

Setting Up Your VR Headset

- Helpful Links:
 - <https://www.vive.com/us/setup/pc-vr/>
 - https://www.vive.com/us/support/vive/category_howto/pairing-the-controllers-with-the-headset.html

Downloading the Necessary SDKs for Use in Unreal Engine

- Helpful Links:
 - <https://developer.vive.com/eu/>
 - <https://developer.vive.com/resources/>
 - <https://developer.vive.com/resources/vive-wave/>
 - <https://developer.vive.com/resources/vive-wave/download/latest/>
 - <https://developer-express.vive.com/resources/vive-wave/tutorials/getting-started-wave-unreal-developers/>
- To get started, there are a couple of things to ensure you have downloaded. Vive can only interface with Unreal Engine if you have the proper Wave SDK / Plugin.
- To download the Plugin for the engine version of your choice, [go to this website](#).
 - Here, you'll have the option to download the plugin files for either UE 4.27 or UE 5.0.
- Once you've downloaded the zipped plugin files, you'll need to add them into the source files for Unreal Engine.
 - Go to where you have the editor version installed (:C -> Program Files -> Epic Games -> <UE_Engine Version> is the default location).
 - Unzip the plugin folder to your engine plugins folder. Follow these steps:
 - : C -> Program Files -> Epic Games -> UE_<Engine Version> -> Engine -> Plugins
- This will add the Wave VR plugin to the Unreal Editor.

Starting a New Unreal Engine Project in VR

- Now that Wave VR is set up, there's some things that need to be adjusted in the Project Settings window of the Unreal Editor. For this, you can open a blank project, or select one of the following templates that will be detailed below.
- You'll get the option to choose between templates between several categories. The ones you've used before are probably in the "Games" section. The VR templates, however, are in the "Simulation" section.
 - You'll have three different template options:
 - Simulation Blank – blank canvas development using C++ or blueprints.
 - Handheld AR – Augmented reality development specifically for Android and iOS devices.
 - Virtual Reality – Blueprint-based VR development for all platforms, including mobile. There's also the option to include Unreal Engine starter content.

- Blank Project – Unlike with Oculus, the Vive Wave plugin comes with some functionality included (which is why you need to make sure to disable Oculus and other VR plugins). This makes creating a project from scratch a lot easier than one may think.
 - Since the most customization can be found in the fourth, that will be the one I select.
- Some Additional notes:
 - Unreal Editor uses the Enhanced Input Systems Plugin for most actions the player can take. Make sure it is enabled.
 - The Wave VR Pawn blueprint included in the Starter Content is the basic player controller. If you don't include starter content, VR Pawn can be created.
 - The process for Unreal Engine 4 has a few key differences:
 - VR is more flexible outright than UE5.
 - The VR templates are not in their own category. Instead, they've all been grouped in with the "Games" category.
 - There is no blank VR template. Instead, there is a Vehicle Advanced template for developing driving games from multiple perspectives. All other templates are in UE5.

Creating a VR Pawn

- These steps will guide you on how to create a VR Pawn that the player can control.
- I will be using a blank project from Unreal Engine 4.27, and this will be tested with the Vive Cosmos Elite.
- This will not go over how to create a project. To view those steps, see the previous section.
- Once the project is created, open your PC's file explorer.
 - Find your Wave VR plugin folder. It should be labelled as *wave_<SDK_Version>_UE_<Engine_Version>*
 - Copy the folder into your project's directory.
 - <ProjectName> -> Intermediate
- Now, check to make sure the plugin is properly enabled in your project.
 - Plugins -> WaveVR -> Enable
 - Ensure other VR plugins are disabled (SteamVR, OculusVR)
 - Restart your editor if you changed any of your active plugins.
- Now that a project has been opened (or reopened), go to the Project Settings window. There are some settings to adjust to ensure Vive can properly interact with Unreal Engine. Use the search function to find these settings quickly.
 - Enable "Start in VR."
 - Set "Mobile MSAA" to 4x MSAA (Optional)
 - Disable "Support movable light CSM shader culling"
 - Select "Forward Shading"
 - Unselect "Separate Translucency"
 - Set "Custom Depth-Stencil Pass" to Disabled
 - Unselect "Custom Depth with TemporalAA Jitter"

- Unselect “Bloom”, “Ambient Occlusion”, “Ambient Occlusion Static Friction”, “Auto Exposure”
- Unselect “Motion Blur”
- Set “Anti-Aliasing Method” to MSAA
- Unselect “Mobile HDR and Select “Mobile Multi-View”
- For more information and details for building for Android, [visit this link](#).
- You can also adjust settings within the Wave VR plugin. For explanations on each setting, visit the link above and scroll to the desired section.

Demoing and Playing Games with Your Vive Headset

- To preview projects, select the Play Mode Options and Settings.
 - Instead of playing from the selected viewport (which is the default option), choose “VR Preview.”

Troubleshooting

- Controllers don’t connect to the headset.
 - Press the System button on the controllers. This is below the touchpad.
 - In Steam VR on your computer:
 - Click Devices -> Pair Controller
 - Instructions within the application will guide the user through the process.
- Vive Wave plugin doesn’t build properly in a new project.
 - Hmmm
- Unreal Editor crashes when you try to “Preview in VR.”
 - I’m still trying to figure this one out. It may be linked to the issue above this one.
- Vive Base Stations aren’t connecting to each other.
 - Angle each sensor 30-45 degrees towards the ground.
 - Ensure that each base station is higher than the headset user. Vive recommends 6.5-7 feet.
 - Make sure each base station is placed facing each other at opposite corners of the intended play area.
 - Check your headset to ensure its front-face camera is turned on and active.
 - On your computer, go to the Steam VR application.
 - Select Settings -> Camera -> Enable Camera
 - Close and restart the Steam VR application.
 - In the opening dashboard, click “Allow Camera.”
 - Make sure your play area is not a reflective surface. The floors of Shocker Studios should not cause issues.