



Virtual Buss Compressors 1.2



Slate Digital Virtual Buss Compressors
Version 1.2
Advanced Algorithms™ by Fabrice Gabriel

Fabrice Gabriel : Algorithm Design & Tuning

Steven Slate : Plugin Design & Tuning

Romain Moret : Project Management

Vincent Travaglini : DSP Development

François Best : Architecture & GUI Development

Niccolo Comin : GUI & Plugin Development

Anthony Taglianetti : QA Lead & Beta Management

Yannick Bonnefoy : GUI Design & Rendering

Ashley Smith : Beta Team Correspondence & Issue Reporting

Mathias Claveau : Quality Assurance

Slate Digital Thanks: The amazing designers who made these legendary compressors, Deborah Lintz, Howie Weinberg, Ross Hogarth, and our “fifth Beatle” Jay Baumgardner.

User Manual by Steven Slate, Fabrice Gabriel, Anthony Taglianetti & Ashley Smith

Introduction	5
System Requirements	7
<i>PC Requirements</i>	<i>7</i>
<i>Mac Requirements</i>	<i>7</i>
Installation	7
<i>Redeeming Your iLok License</i>	<i>7</i>
<i>Installing Virtual Buss Compressors</i>	<i>8</i>
Virtual Buss Compressors	9
<i>The Compressors</i>	<i>9</i>
<i>The Rack</i>	<i>11</i>
Compressor Parameters	13
<i>Threshold</i>	<i>13</i>
<i>Ratio</i>	<i>13</i>
<i>Attack</i>	<i>13</i>
<i>Release</i>	<i>13</i>
<i>High-Pass Filter (HPF)</i>	<i>13</i>
<i>Make-Up Gain</i>	<i>14</i>
<i>Mix</i>	<i>14</i>
<i>Meter Selector</i>	<i>14</i>
<i>Power</i>	<i>14</i>
Unique Parameters	15
<i>Auto-Release</i>	<i>15</i>
<i>Drive</i>	<i>15</i>
<i>Stereo / Mid-Side</i>	<i>15</i>

<i>Stereo Link</i>	16
Preset Bar	16
<i>Preset Options Panel</i>	16
<i>Navigating Presets</i>	16
<i>Snapshot Slots</i>	16
<i>Saving a Preset</i>	17
Key Commands	17
<i>Components</i>	17
<i>Rack</i>	17
3rd Party iLok License Transfer Fee	17
Contacting Support	18
<i>User System and Hardware Information Log</i>	18
Conclusion	19
<i>FG-Grey</i>	19
<i>FG-Red</i>	19
<i>FG-MU</i>	20

Introduction

By Steven Slate

The compressor has become one of the most crucial processors in modern recording. While the compressor in theory is a simple utility to modify and control dynamic range, it has proven to become much more than just that. Compressors are also used for the tone that their specific circuits impart on audio tracks. Some compressors are warm and fat, others are smooth and rich, and some are punchy and aggressive. Many audio engineers choose a compressor model based on how they desire their audio track to sound in the mix. For instance, a classic VCA compressor, with a slow attack and medium release, may be a good match for a snare drum due to its ability to add some punch. A tube optical compressor, with its photo cell gain reduction element, results in a typically smooth and airy tone, making it an ideal match for vocals and bass.

I own dozens of analog compressors and even manufacture a compressor and dynamic processor called THE DRAGON. I use compression in various amounts on almost all my tracks in a mix. Sometimes I really want to reduce the dynamic range a lot, like on vocals or bass. Other times I'm barely moving the gain reduction needle. But overall, I'm using the compressors to add more vibe, tone, presence, and punch to my mixes.

There are some very interesting things that happen in the circuit of an analog compressor that give each one of them their unique sound. First of all, there is the actual compression topology and the timing of the attack and release of the compression. Simply making a digital model that includes the replication of this topology and timing can make a decent representation of the compressor's sound. In the early 2000's, plug-in developers began to release compressor plug-ins that included modeling of classic compressor topology and timing. But many industry pros still claimed that analog compressors reigned superior in terms of sonic impact. And there was a simple reason.

Beyond the topology and timing, analog compressors will exhibit dynamic nonlinear levels of harmonic distortion, phase distortion, frequency alteration, and noise. And it is this unique blend of dynamic nonlinear anomalies that help give analog compressors their expressive and deep character. Some more modern compressor plug-ins do add bits of harmonic distortion to emulate the amplifiers and tube stages of analog compressors. But after some study, the Slate Digital development team lead by Fabrice Gabriel, noticed that there were still limitations in some of these plug-ins in the way that they replicated the nonlinear reactions that naturally occurred.

For instance, in one real analog compressor that we studied, the harmonic distortion at the point of attack was a different profile than that of the instance of release. Both of these profiles were different depending on the source file that was used. Overall, compression is an extremely complex set of nonlinear reactions, and replicating them authentically is the only way to get real analog tone out of a digital model.

At Slate Digital, we wanted to offer compressor plug-ins that truly responded with the same expressive analog character of real analog compressors. We started way back in the summer of 2010, with Fabrice Gabriel and Slate Technical Director Anthony Taglianetti doing hundreds of measurements on some of the most sought after vintage compressors in the industry. And now in 2013, we offer our first compressor bundle called the Virtual Buss Compressors.

The three compressors intended for stereo buss use will amaze your ears with their unique tone, versatility, musicality, and authenticity. As an audio engineer myself, I am ecstatic that I can now have plug-in compressors that exhibit the real tone and vibe that I've become accustomed to for years with my analog compressors. I hope you enjoy this wonderful processor on your mixes as much as I enjoy it on my own.

- Steven Slate

System Requirements

PC Requirements

- Windows 7 or later (32 and 64-bit)
- Dual-Core Intel or AMD Processor (Quad-Core Recommended), 4GB RAM
- Plugin Formats: VST2, VST3, AAX
- iLok 2

Mac Requirements

- Mac OS X 10.7 or later (32 and 64-bit)
- Dual-Core Intel Processor (Quad-Core Recommended), 4GB RAM
- Plugin Formats: AudioUnit, VST2, VST3, AAX
- iLok 2

Installation

Redeeming Your iLok License

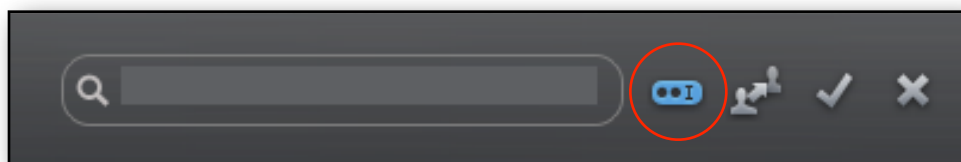
Before downloading the iLok license for Virtual Buss Compressors, you'll need to install the new iLok License Manager. You can find more information about the iLok License Manager [here](#).

You can download the latest installers here:

- iLok License Manager for Mac : [Mac OS X 10.7 and above \(Intel Only\)](#)
- iLok License Manager for Windows
 - [Windows 32-bit 7 and above](#)
 - [Windows 64-bit 7 and above](#)

In order to download your iLok license to your iLok 2 dongle, please visit the link that was given to you in your email receipt and enter the required info including the issued passcode. This will unlock your *iLok Activation Code*.

1. Launch the iLok License Manager and sign in to your iLok account.
2. Click this button in the upper right corner of the window:



3. Enter your Activation Code and click "Next"
4. Select your iLok 2 Dongle from the **Activation Location** dialog and click "Activate"
5. You'll receive a confirmation message when the license is moved to your iLok 2 Dongle.

Installing Virtual Buss Compressors

Mac

Double-Click on the INSTALLER icon and follow the onscreen prompts. You may choose to customize your installation by clicking the customize button to install those selected AAX, VST2, VST3 or AudioUnit plug-in formats listed.

Windows

Double-Click on the INSTALLER icon and follow the onscreen prompts. You may choose to customize your installation by selecting those AAX, VST2 or VST3 plug-in formats listed. Choose the desired plug-in directory paths (those default are usually noted best), and proceed.

Virtual Buss Compressors

Virtual Buss Compressors comprises three unique sounding, 100% analog modeled dynamic processors that are ideal for program material.

Every nuance of real analog compressors has been modeled; including the exact nonlinear characteristics of their transformers, tubes, VCAs, amplifiers, phase distortions, harmonic distortions, and timing.

The Compressors

All of the compressors in the VBC bundle have a variable hi-pass filter AND a mix knob that can be used to control the ratio/percentage of the compressed signal to the dry signal. Each compressor can be used in series, and the series rearranged by dragging and dropping (see information on **"The Rack"**). Compressing a mix with each one doing a very little amount can sound amazing! And, using the compressors in series within the 'Rack' also makes it very easy to A/B/C the compressors on source material. Finally, VBC will come with stock presets made by some of the industry's top mixers.

FG-Grey



The FG-GREY starts off with a very precise model of the classic British "4000 series console compressor". I've used the hardware model for many years but until studying the unit in the modeling process, I never fully appreciated just how magnificent the piece is. It has a way of being able to tighten, glue, and 'gel' the components of the mix in ways that can go from fairly transparent in auto release mode, to very aggressive in manual mode.

We did a small mod to the circuit in our virtual model which I think you'll really enjoy. We took the classic British discrete transformer and added some of the characteristics to the signal path. This does something very amazing to the clarity of the midrange and bottom end. The hardware unit tends to start sucking out too much bottom as you start to compress more. It can also get slightly 'choked' in the mids. These are subtle issues but the transformer stage keeps the bottom big and round and the midrange more open, while still retaining the classic sound of the hardware unit. You'll notice especially when you heavily compress with the FG-GREY, there is a bit less of a drop in the bottom and the rich mids will still be nice and present. I love the FG-GREY in both manual and auto mode, and it's amazing on drums and guitars too!

FG-RED



This compressor is based on the classic RED faced compressor that has been a favorite of mix legend Chris Lord Alge, who first showed it to me when I visited his studio years ago. I thought it was odd actually. Here was this compressor that nobody else seemed to really use, and it was on a setting at 1.5:1 and the attack looked very fast for a Mix-Buss compressor. This was puzzling because I usually associated a faster attack with a loss of transient punch, but if you've heard Chris's mixes you know that they are the exact opposite of that! So being the classic gearslut, I bought one, (I got the unit with both input and output transformers). The first thing I did was put it on my mix in the settings that Chris showed me... 1.5:1, attack around 10/11 o'clock, auto release, compressing just 2-3db tops. And.... WOW! One of the clearest, punchiest sounding rock mixes I'd ever heard come out of my own speakers. This unit was amazing!!!

When Fabrice and I analyzed the RED, we found out that it was indeed a very unique beast. The attack and autorelease work very uniquely and musically. But the real magic we found was in the output section! We found that just pushing the makeup gain a few db did some insane things to the sound! A little push and things got so much more punchy, fat, and aggressive. After more examination, we realized that this was due to a series of nonlinear reactions caused by the output transformer. Howie Weinberg, the famous mastering engineer who has a studio on our campus let us in on a little secret. He uses his RED not for compression, but just to use the output gain to get that amazing effect! So I decided to do something that the original unit cannot.. I put that output transformer effect on a knob called DRIVE. When you push this DRIVE knob, you get this beautiful punch and articulation of the transients, and you can control just how much you want, regardless of whether or not you use the makeup gain! Famous rock mixer Justin Neibank beta tested the FG-RED and loves the drive, suggesting '6.6' as the magic number. But you can try cranking it all the way for an interesting effect!

FG-MU



I've been lucky enough to hear some of the most classic tube based buss compressors such as the Fairchild 670 and Manley Vari Mu. There is some real magic that happens when your mix goes through a brilliantly designed piece of tube gear. The midrange thickens, the lows get tighter and rounder, and the top end opens up with a beautiful sparkle... and even better, those harsh upper mid overtones seems to get tamed. For the FG-MU, we put all of these wonderful qualities into the algorithm. First and foremost, to hear the FG-MU, you don't even have to do any compression. Just going through the processor without any gain reduction will inhibit a beautiful open sound due to the modeling of the tube circuit path. Even when I'm using the FG-GREY or FG-RED, I love using the VBC Rack just so I can have the audio pass through the FG-MU!

But on it's own, the FG-MU is an amazing sounding compressor. If you scan through the presets, you can get a great idea of what its capable of. Smooth rich compression, fat warm compression, and even slightly aggressive compression. But overall, this is a processor that has tons of analog mojo and vibe for days. A sure hit on your ITB mixes!

The Rack

While all three compressors are available as separate plug-ins in your DAW, you can also use them in our Virtual Buss Compressors Rack plug-in, in which they can be chained, reordered via drag and drop of the u-rack handles, and soloed independently.

The Non-Linear Difference

During the development of the VBC, I spoke to many top pros in the audio industry about mixbuss plug-in compressors. There seemed to be an overwhelming consensus that even though many of them were advertised as 'analog modeled', they still didn't have the classic sound of analog compressors.

So Fabrice and I got to work. First we needed to examine the hardware compressors and the current crop of analog modeled plug-in compressors to see what was going on! And what we found was surprising. The classic analog compressors that we studied added some very complex nonlinear artifacts in their signal paths. Their sound was not simply based on their specific compression topology like timing and compression curves. Some of the analog compressors had modulations, dynamic harmonic distortions, dynamic phase distortion, saturation, crosstalk, and more. And just like in our Virtual Console Collection plug-in, these artifacts added a sonic imprint to the compression. Was this the magic sound that made the plug-in compressors sound different than the analog compressors? There was only one way to find out. We had to precisely model it. All of it!

Several months later, we had algorithms that combined the exact compressor topologies, curves, timings, as well as the circuit's nonlinear dynamic artifacts. We were able to bypass JUST the artifacts, and the answer was very clear. Much of the magic tone that has been missing from many plug-in compressors is these nonlinear additives. When you hear the three VBC compressors, you'll notice a depth, life, and analog 'vibe' that you've likely not heard before in a plug-in compressor. I hope that you enjoy it on your mixes!

Using the Presets

The presets will give you a great starting point as to what the compressors are capable of. But the most important thing is to modify the threshold and gain reduction for your particular mix.

Overall, I ultimately suggest adjusting until you have about 2-4 db of gain reduction... however on some settings of the FG-GREY, I've set it for a lot of gain reduction and it can still sound great, even on a full mix.

- Steven Slate

Compressor Parameters

Threshold



The Threshold parameter (scaled in dB) sets the point at which compression will start to occur after an audio signals amplitude exceeds this set level.

Ratio



The Ratio parameter sets the amount of gain reduction. For example, if the ratio is set 2:1: this means for input level 2dB over the threshold, 1dB will be output.

Attack



The Attack parameter controls the onset point of gain reduction - The speed at which compression occurs after the signal has exceeded the threshold value.

Release



The Release parameter controls the offset point of compression - The speed at which the compressor stops compressing the signal, once it has fallen below the threshold value.

High-Pass Filter (HPF)



The High-Pass Filter (HPF) sets the frequency value at which to prevent prevent low frequencies triggering compression.

Make-Up Gain



The Make-Up Gain parameter allows for adjusting the output level; to compensate for level reduction caused by compression.

Mix



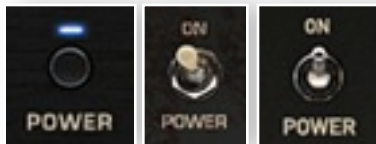
The Mix knob is a Dry/ Wet control. With Mix at 0%, you are hearing the uncompressed signal. At 100% you are hearing the compressed signal only. Intermediary positions will allow you to blend the level of compression.

Meter Selector



This allows you to switch between three meter displays: Input Level, Output Level, and Gain Reduction.

Power



This bypasses signal processing. This is a hard bypass that utilizes your hosts insert bypass.

In the VBC Rack Plugin, **Ctrl+Clicking** the *Power* switch will solo the effect of the selected compressor. The selected compressor will be bordered in yellow to indicate the soloed state.

Unique Parameters

Auto-Release

The Auto-Release parameter on the FG-RED and FG-Grey is program dependent and sets the release time automatically.

Drive



The Drive parameter is the modeled output transformer stage of the Focusrite RED as a separate control, meaning you can have no compression and still impart the subtle characteristic low-level, frequency dependent distortion of the box post make-up gain...

It affects the signal if the knob is more than "0" regardless of compression, it is the transformer nonlinearity from the RED OUTPUT. But, rather than make it dependent on output, it's been made separate on the actual FG-RED. On the original unit, in order to get the effect you HAD to increase makeup gain, but with the "FG-RED" you don't.

Stereo / Mid-Side



The FG-MU employs two processing methods for compression, Stereo & Mid/ Side.

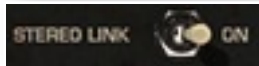
Stereo processing occurs conventionally to the sum of the left and right channels. Compression may be adjusted independently on both channels (top = left, bottom = right) or together using the **Stereo Link** mode.

Mid / Side: Also know as m/s, sum and difference, or on the original Fairchild 670 unit "Lat/ Vert"...

Mid (the top section of FG-MU in this mode) = a mono sum of both left and right channels (L plus R).

Side (the bottom section) = the difference (L minus R).

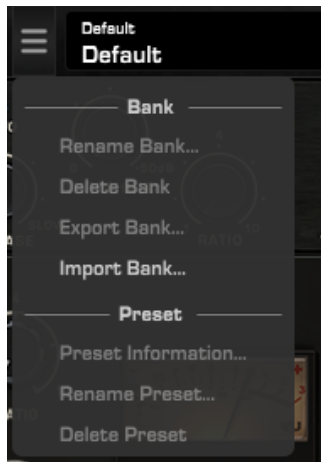
Stereo Link



The FG-MU employs a stereo link feature which links all controls, so for example to set the same amount of gain reduction for both left/right channels¹.

Preset Bar

Preset Options Panel



Selecting the preset options panel will show a list of options for the currently loaded Bank and Preset: -

- Bank <name>
 - Rename bank
 - Delete bank
 - Export bank
 - Import bank
-
- Preset <name>
 - Preset information
 - Rename preset
 - Delete preset

Navigating Presets

You may navigate presets within a bank using the up/down arrows directly to the right of the Bank/Preset selection area.

Snapshot Slots



The Rack, and all single components have two snapshot slots 'A' and 'B', in which each can have different preset settings. Settings may be swapped between each A to B, B to A by clicking the arrow button. The corresponding letter will flash orange to indicate transfer.

¹ When Stereo Link is engaged, each control still has its own automation lane. The Stereo Link only links control changes that are coming from the VBC GUI. The automation is managed by the host, and the plugin can't override it without any undefined side-effects.

Saving a Preset

Save

Clicking 'Save' will overwrite the current preset state.

Save As

Clicking 'Save As' will open a dialog box, where you may opt to save the current state as a preset, overwriting it (same as Save), or save a preset with a new bank/preset name. To save with a new bank/preset name, simply enter details in the respective fields and click ok.

Bank Import/Export

Under the 'Preset Options Panel' you will see options for importing and exporting banks. Clicking the export option will bring up a dialog window for you to name and save the bank. Banks are saved with the extension *.ebf

Key Commands

Reset Parameters to Default

- Mac: Double-Click or Opt + Click
- Win: Double-Click or Alt + Click

Fine Adjustments

- Mac: Right-Click + Drag or Cmd + Drag
- Win: Right-Click + Drag or Ctrl + Drag

Enable Automation Dialog (Pro Tools and VST3 DAWs* only)

- Mac: Ctrl + Opt + Cmd + Click
- Win: Ctrl + Win + Alt + Click

Component Solo (Rack only)

Ctrl+Click on a components *Power* button will solo the effect of the selected compressor. The selected compressor will be bordered in yellow to indicate the soloed state.

3rd Party iLok License Transfer Fee

When reselling any Slate software product, there will be a \$10 License Transfer Fee in order for us to process the new customer into our user database. It is the responsibility of the seller to inform the buyer of this fee at the time of sale.

* Most of VST3 DAWs support this feature. This dialog often also allows the control assignment.

Contacting Support

All technical support inquiries must be logged through our help desk for attention.

Please login to your help desk account at [Slate Digital Support](#). Click "Ask A Question..." and choose the respective category relevant to your product/query. And, be sure to include the information log within the ticket comments or as an attachment...

User System and Hardware Information Log

- Open the About panel.
- Right click on the version number to open a menu "Copy plug-in info to clipboard", click it.
- Open a text editor, an e-mail or a support ticket, and paste.

Example of information displayed:

Plugin & Host Information: -----

Version: <version number> - 64 bit
Build: <build number> <date> <time>
Format: <VST2, VST3, AudioUnit, AAX>
Host: <DAW name>

OS Information: -----

Name: <operating system name and version>
64 bit: yes

Hardware Information: -----

CPU: Unknown
Num cores (per cpu): 4
Num cores (total): 16
Speed: 2400 MHz
Max Cache: 12582912 bytes
CPU Flags: <mmx, sse, sse2, sse3, ssse3, sse4.1, sse4.2, etc...>
RAM (MB): 8192
Page size: 4096

Language Information: -----

User Lang: <FR, ENG, GER, etc...>
Region: <FR, ENG, GER, etc...>
Display Lang: <FR, ENG, GER, etc...>

Conclusion

By Fabrice Gabriel

With the Virtual Buss Compressors, we wanted to create something unique, powerful and easy to use. But more importantly, we wanted to be creative and to bring something new to mix buss compression.

The algorithm design had several challenges; we wanted to be faithful to the original hardware that inspired us, however, we also wanted to add something unique to these already great-sounding units. After studying many hardware compressors, we realized that we could not cover all the flavors and styles of compression with only one unit.

FG-Grey

At first, we thought of this unit as a very faithful recreation of the well known, British mix buss compressor. We realized that despite the simple electronics, its behavior is quite complex, especially in the auto release mode.

One of the main concerns about this unit is its tendency to reduce punch in bass frequencies, especially when the gain reduction is pumping. So I thought of a circuit design to compensate for this behavior that would allow mixing engineers to have the same pumping behavior without having to balance the bass differently for each setting. This resulted in an elegant algorithm design in which we we spent a lot of time tweaking with Steven.

Then, we wanted not only to keep the analog behavior of the original, but also to design the transient response so it would remain more articulate and alive in any situation, even with really heavy compression. Finally, we thought that including our precise model of the classic British transformer design would be a great addition!

FG-Red

The FG-Red has been a very exciting compressor to work on, maybe the most exciting for me because of its characteristic personality. The algorithm design could be seen as the simplest and the most complex at the same time, because at the end it has the least complex structure of the three compressors but it was the hardest to tweak.

The release behavior and the saturation behavior are very specific to this unit. Many mixing and mastering engineers have been using the original to obtain a very specific coloration of the sound, which has been referred to as “bigger, wider, tighter, and punchier.”

The saturation algorithm has been designed to reproduce this characteristic, as the timing has been carefully designed and tweaked to obtain that beautiful “alive” transient behavior. With this compressor, it’s pretty amazing to hear what it does on auto release even with a little amount of gain reduction, once again, due to its unique timing behavior. The fast, punchy, and breathing transient response is pretty surprising if you’ve never heard the actual hardware

compressor and I can understand why it is used by one of rock's biggest mixers. Once you tried it, you can never go back !

FG-MU

The FG-MU is the most colorful and complex compressor of the Virtual Buss Compressors collection. The the saturation and timing behavior as well as the gain reduction structure have been custom designed and inspired from several vintage compressors.

This allowed unprecedented creativity, all thought in the respect of a vintage flavor, solid bass, warm mids and glossy highs.

The complexity of the design and the richness of the sound is obtained with a very simple set of controls. Here, there is no ratio setting and the compression amount can be adjusted with the Threshold, but also by adjusting the input level. The saturation behavior will interact with the Input Gain, the Gain Reduction and the Output Gain, so it's a great tool to shape the sound using those three parameters in concert.

The timing behavior is very different from the FG-Grey and FG-MU, as the dynamic response of harmonics and saturation is carefully designed and tweaked to obtain the richest transient response and true analog vibe. If you want color, warmth, a very dynamic and interactive response, the FG-MU is for you!

We decided that offering three units in one plug-in, each with a very different response and character, was the best way to offer everything that a mixing or mastering engineer would dream about. However, we wanted to make sure that the entire plug-in was straightforward and easy to use, with just the amount of control needed to use them efficiently in the mix stage.

Steven and I worked very closely as we have in the past to combine our passion and experience, to bring you the best of both worlds: the authentic analog sound mixed with a limitless digital creativity.

- Fabrice Gabriel