TRANSIENT

A Transient-Aware Signal Shaper

USER MANUAL

KVR Developer Challenge 2012
Official Entry

Thank you for using **Transient** by **Sleepy-Time Records**! Please place the appropriate .DLL file in your VST Plugins folder and launch your DAW to get started!

Supported Platforms:

- Microsoft Windows 32-Bit or 64-Bit
- Digital Audio Workstation (DAW) or VST host with VST2 plugin support

Description:

Transient is a transient-driven signal shaper that allows you to adjust the attack and sustain portions of the peaks in your audio signal. It works by detecting rapid changes in the incoming signal regardless of its amplitude level.

For a more in-depth understanding of how **Transient** works, please see the section below entitled **GeekTalk: How It Works**

Main Controls:

Attack: This knob controls the volume of the initial attack ("smack") of a transient. This knob has a range of -100% to 100% as well as an '**x2**' button to double the volume adjustment. Turning the knob all the way to the left (-100%) will completely remove the attack of the transient leaving only the "tail" behind. Turning the knob fully to the right (100%) increases the attack portion by 6dB.

Sustain: This knob controls the volume of the sustain ("tail") of a transient. Similar to the **Attack** knob, this knob also has a range of -100% to 100% and an '**x2**' button. Also like the **Attack** knob, turning the **Sustain** knob all the way to the left (-100%) will completely remove the sustain of the transient leaving only the attack portion. The difference is that by turning the **Sustain** knob all the way to the right (100%), the transient's sustain will be increased by 12dB instead of 6dB.

x2: This button is available for both **Attack** and **Sustain** knobs. When engaged, positive **Attack** and/or **Sustain** levels will be doubled. For example: **Attack x2** = OFF, 100% = 6dB; **Attack x2** = ON, 100% = 12dB; **Sustain x2** = OFF, 100% = 12dB; **Sustain x2** = ON, 100% = 24dB

VCA/Envelope Timing: These settings control the timing for both the transient detector and the VCA envelope for the **Attack** and **Sustain** controls. The left setting controls the **Attack** timing. This tells the plugin how quickly it should adjust the **Attack** volume when a transient is detected. The right setting controls the **Sustain** timing and tells the plugin how quickly to adjust the volume during the transient's sustain.

Power: This is an internal bypass control. It will turn the plugin's processing on or off.

Link: This button will link the **Attack** and **Sustain** volume knobs. When this is enabled, turning one knob will automatically turn the other in the opposite direction. Essentially, this changes the operation of the controls into an Attack/Sustain balance control.

Advanced: This button allows access to more advanced controls explained in the next section.

Output: Transient can drastically increase the volume of your audio and cause clipping. This knob allows you to control the final output volume of the plugin. It has a range of -24dB to +12dB.

Advanced Controls:

Detection: Transient has the ability to accept an external sidechain input. On mono tracks, it will accept a mono input on channel 2. On stereo tracks, it will accept either a mono input on channel 3 or a stereo input on channels 3 and 4. Setting this switch to **EXT** tells the plugin to adjust the main signal based on the transients in the sidechain.

Operation: At the default setting of **LNK** (stereo link,) **Transient** will adjust both the left and right signals equally when a transient occurs in either channel. When switched to the **L/R** (left/right) position, the plugin will adjust the left and right volume independently.
NOTE: This option is only available when **Transient** is inserted on a stereo track.

Detection Filter: These two knobs, **HP** and **LP**, adjust which frequency range is both detected and affected by **Transient**. Examples usages could be exaggerating the higher-end of a kick drum or dynamically de-essing vocals.

ATK, SUS: These buttons will solo only the attack or sustain portion of the sound. This can be helpful when adjusting the **VCA/Envelope Timing** settings.

L, R: These buttons solo only the left or right channel.
NOTE: This option is only available when **Transient** is inserted on a stereo track.

Monitor: By default (**OUT**), **Transient** will output all changes that are being made to the main signal. When switched to Detector (**DET**), Transient will output exactly what the plugin is using to detect a transient in the signal. This is very useful when determining precise settings for your signal.
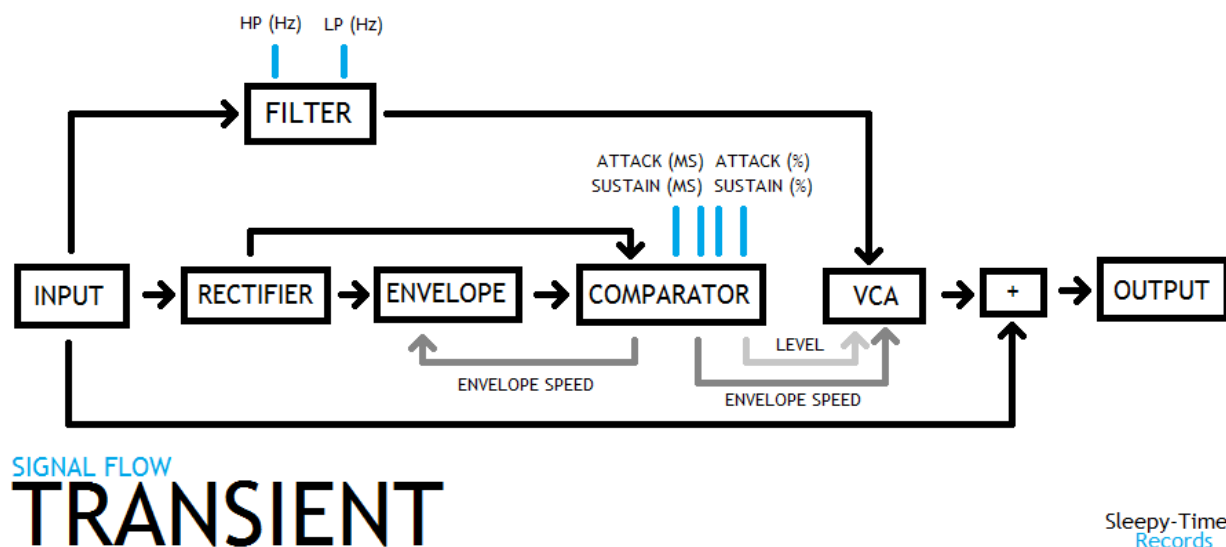
Transient Detection Range: These two controls (**Low**, **High)** determine which amplitude range **Transient** is using to detect transients in your signal. Typical usage examples include adjusting **Low** to prevent low noise and/or microphone bleed from being detected as transients, and adjusting **High** to prevent high volume transients from being detected.

GeekTalk: How It Works

Although **Transient** accomplishes similar goals to other transient/signal shapers, the way it works is quite different. Most "transient modifiers" tend to derive the values for the volume changes from the difference between a fast and slow envelope or from the ratio between the peak and average levels. **Transient** uses the signal's peak and a slower envelope, but instead of calculating the gain change there, it compares the two values to determine which portion of the transient is currently passing through the plugin. Instances where the peak is "louder" than the envelope are considered the "attack" section and instances where the peak is "quieter" than the envelope are considered the "sustain" section. The appropriate gain level and envelope speed is then chosen and sent to another envelope to smooth out the transition between the gain changes. The output of this envelope is used as a control voltage that is applied to a parallel signal of the main signal. These signals are then added together which creates the automatic volume adjustments.

Negative gain values invert the polarity of the parallel signal and adjust its volume while positive gain values will only adjust the volume of the parallel signal. By utilizing this phase-addition/cancellation method, things like transient-dependent "de-essing" and other frequency based effects can occur without the need to implement other EQ filters.

I have provided the following flow-chart to aid in the understanding of **Transient**'s internal workings:

Black	Signal passing through the plugin
Blue	User controls
Dark Grey	Envelope speed determined by the transient detector
Light Grey	Gain level determined by the transient detector

In Conclusion:

I hope you enjoy using **Transient**. This plugin marks my first entry into the KVR Developer Challenge and my first venture into the world of signal-dependent processing. I've learned a lot during the development of this plugin and I plan to continue learning. This plugin has triggered **many** great ideas for future software from **Sleepy-Time Records.**

Special Thanks:

I would like to thank Red Black Production and Lights Fade Low for their work in beta testing!
I would also like to thank KVR, olilarkin/WDL-OL, Cockos REAPER, and Steinberg Technologies.

Most importantly, I would like to thank you, the user, for taking the time to try out my software. If you have any questions, comments, suggestions, or anything else, you can contact me at www.sleepytimerecords.com via the "Ask Me Anything" button or find me on KVR, GearSlutz, and REAPER forums. My user name is d.bop

Thanks again! Enjoy the rest of your day :)

Sincerely,
-Dustin Ralston

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