO as the source.

When set to one of the tempo options, you will see these controls:

- **RATE:** Sets the rate of the LFO.
- **WIDTH:** Sets the width of the LFO.

When set to one of the audio options, you will see these controls:

- **HP:** Sets the cutoff frequency of the high-pass filter on the detection signal (sidechain).
- **LP:** Sets the cutoff frequency of the low-pass filter on the detection signal (sidechain).

Compressor

A compressor is an automatic gain reduction effect. When a signal passes a threshold level, the compressor will turn down volume on the signal. Since compressors have a reaction time (set by the attack and release controls) they can also act more like an envelope or transient designer.



16 The Compressor Controls

The main controls of the compressor are as follows:

- **THRESHOLD:** Sets the point the input level must pass in order to activate the compression.
- **RATIO:** Ratio of the input level to output level. In other words: this sets the amount of compression.
- **ATTACK:** Sets the time it takes for the compressor to react to the input signal increasing in level.
- **RELEASE:** Sets the time it takes for the compressor to react to the input signal decreasing in level.
- **MAKEUP:** Since the compressor reduces the level of the signal, this control can be used to compensate and increase the level of the processed signal.
- **MIX:** Blends between the input signal and the processed signal.

In the left part of the control layout are controls that affect how the gate's detection system works:

- **DETECTOR SOURCE:** Selects which signal the level detection part of the effect should listen to. This is also known as the *KEY* or *SIDECHAIN*.
- **HP:** Sets the cutoff frequency of the high-pass filter on the detection signal.
- **LP:** Sets the cutoff frequency of the low-pass filter on the detection signal.

Delay

As the name suggests, a delay effect takes a signal and delays it. When the delayed signal is mixed with the original signal, it sounds like an echo. Adding feedback increases the number of decaying echoes.

The delay in VAST also contains a pitch-shifter for creating out-of-this world echoes that shimmer.



17 The Delay Controls

- **TIME:** Sets the time between each echo.
- **SYNC:** When active, the delay time will sync to the host tempo.
- **WIDTH:** Controls the difference between the delay time of the left and right channels. Can be used to add subtle spread or create ping-pong echoes.
- **MODE:** Choose between two delay styles: *ANALOGUE* or *DIGITAL*.
- **QUALITY:** Sets the delay audio quality (the exact behaviour will depend on the selected *MODE*).
- **FEEDBACK:** Sets the amount of effect output that is routed back into the effect input. Effectively this controls the number of repeating echoes.
- **PITCH:** Sets the transposition of the delayed signal.
- **>>FBK (PITCH FEEDBACK):** When active the pitch-shifter will come after the feedback, so each echo will change in pitch, rising or falling depending on the *PITCH* setting.
- **MOD RATE:** Controls the rate of the internal delay time modulation.
- **MOD AMOUNT:** Controls the intensity of the internal delay time modulation.
- **LOW CUT:** Controls the cutoff frequency of a high-pass filter, to remove low frequencies.
- **HIGH CUT:** Controls the cutoff frequency of a low-pass filter, to remove high frequencies.

Output

The Output module contains three simple effects that are applied at the very end of the signal chain (even after the main output level control).



18 The Output Controls

Reverb

An additional simple reverb is available to help smooth and blend things. These are especially useful after reverses or rhythmic settings.

- **TYPE:** Select the output reverb impulse response from this menu.
- **TONE:** Controls the brightness of the reverb.
- **MIX:** Controls the dry/wet mix of the reverb.

Tone

The tone effect is a simple EQ/Filter effect for controlling the high and low frequencies.

- **MODE:** Select the style of tone controls: *FILTER* or *SHELF*.
- **LOW:** When in *SHELF* mode, this controls the gain of the low shelf; when in *FILTER* mode, this controls the cutoff of the highpass filter.
- **HIGH:** When in *SHELF* mode, this controls the gain of the high shelf; when in *FILTER* mode, this controls the cutoff of the lowpass filter.

Clipping

The final effect is a clipping module which can be used to catch quick transients or fully saturate the final output.

- **CLIPPING MODE:** Select the style of clipping. The modes marked with HQ use oversampling to reduce aliasing and preserve high frequency content, however this means that they might exceed the threshold level.
- **THRESHOLD:** Defines the point at which the clipping will occur. Note that the HQ Clipping modes might exceed this level.

Appendix 1: Release Notes

Version 1.0.0

- Initial release version