BRIDGE SDK

User Manual

for Bridge SDK 2.0
Note: this documentation is not valid for previous (1.X.X) versions of Bridge.

Last update: **Sept 4th 2018**

Contact: supportsdk@logitech.com

1.Introduction

The BRIDGE SDK is a Development Kit aiming at helping app makers and SW developers to solve the issues arising when a user needs to type in Virtual Reality.
However, be aware that it is not a consumer-ready product yet and should therefore consider it as a Beta version: it is in fact an experiment and might not be commercialized in its current form, but learnings will be used to fine tune the user experience for the final product.

2.Motivation

Our motivation comes from the research-backed understanding that in certain situations the user still needs a keyboard to interact with applications, particularly in productivity-driven or desktop scenarios, but also in games, social applications and content browsing.

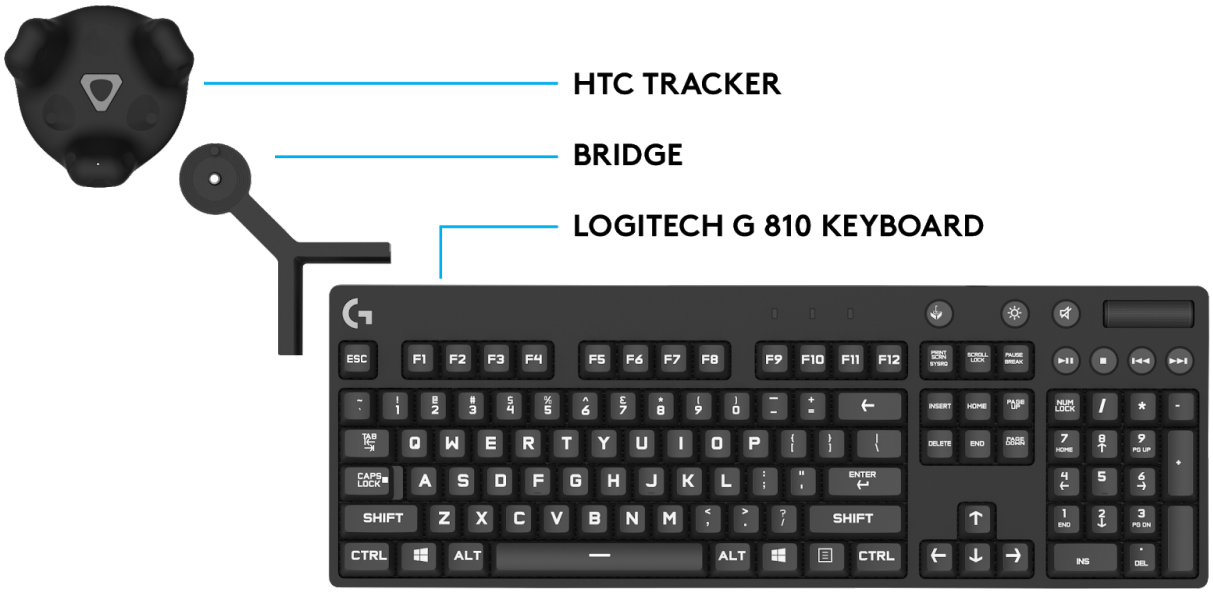
We believe that a physical keyboard should be present, as it delivers essential tactile feedback and the universal typing experience that people value.

3.Components:

The BRIDGE SDK requires the following elements:

- Hardware
  - A HTC VIVE Tracker.
  - A Logitech G BRIDGE.
  - A Logitech G810 Keyboard (off-the-shelf, US English layout).

- Software
  - BRIDGE SDK
    - The SW installer sets up the BRIDGE software on the user's system.
    - Includes a SW UI that allows to associate a specific VIVE Tracker to the keyboard.
    - Overlays a 3D VR keyboard that appears on top of the VR environment in any app.
    - A representation of user’s hands overlaid on that VR keyboard (capture from the VIVE HMD Passthrough camera).
    - SDK to allow any app to control some elements of the VR keyboard overlay.



4.Setup instructions:

4.1. Attaching the VIVE Tracker to the Keyboard

1. Ensure that the BRIDGE *Locator Pin (1, labelled below)* is aligned with the VIVE Tracker locator hole when placing the Tracker on BRIDGE.
2. Secure the VIVE Tracker to BRIDGE by tightening the BRIDGE *Mounting Screw (2, labelled below)*.
3. Attach the assembled BRIDGE & VIVE Tracker to the top left corner of the Logitech G810 keyboard. First align BRIDGE to the left side of the keyboard, and then position the other leg on the top of the keyboard and push both sides to make sure is it well secured.

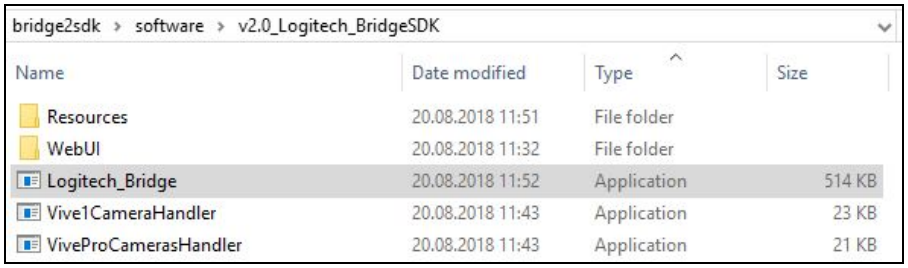
4.2. Install the BRIDGE SW package

Head to our private GitHub repository: https://github.com/Logitech/logi_bridge_sdk, and clone or download the full content. Follow the README.md instructions.

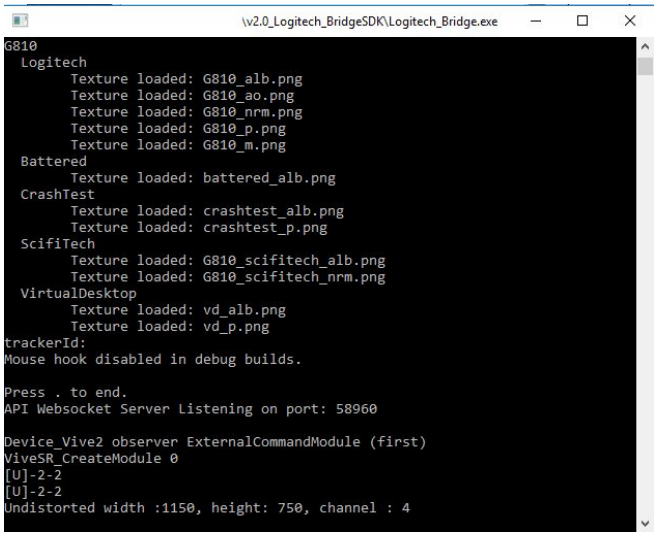
- Clone/Download the full repo package.
- Extract it to a folder of your choice.
- Once extracted, look in the *software* folder for the *vX.X.X_Logitech_BridgeSDK* folder and look for the **Logitech_Bridge.exe**.
- Once started the core SW functionality will run as a service

4.3. Running Bridge SW

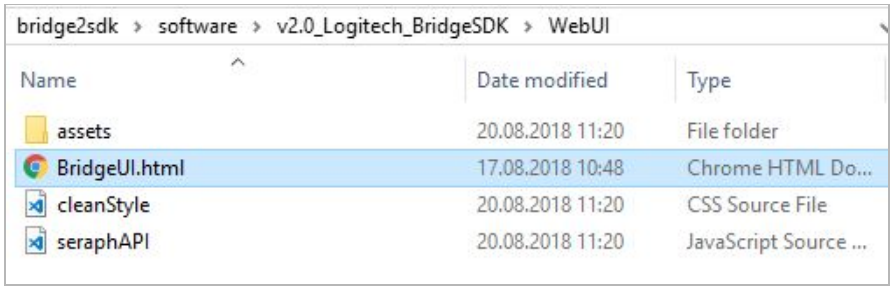
- Head to the unzipped/cloned folder



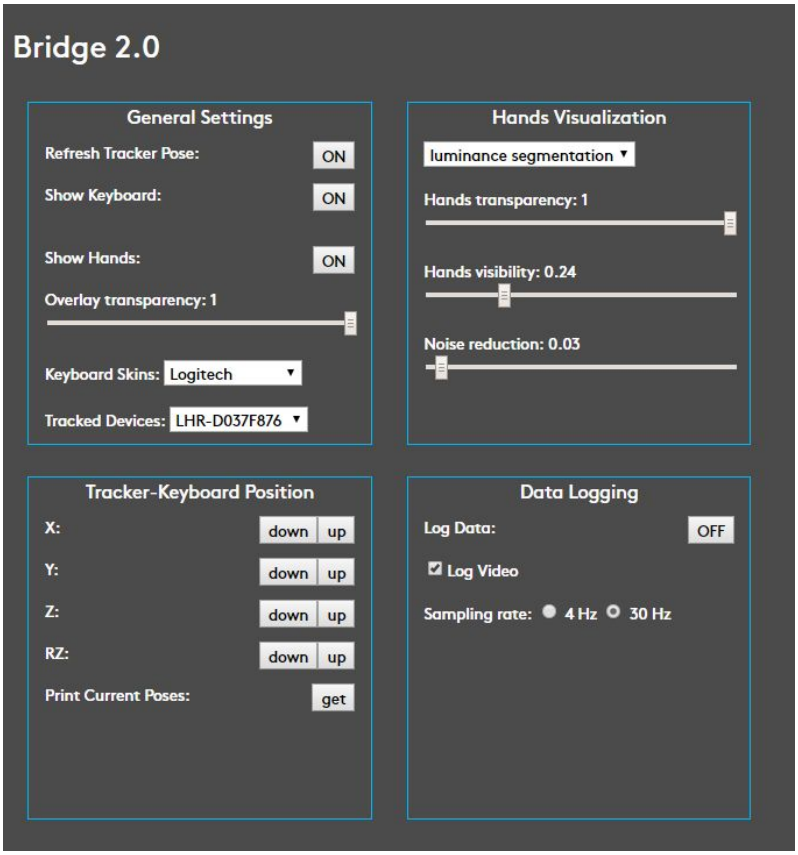
- Double click on **Logitech_Bridge.exe** to launch it
- A **console window** will appear with some debug information, you should leave it there.



- we have provided a simplified UI in the form of a **Web UI** (can be loaded using a browser)
- Head to the folder containing the **Logitech_Bridge.exe** you just launched , enter the **WebUI** folder, and double click on **BridgeUI.html**



- The Web UI should look similarly to this:



- Here you have different panel containing different settings. The main one **GENERAL SETTINGS** will allow you to switch the keyboard and hands visualisation ON/OFF as well as choose the KEYBOARD SKIN.

- The HANDS VISUALISATION will allow the user to configure and setup the hands layer settings such as transparency and visibility and also some noise reduction filtering.

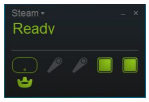
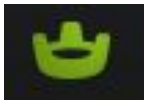
- In order to have an idea on how to tweak the settings, here are some recommendations:

settings	*result*
	**Most visible hands:** ● no transparency ● showing a lot more of the hands (no filtering). ● no noise reduction These settings will certainly allow your to see your hands, but probably too much of the background as well. 
	**Good settings** ● Some hands transparency (nice!) ● Good background removed ● Removed some “stains/blobs” on the keyboard background  The actual values of the sliders will depend on your specific environment.
	**Too much !** If your use too much Noise reduction you’ll erode too much and end up losing your hands 

- The other panels contain experimental/debug features, you can try to play with them if you know what they do !
- To **close the SW** you can simply close the console window or close SteamVR

4.4. Quick start steps

To make sure that you have the best possible experience, please follow these steps in order to make sure it runs smoothly:

• **CLOSE any previous instance of the Bridge SW (If any)**	
then	
1. Make sure **SteamVR is** running.	
2. Verify your **HTC tracker is paired in Steam VR** *(SteamVR -> Devices -> Pair Controller).* If not, follow steps in Section 4.4, below.	
3. Verify also that the **HTC tracker turned ON** and the led is steady **GREEN**	
4. Check that the **VIVE HMD CAMERA** is enabled and functional *(SteamVR -> Settings -> Camera -> Test Camera Rate,* and follow any instructions from here to ensure it's running*).*	
5. Your **HMD is tracking** correctly (led is **GREEN** and there are no errors reported on the SteamVR window)	
then	
1. Run the Bridge SW by double clicking on the **Logitech_Bridge.exe** in the unzipped folder.	Logitech_Bridge.exe

2. Associate the correct tracker with your keyboard by shaking it briefly (see instructions here).	
3. Optionally use the Web UI to fine tune parameters, if needed, such as the visibility of your hands, the color, the type of segmentation.	
then	
• Launch any VR app and you can start using the keyboard.	

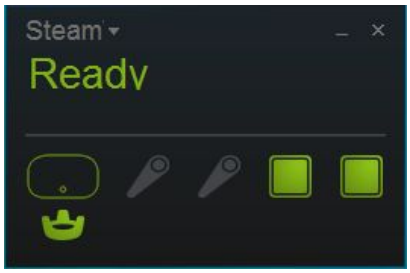
4.5. Pairing a tracker

A) in Steam VR

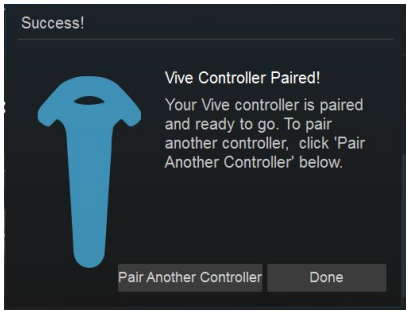
- First, pair the VIVE Tracker as per HTC instructions (http://community.viveport.com/t5/Developer-SDKs-and-Downloads/Vive-Tracker-general-FAQs/ba-p/5465).

- Switch on the VIVE Tracker in PAIRING MODE, indicated by the Tracker LED blinking blue, by long pressing the center button.

- Use the SteamVR drop down menu > DEVICES > PAIR CONTROLLER to pair a new device. Follow the steps there and, when successful, the Vive Tracker light should turn green, and the Tracker icon should appear as below in SteamVR. Be aware that sometimes the UI references Controllers rather than Trackers.



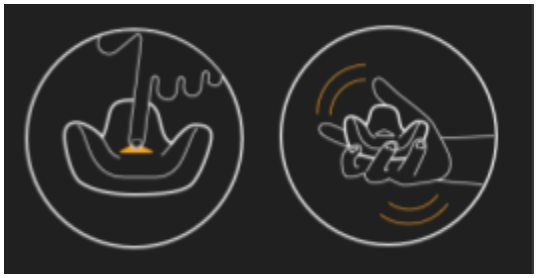
Use the SteamVR menu. Go to DEVICES > PAIR CONTROLLER



After successful pairing, the tracker LED should turn green and you should get this confirmation screen.

B) associate it in Logitech BRIDGE SW

- Launch the Logitech BRIDGE Software by launching **Logitech_Bridge.exe** from the installed folder.
- Make sure the tracker is turned ON



- **Shake the selected tracker** shortly (5 seconds)
- In the HMD, you should see the keyboard model being tracked, as you move the tracker attached to the keyboard.
- Alternatively you can also use the Web UI to select the tracker: GENERAL SETTINGS panel -> TRACKED DEVICES.

To pair it with a new tracker:

1. Simple: just delete the settings.dat file at the root of the Bridge folder and restart the **Logitech_Bridge.exe**
2. Shake the new tracker.

5.Functionality:

5.1. Requirements:

BRIDGE OVERLAY SW package requirements:

- Steam and SteamVR installed
- An **HTC Vive** or **Vive PRO**
- one HTC Tracker
- Windows x64
- Keyboard layout in the Operating System set to US English (for best experience)
- Compatible with all apps that are developed based on SteamVR (©Valve)
- For some enhanced functionality we suggest installing the **Logitech Gaming Software** (see below).

5.2. Keyboard Model Overlay

It is the SW piece used by BRIDGE SDK to present the user with an overlaid representation of their keyboard in any SteamVR-based application: it acts as an additional virtual screen that is placed in front of the user's HMD view.

The system uses the paired VIVE Tracker pose to render a 3D representation of a Logitech G810 keyboard - with animations when the keys are pressed.

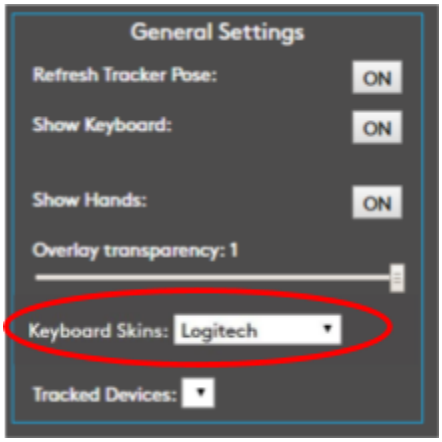
Fig: Skin example where fonts are bigger (more readable)

How does that work ?

The developer's application does not need to manage anything as the overlay appears automatically as soon as the associated Tracker (see pairing chapter) is turned on. Starting from version 1.0.0 the developer's application is able to interface (see API chapter below) with the BRIDGE SW to control the keyboard's appearance, skins, layout and other elements.

Skins

In order to show what an augmented keyboard in VR could be we have provided a couple of different “skins” for how the keyboard model looks like in VR. you can change them by using the WEB UI by using the general settings panel:



Generic G810 skin (Logitech) / Identifier: “Logitech”

This one is representing the original G810 Keyboard, with slightly different and larger font in order to optimize readability.

Rusty Blue Battered / Identifier: “Battered”

This one is showing how a fully colored and textured can look like in VR.

SciFi “gaming” Tech / Identifier: “SciFiTech”

This one has a particular highlight on WASD keys as well as letter keys that are greyer than the rest. It could be used as a “gaming” skin.

Virtual Desktop / Identifier: “VirtualDesktop”

This one has been created to match virtual desktop SW and suggest some of the available shorcuts that the SW allows (mostly F keys).

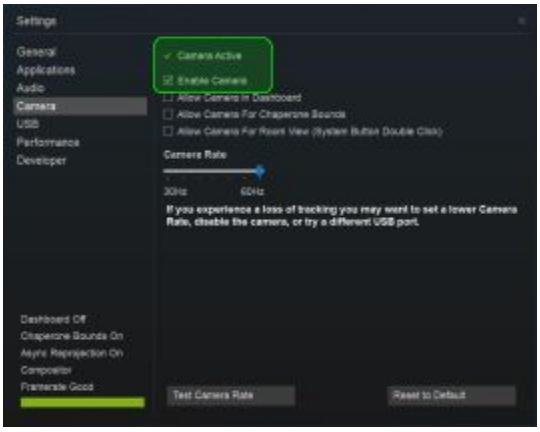
Crash Test / Identifier: “CrashTest”

This is another example to show what a lighter-colored skin (with black letters) can be. See how differently colored key groups are used to differentiate different functionalities on the keyboard.

6. Troubleshoot

SteamVR camera settings

- Before starting, ensure that the Vive's HMD "Chaperone" camera is enabled.
- SteamVR app->Settings->Camera->Enable Camera

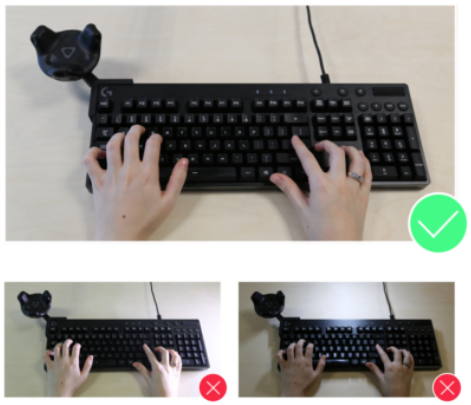


SteamVR Settings panel, Camera settings.

- You can click on Test Camera Rate to check if it works correctly
- For better performance, setup the camera rate to **60Hz.**
    - to **avoid possible USB issues** use 30-45Hz instead.
- If you encounter any issues with that, you can try to unplug-replug your HMD, as well as close and restart SteamVR, this usually gets the camera working.

Hands visibility

- In your environment, make sure you have **decent and uniform lighting conditions** on your desk (ie avoid reflections and direct hard surn light on your keyboard).

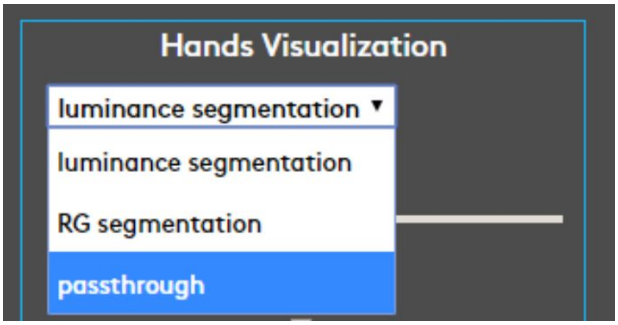


Hands alignment

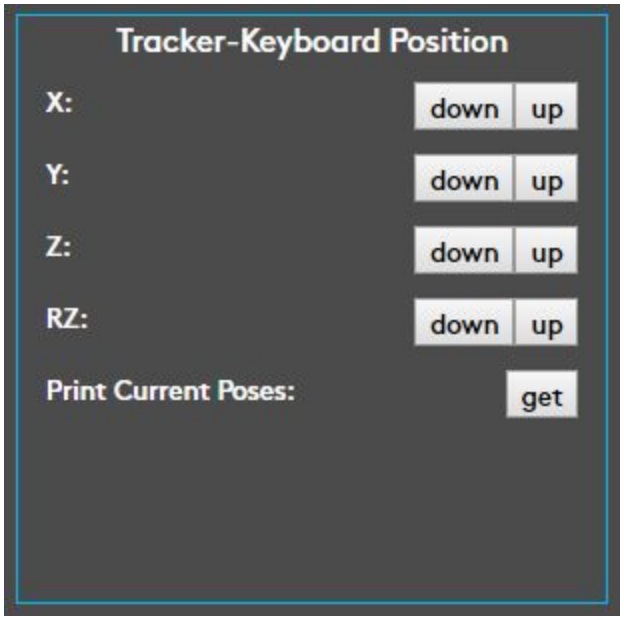
- It might happen that the bridge adapter is not perfectly placed, due to the mechanical tolerances or due to the adapter possible bending/deformation, as well as the rotation of the tracker might be slightly offset from the normal position.

- In order to fix that, and have perfect alignment between the keyboard model and your hands visualisation, you can follow those steps:

    - Switch to passthrough HANDS VISUALISATION mode



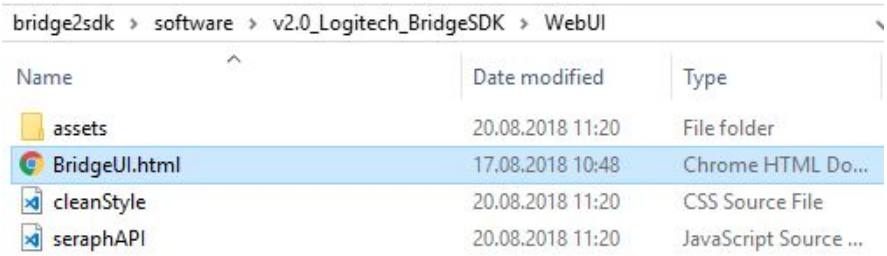
    - Then use the TRACKER-KEYBOARD POSITION panel to correct the alignment, making sure to have the real keyboard match the virtual outline with the controls below:



7. API

We have vastly simplified the available API in this 2.0 version. Since there was not much need by developers for specific APIs, we have nonetheless left some available via the WebUI.

- So you can have a look at the **BridgeUI.html** file on how those are used/called.
- You can then write your own Websocket calls from within your application.



- Have a look at the details of the API description in the wiki: https://github.com/Logitech/logi_bridge_sdk/wiki/API

8. Feedback & Bug report procedure:

DISCLAIMER: Please be aware this is a BETA version of this SDK and it is mainly meant as a POC and to spark discussions and feedback from your side. You can expect seeing bugs and robustness issues, but we are working to fix them continuously, so please make sure you have the latest release available on our GitHub repository (https://github.com/Logitech/logi_bridge_sdk).

We really hope this will be an ongoing discussion between Logitech and you, and for that to happen we will organise some sessions and meetings to get face to face (or CC based) discussions, whenever possible.

We value a lot your input on:

- possible bugs
- Shortcomings
- Issues
- imcompatilities

As well as:

- enhancements ideas
- possible new features

More importantly :

- What you think of the idea
- Is it useful
- Does it fit your app scenarii

We also strongly suggest to use our private GitHub repository for bug reports and features requests. Follow this link https://github.com/Logitech/logi_bridge_sdk/issues and post it there. This will help us better track your feedback and follow up.

If you have any other generic questions or comments, please feel free to contact us on supportsdk@logitech.com.