Quest Pro VRCFT Setup

WARNING: THIS SOFTWARE IS CHANGING VERY FAST AND IS UNDER DEVELOPMENT UNDERSTAND THERE IS BUGS AND IS NOT RELEASE READY

Basic Setup Notes for Quest Pro

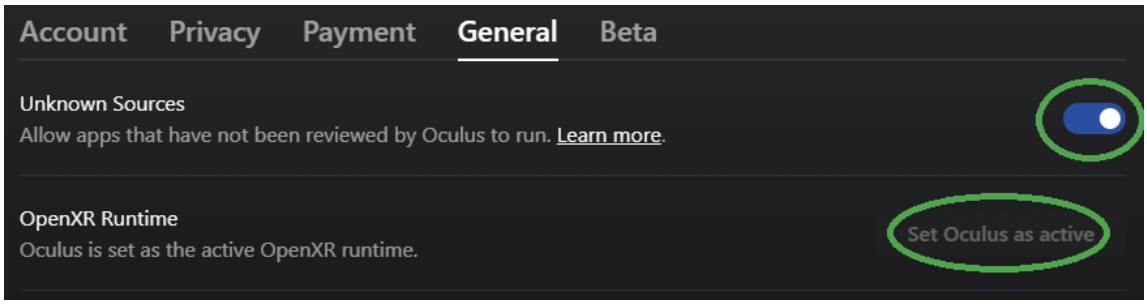
Have basics setups figured out before proceeding on the VRCFT setup

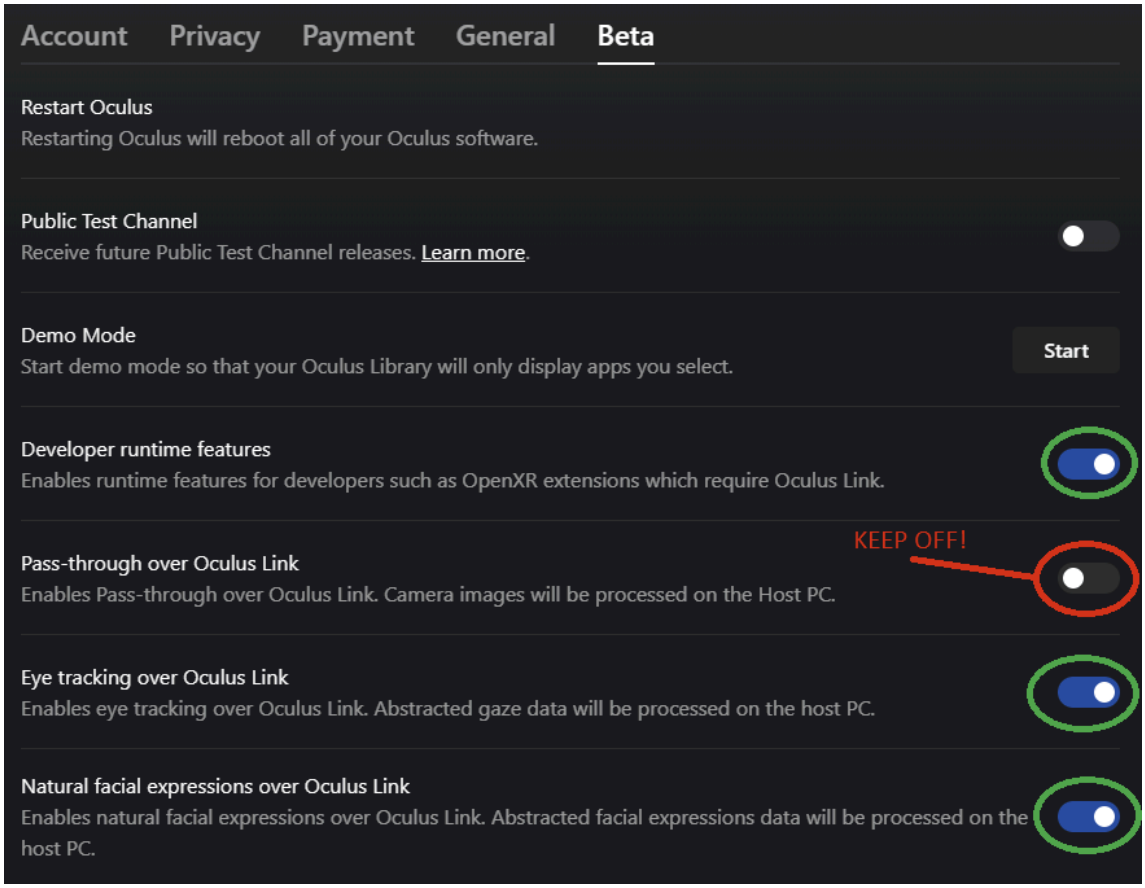
- ➢ Ability to connect the headset to the computer VIA USB i.e. Link Cable or USB-C connection
- ➢ Oculus Link
  - AirLink
  - USB-C Cable (Most Stable with ALVR)
- ➢ VirtualDesktop
  - Windows App
  - Quest Pro
  - Disable Nvidia overlay
- ➢ Launch SteamVR
  - Make sure SteamVR is running properly
- ➢ Create boundaries
- ➢ Calibrate fitment of headset
- ➢ Calibrate eye tracking

VRCFT with (Air)Link

Setup

1. Ensure your account is an Oculus Developer account
2. Open the Oculus application on the PC and navigate to Settings then General. Turn on Unknown Sources. Ensure the current OpenXR Runtime is set to Oculus
3. Navigate to the Settings then Beta. Turn on Developer Runtime Features, then turn on Eye tracking over Oculus Link, and Natural Facial Expression over Oculus Link.
   a. Please leave/turn off “Pass-through over Oculus Link”





4. Download and unzip alxr-client-win-x64.zip https://github.com/korejan/ALXR-experimental/releases
5. Right click on the alxr-client and create a shortcut. Feel free to move the shortcut to wherever is most convenient
6. Right click on the alxr-client shortcut and click properties. Under Target: append the flags `--no-alvr-server --no-bindings` to the end. Ensure there is a space between alxr-client.exe and the appended flags. Click ok
    a. If ALXR exits with error messages about Vulkan please try using a different graphics backend, you can add either `-gD3D12` OR `-gD3D11`
7. Download the latest VRCFT build and the questProSensitivity.ini (Optional) file: https://github.com/Adjerry91/VRCFaceTracking/releases/latest
8. Ensure questProSensitivity.ini is in the same location as VRCFT
9. Create a .txt file, at VRCFT's launch location, named `questProIP` and input `127.0.0.1` as the only text in the file and save the file

Launching

For the launch procedure, there are 3 options, depending on the setup. Launch Order Matters.

- Quest Pro Controllers

1. Launch (Air)Link on the Quest Pro
2. Launch the alxr-client shortcut on the PC
3. Launch VRCFT (though this can be done at any point after alxr-client is successfully running)
4. Launch SteamVR from the PC

- Index Controllers
    1. Ensure the Index controllers are off
    2. Launch (Air)Link on the Quest Pro
    3. Launch the alxr-client shortcut on the PC
    4. Launch VRCFT (though this can be done at any point after alxr-client is successfully running)
    5. Turn off the Quest Pro controllers
    6. Turn on the Index controllers, which will also cause SteamVR to boot
    7. Calibrate, using OVR Space Calibrator, with a tracker or an Index controller and the Quest Pro HMD

- Index Controllers Alternate
    1. Ensure the Index controllers are off
    2. Launch (Air)Link on the Quest Pro
    3. Launch the alxr-client shortcut on the PC
    4. Launch VRCFT (though this can be done at any point after alxr-client is successfully running)
    5. Launch SteamVR from the PC
    6. Calibrate, using OVR Space Calibrator, with a tracker and a Quest Pro controller or the Quest Pro HMD
    7. Turn off the Quest Pro controllers
    8. Turn on the Index controllers (if utilizing an application that binds to specific controllers, such as OVR Toolkit, a relaunch of that app will be needed for it to recognize the Index controllers as the primary controllers)

VRCFT with ALVR Server

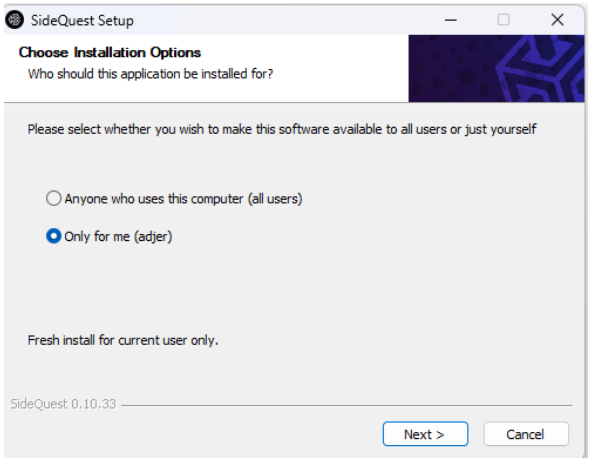
(This only currently support v18.2.3 ALVR)

Install Side Quest (Advance Installer)

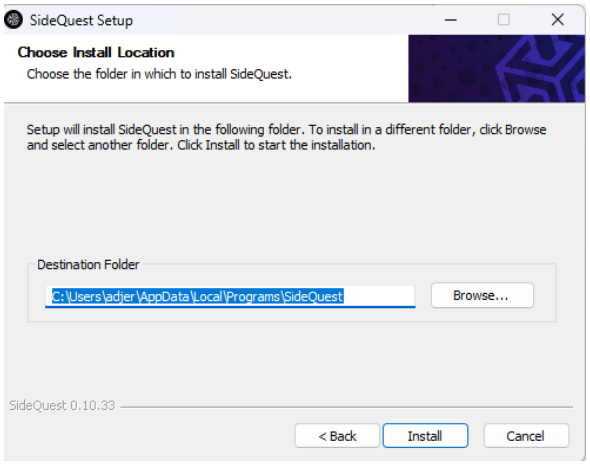
Side quest is needed to install APK (Android version of Windows EXE) onto the headset.

1. Download Advance Installed on SideQuestVR.com https://sidequestvr.com/setup-howto

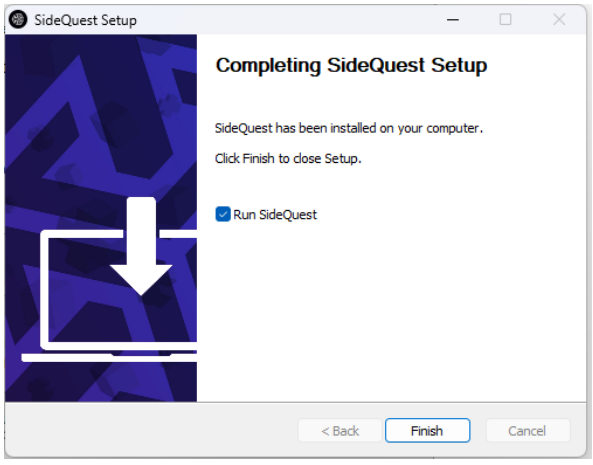
2. Install Side Quest on Computer



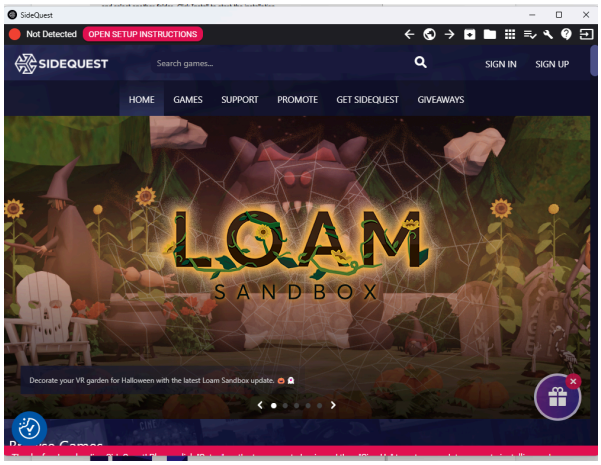
3. Select install folder



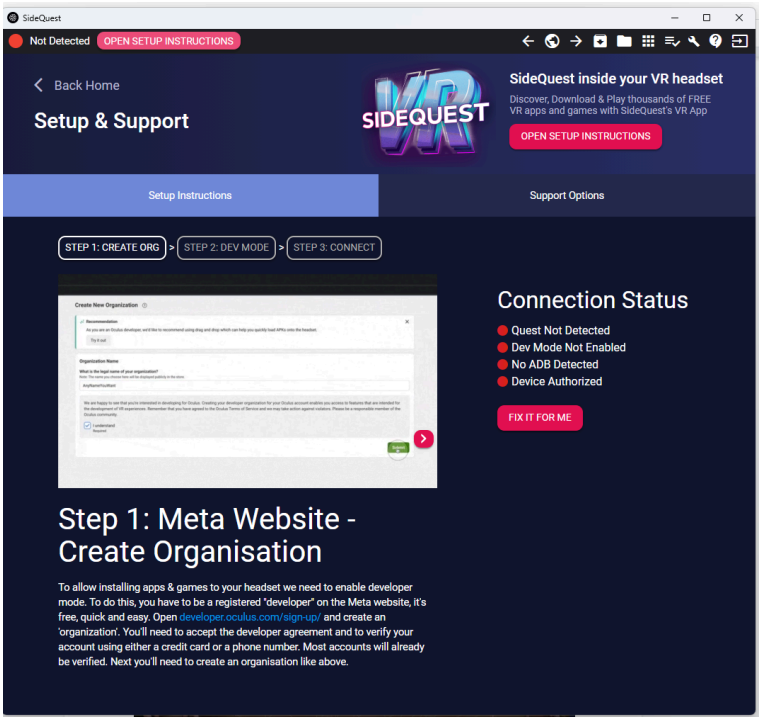
4. Run SideQuest



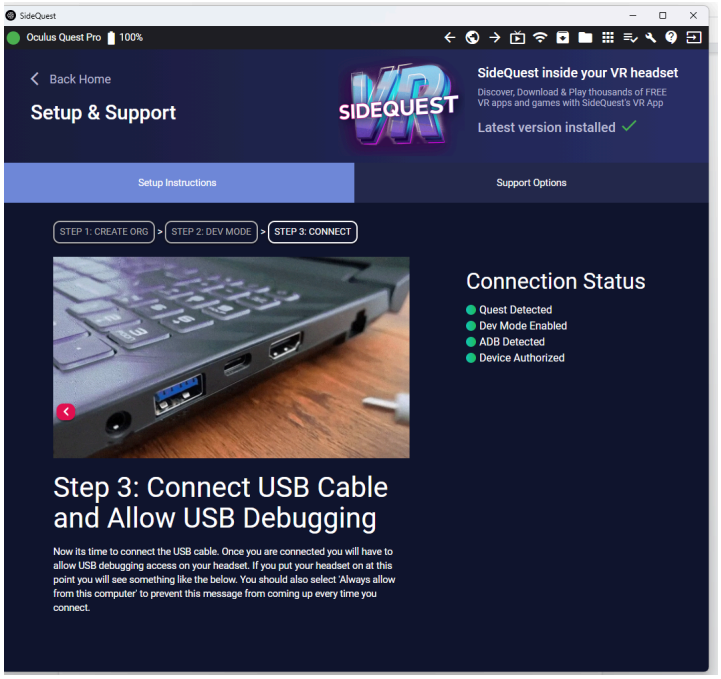
5. You will see the SideQuest home page click on “Open Setup Instructions”



6. Follow the prompts on the page
    - Create developer account developer.oculus.com/sign-up/
    - Enable developer mode
        i. Oculus App (IPhone or Android) > Menu > Devices > Developer Mode
    - Connect headset to computer via USB link
    - Allow USB debugging (headset prompt)
    - Allow file access (headset prompt)



7. Click install Side Quest on Headset. SideQuest will state the latest version is installed.



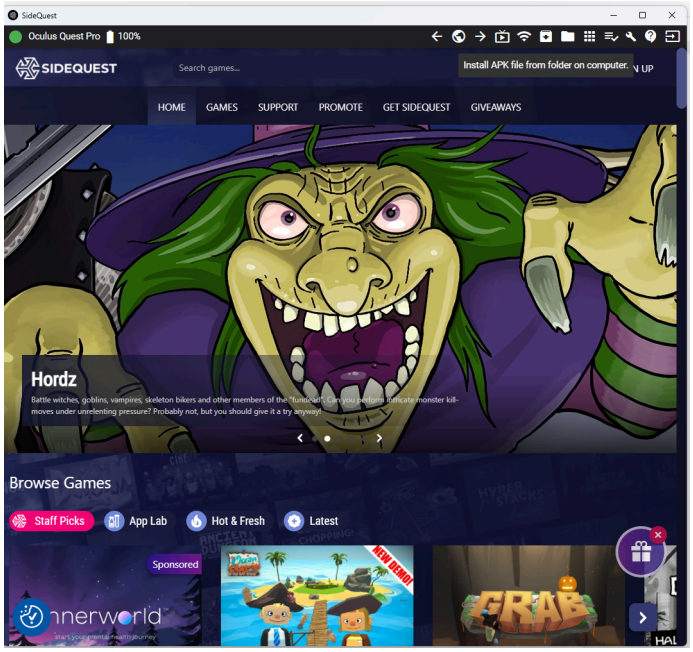
Install ALXR client onto Quest Pro

ALXR is an alternative OpenXR based, cross-platform client for ALVR, more details here. The client will take the face tracking information from the Quest Pro and send values as a server over the network.

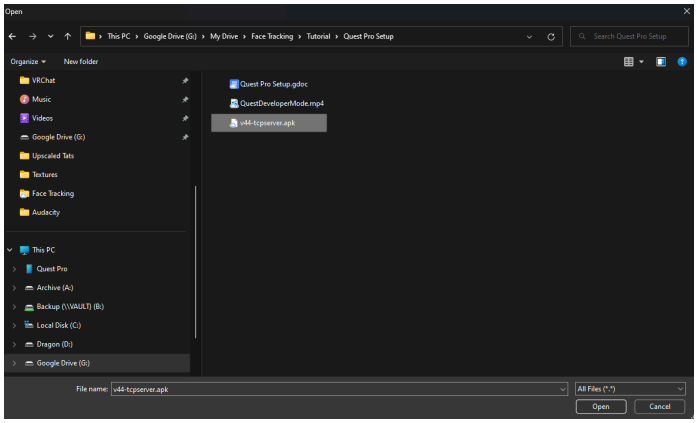
Download alxr-client-quest.apk

1. Connect the headset VIA USB or WiFi via side quest

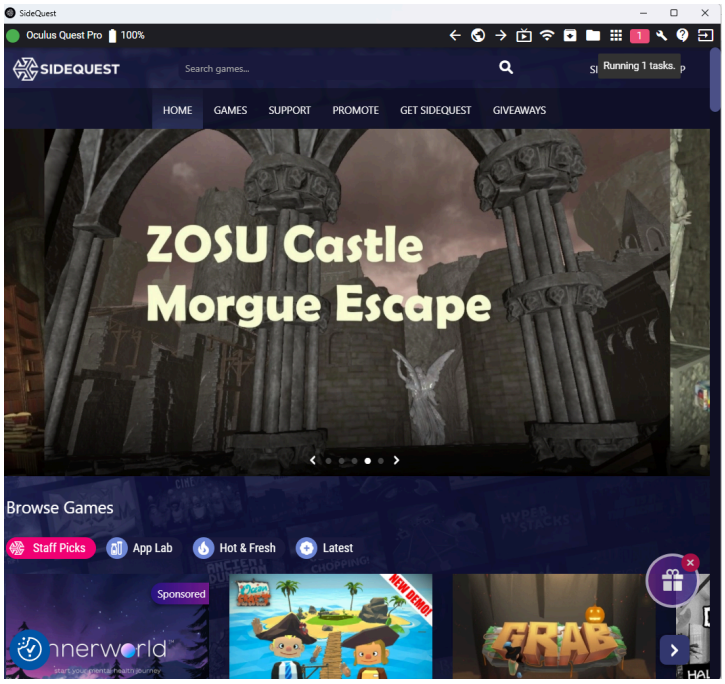
2. Install APKs on the top bar 



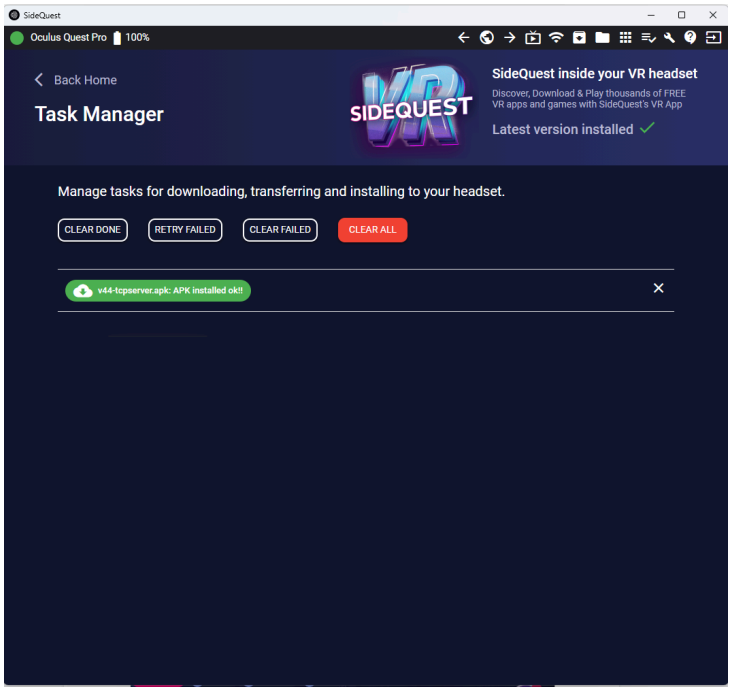
3. Select the latest APK for ALXR and Install



4. Installing will show in the right corner



5. When finished it will show it as successful

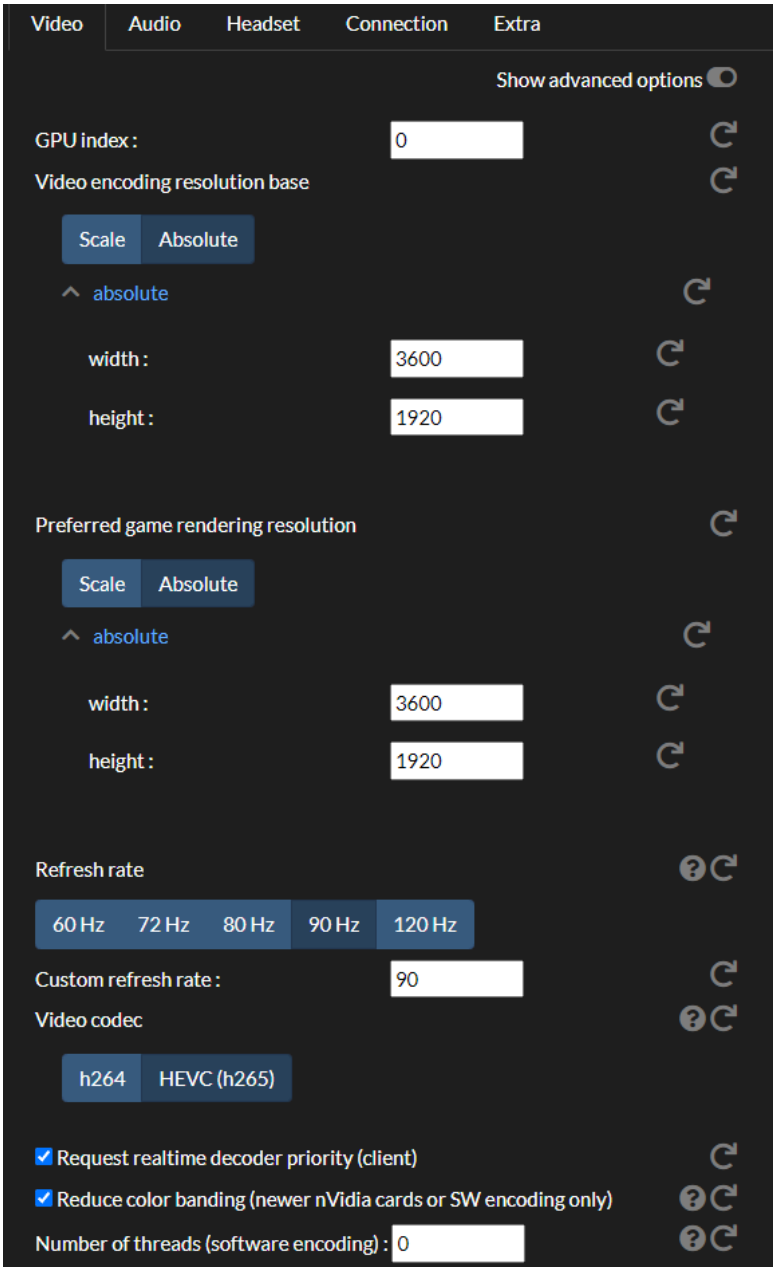


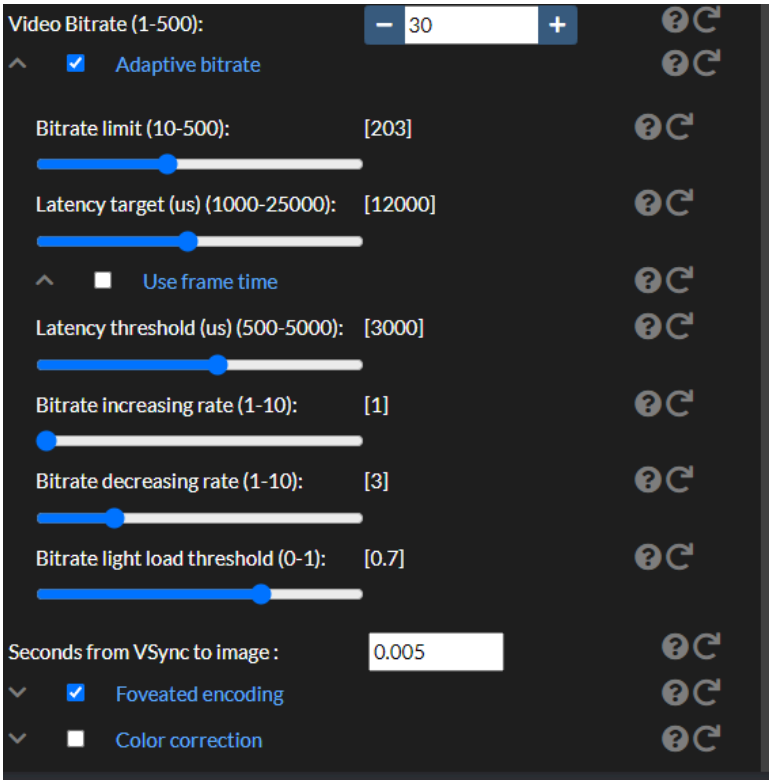
Install ALVR server on Windows - Wireless Setup

This will go over how to set up the wireless ALVR to link to the headset. If you are having stability issues with the connection with low performance or stuttering look into the link cable method.

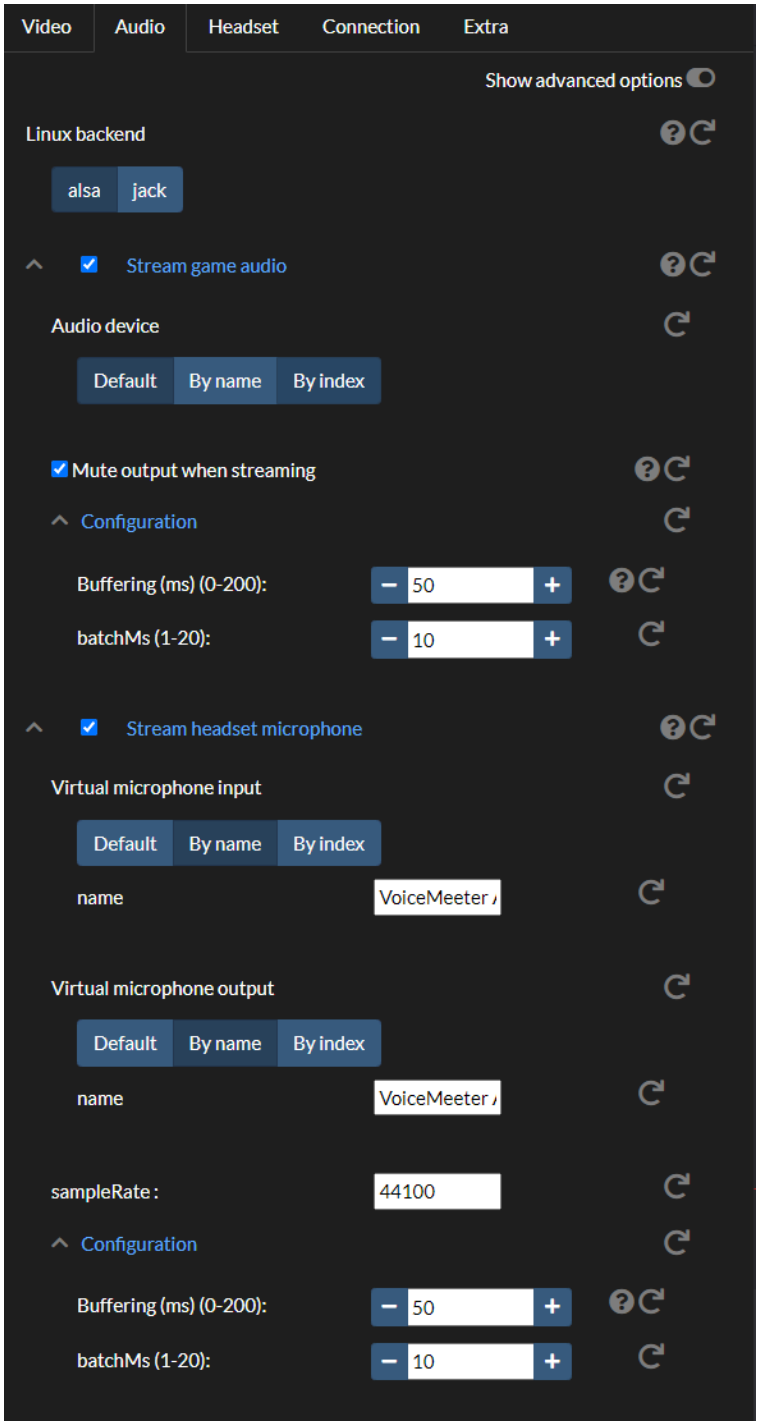
1. Download alvr_server_windows.zip v18.2.3 https://github.com/alvr-org/ALVR/releases/tag/v18.2.3
2. Run ALVR Launch.exe
    a. ALVR will launch SteamVR
3. Follow Setup Steps of ALVR
    a. Audio Source available
    b. VB Virtual Cable https://vb-audio.com/Cable/
        i. VB-Virtual Cable is the microphone out from the Quest Pro select it microphone input for VRChat
    c. Add Firewall Rules
    d. Add Headset client, it will show up when you launch the APK on the headset
4. Config Video settings will need to be optimized for the Quest Pro
    a. Show advance option
    b. Absolute Scale width 3600 height 1920 for video encoding
    c. Adjust refresh rate

d. Adjust bitrate

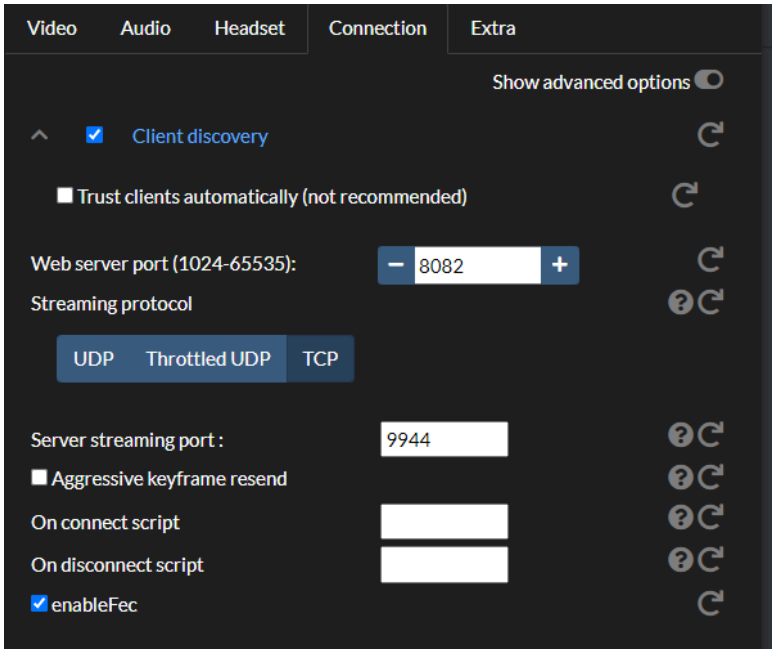



Video Bitrate (1-500):
30
Adaptive bitrate
Bitrate limit (10-500):
[203]
Latency target (us) (1000-25000):
[12000]
Use frame time
Latency threshold (us) (500-5000):
[3000]
Bitrate increasing rate (1-10):
[1]
Bitrate decreasing rate (1-10):
[3]
Bitrate light load threshold (0-1):
[0.7]
Seconds from VSync to image :
0.005
Foveated encoding
Color correction

5. Setup Audio. Check box to stream headset microphone and set it to VB CABLE Output



6. Change connection type to TCP

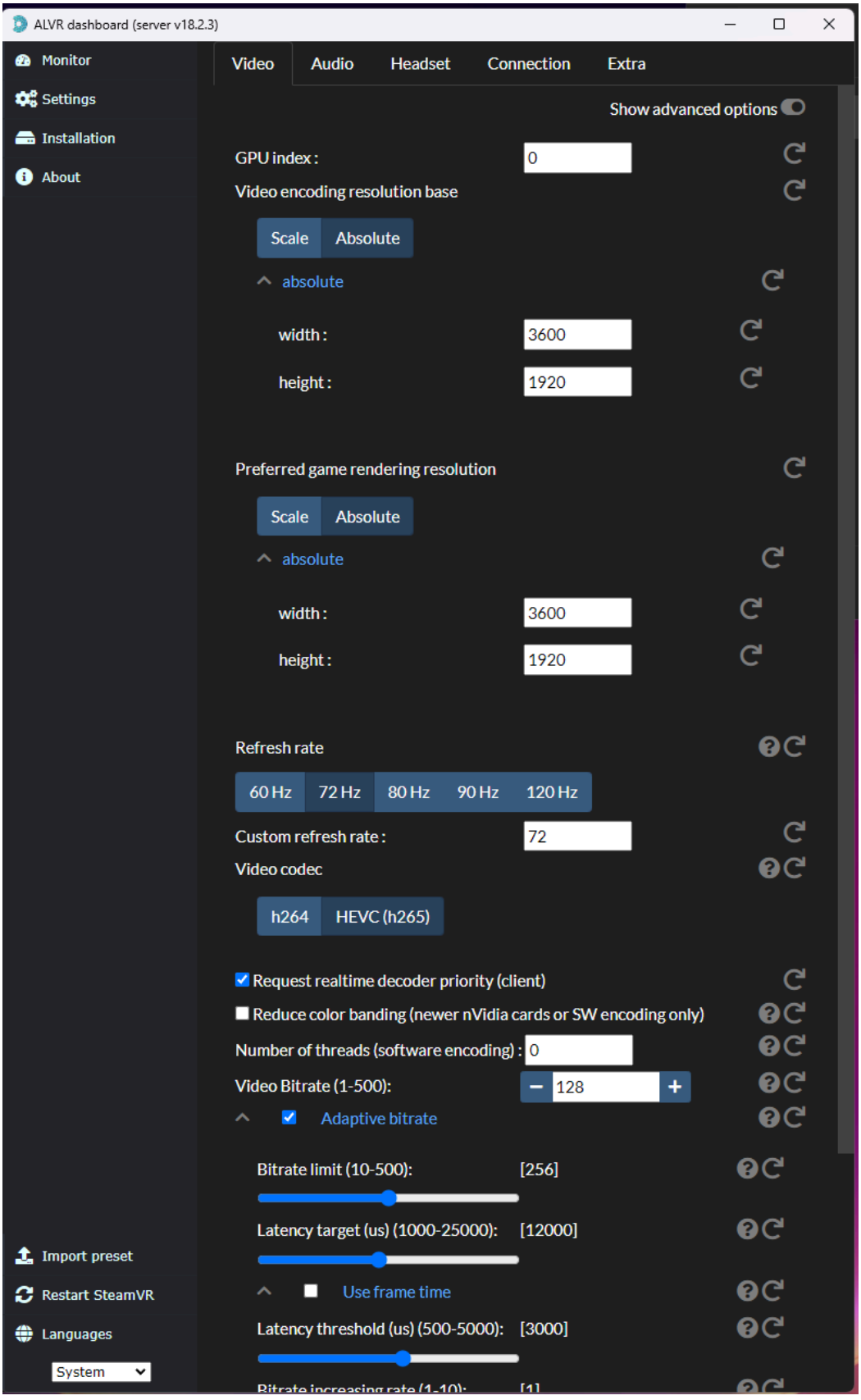


Install ALVR on Windows - Link Cable Setup

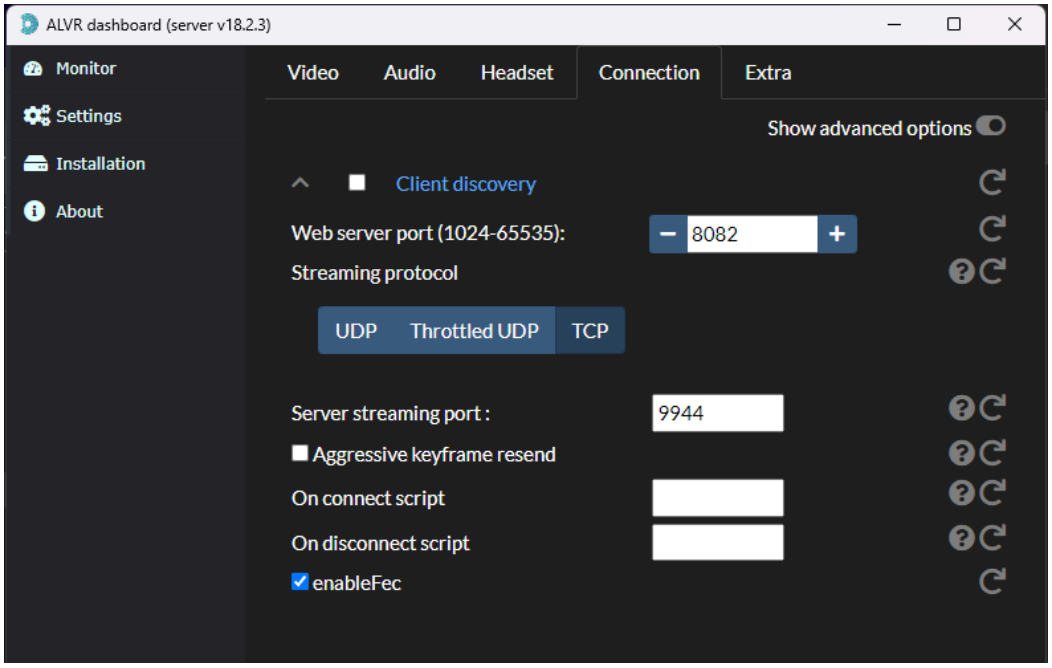
Use link cable if you are having networking issues. This will make a more stable higher bitrate connection. Will require commands to be sent over the headset to enable it every time.

1. Download alvr_server_windows.zip v18.2.3 https://github.com/alvr-org/ALVR/releases/tag/v18.2.3
2. Run ALVR Launch.exe
    a. ALVR will launch SteamVR
3. Follow Setup Steps of ALVR
    a. Audio Source available
    b. VB Virtual Cable https://vb-audio.com/Cable/
        i. VB-Virtual Cable is the microphone out from the Quest Pro select it microphone input for VRChat
    c. Add Firewall Rules
    d. Add Headset client, it will show up when you launch the APK on the headset
4. Configure Video Settings
    a. Show advance option
    b. Absolute Scale width 3600 height 1920 for video encoding
    c. Adjust refresh rate

d. Adjust bitrate


ALVR dashboard (server v18.2.3)
Monitor
Settings
Installation
About
Import preset
Restart SteamVR
Languages
System
Video
Audio
Headset
Connection
Extra
Show advanced options
GPU index :
0
Video encoding resolution base
Scale
Absolute
absolute
width :
3600
height :
1920
Preferred game rendering resolution
Scale
Absolute
absolute
width :
3600
height :
1920
Refresh rate
60 Hz
72 Hz
80 Hz
90 Hz
120 Hz
Custom refresh rate :
72
Video codec
h264
HEVC (h265)
Request realtime decoder priority (client)
Reduce color banding (newer nVidia cards or SW encoding only)
Number of threads (software encoding) :
0
Video Bitrate (1-500):
128
Adaptive bitrate
Bitrate limit (10-500):
[256]
Latency target (us) (1000-25000):
[12000]
Use frame time
Latency threshold (us) (500-5000):
[3000]

5. Configure connections



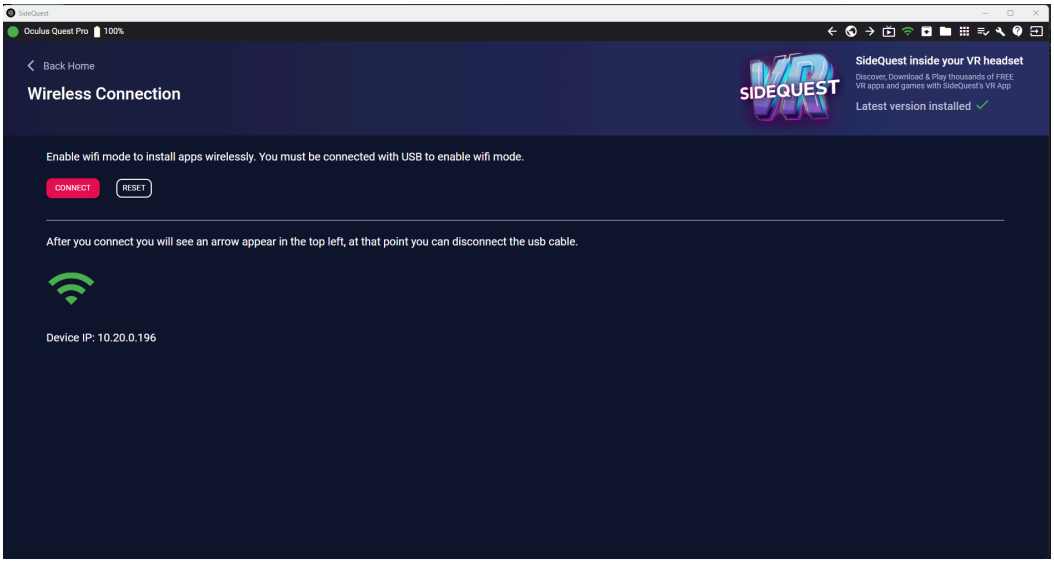
6. Configure device to 127.0.0.1 IP for local link cable
7. Ensure SideQuest is running, and the headset has authorized the USB connection to the PC
8. Open the 'Run ADB Commands' menu in SideQuest (top-right, box with an arrow inside it)
9. Click 'Custom Command' and run these adb commands:
    a. adb forward tcp:9943 tcp:9943
    b. adb forward tcp:9944 tcp:9944
10. These commands will need to be run every time you (re)connect your headset
11. ADB commands through SideQuest and set to TCP connection. https://github.com/alvr-org/ALVR/wiki/Use-ALVR-through-a-USB-connection

Install VCRFaceTracking

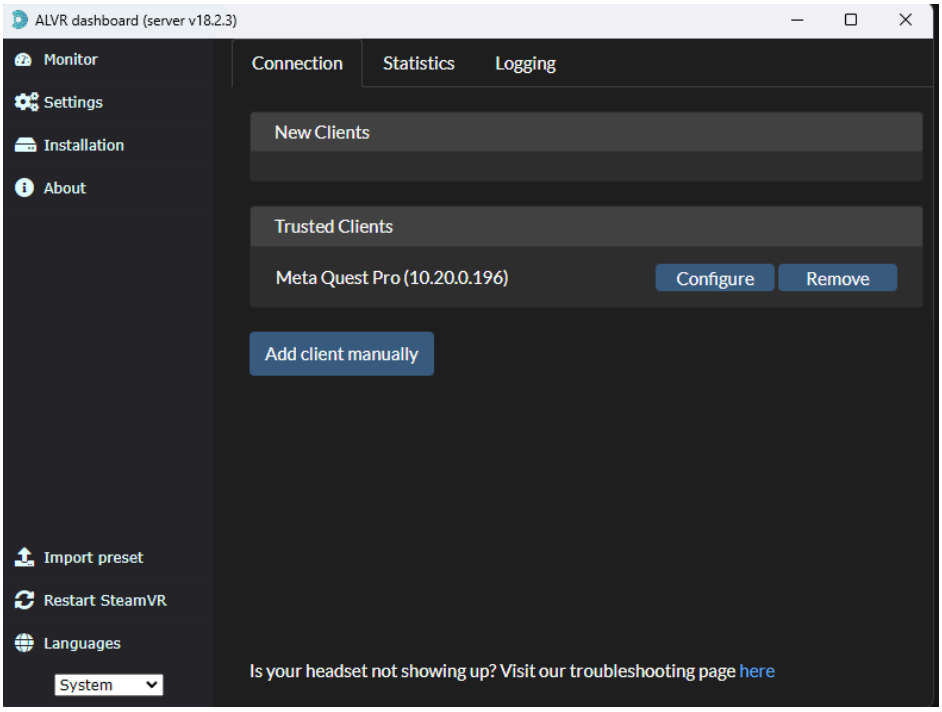
Currently using a modified version of VRCFaceTracking.exe to take ALVR data over the network and use custom libraries.

1. Download modified VRCFaceTracking.exe from VRCFT #quest-pro-files
2. Place on into folder or desktop
3. Modify questProIP.txt with the VRCFaceTracking.exe folder with Quest Pro IP address.

a. IP can be found on when connecting SideQuest



b. Also can be found when launching ALXR



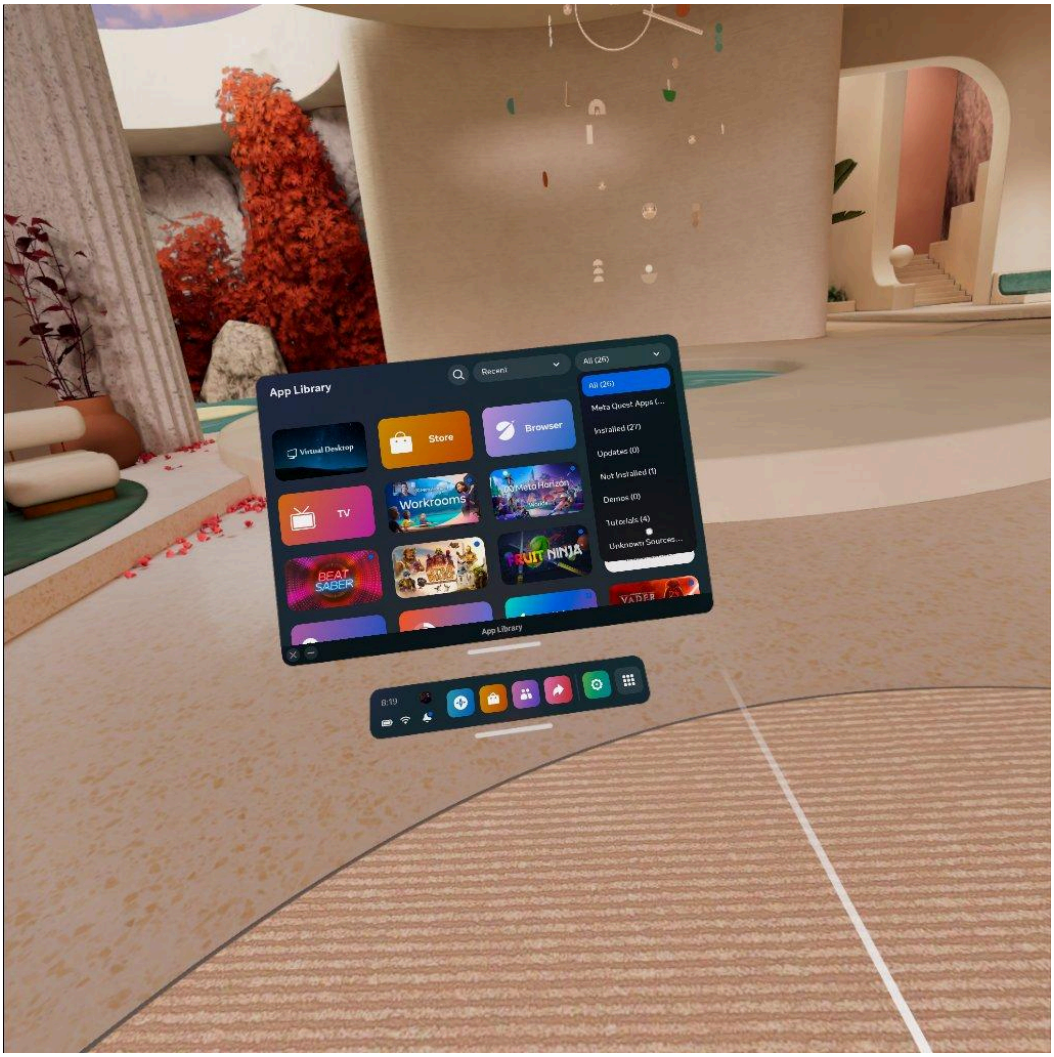
c. If you want to do local connection 127.0.0.1 to VRCFT you will need to run the follow ADB commands in side quest:
    i. adb forward tcp:13191 tcp:13191

Launching VRChat

1. Launch ALXR server Launcher.exe on PC
2. Launch ALXR client on Quest Pro

a. Navigate to apps menu

b. Unknown Apps is at the bottom



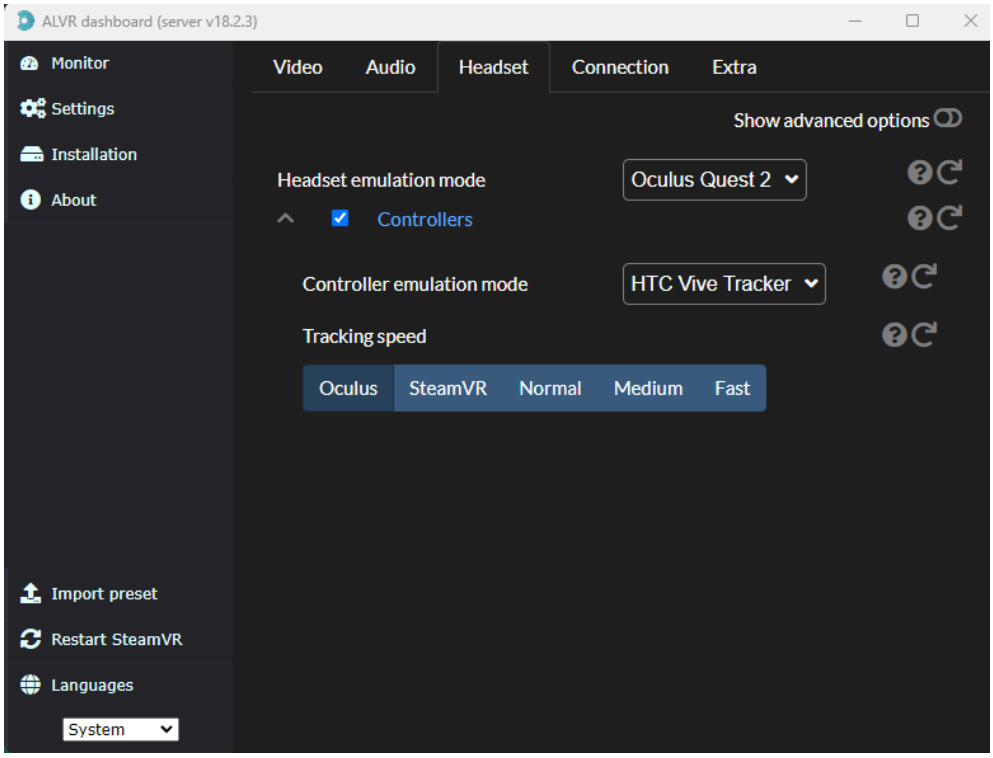
c. SideQuest and Installed APK will be here. Launch ALXR client

d. If successful you should see SteamVR environment
e. If not successful try the following:
    i. Restart client
    ii. Restart server
    iii. Check connection settings
    iv. Check ALVR server version, must be V18.2.3
    v. Restart headset
3. Launch VRCFaceTracking.exe
    a. VRCFaceTracking will state successful connection to the IP of the Quest Pro
4. Launch VRChat
    a. If you start VRCFaceTracking after VRChat loaded you will need to reset the OSC or turn it on and off

Miscellaneous ALVR Notes

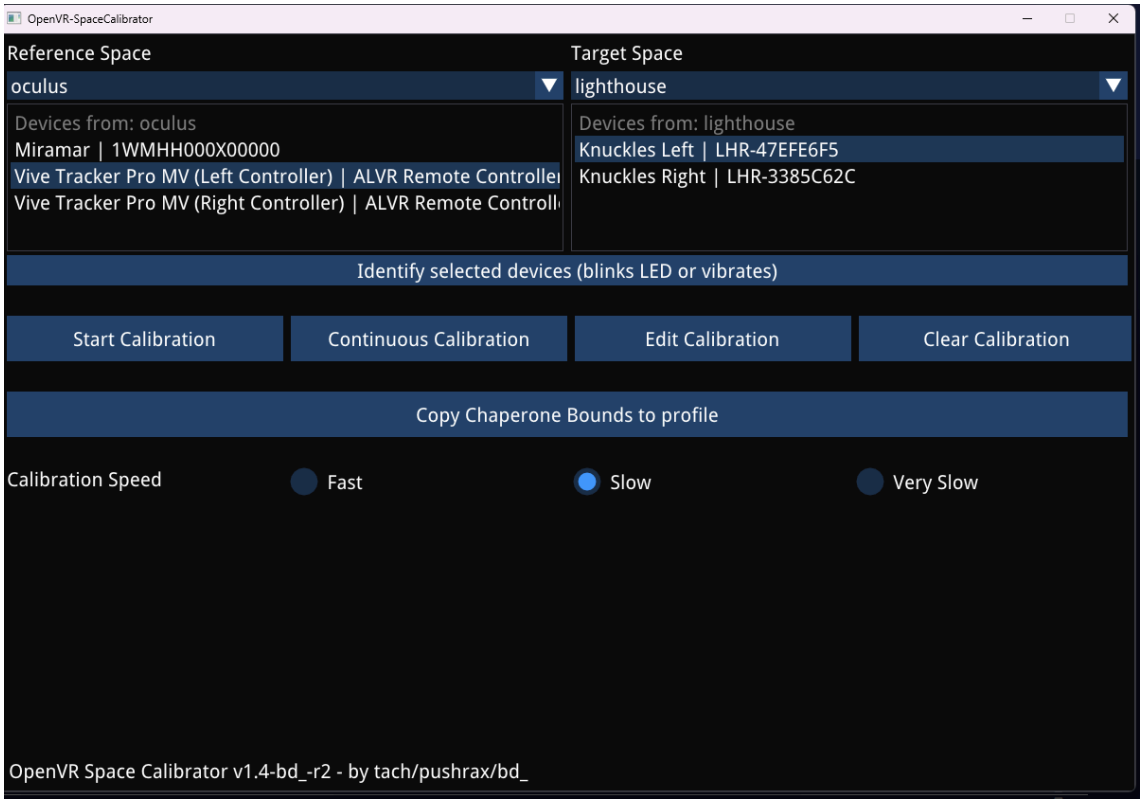
Making Index Controller your primary controller in ALVR

1. Change emulation mode to HTC Vive Tracker. This will make the Quest Pro controller show up as a HTC Vive Tracker. You have to change this otherwise the Quest Pro controller will take precedence over other controllers.



2. Click on the *Show advanced options toggle* in the top right

3. Change Tracking System Name to Oculus. This needs to be changed to make the emulated tracker to show up in Oculus reference space for OpenVR-SpaceCalibrator



Continuous Calibration with tracker on headset

Calibration drifts are an issue with using combined tracking methods. To combat this there is continuous calibration where you can have a lighthouse tracker on the headset to continuously calibrate with Quest Pro. You can find the continuous from fork of OpenVR SpaceCaibrator at https://github.com/bdunderscore/OpenVR-SpaceCalibrator/releases

1. Identify the trackers being used
    a. Note on the tracker what is what, ID number is useful
2. Recommend using slow calibrate