

Setting up OptiTrack

Calibrating Camera for Optitrack

- Step 1: in Motive(software) go to the camera calibration tab on the right side of the Motive.
- Step 1: in Motive click clear all masks to delete any currently existing masks.
- Step 3: hide all markers in the room under a black cloth so that they won't be visible to the camera.
- Step 3: in Motive click create masks to ignore any currently tracked objects.
- Step 4: in Motive click on start wanding.
- Step 5: take the wand and wave it in front of all the cameras (like painting the entire room in VR). Green lights indicate how much data remain for optimal tracking.
- Step 6: once all cameras are green click on calculate in motive and wait for the software to complete the calibration.
- Step 7: click on "apply" to apply the calibration. (A windowpane will pop up describing how good the calibration is).
- Step 8: take the Z-axis ground plane marker (which looks like a right angle device) and put it on the ground; make sure to level it with the ground using the screws underneath to adjust its height.
- Step 9: Under the camera calibration tab click the ground plane tab next to the calibration tab, click on the set ground plane button to calibrate the global offset.

Creating Rigid Bodies with Optitrack

- Step 0: On the top menu click on view->assets pane to see all currently active rigid bodies. Deactivate all untracked rigid bodies.
- Step1: On the top menu click on view > rigidbody pane and set the values as

streaming id = 32 min marker count = 3 (note: if this value is higher than the available markers in the view the rigid body won't follow the markers and will be stuck at the origin) max deflections 4 smoothing =0 (can experiment with this

value to interpolate between jumps for smoother motion) forward prediction =0
tracking algorithm =auto select

- Step 2: Take a marker that you want to track and in the 3d view part select all the orange dots related to the tracker, right-click, and select create rigid bodies. This will create your rigid body which you can then see in the assets pane.

Using Optitrack in Unreal

Since Optitrack and Unreal both require a lot of computational power, it is a good idea that we use Optitrack and unreal on separate computers and stream the data from motive to unreal.

- Open the Data Streaming Pane in Motive
- Select the network interface address for streaming data.
- Select desired data types to stream under streaming options.
- Configure streaming settings and designate the corresponding IP address from client applications.
- Stream live or playback captures

Enable the Plugin on unreal

OptiTrack - Streaming Client Plugin (required)

- Download the plugin ZIP file: [download page](#).
- Extract the contents from the ZIP file.
- Open the extracted OptiTrack folder, transfer the OptiTrackNatNet and OptiTrackOculusRift folders into the Unreal Engine's plugin directory. By default, this directory is located in the C:\Program Files\Epic Games\4.##\Engine\Plugins folder and there will be other plugins in that folder already. Simply copy and paste the OptiTrack plugin folders into this directory.
- Open/Create a UE4 project.
- Under the Edit menu, click Plugin to open up the panel where all of the available plugins are listed.
- Browse to OptiTrack section and enable the OptiTrack - Streaming Client.
- Click Apply to submit the changes. It may require the UE4 project to be restarted.

Add the client origin, simply drag-and-drop the OptiTrack Client Origin from the Modes panel into the level in UE4. Once the client origin is placed within the level, its position and orientation will reconcile the global origin of Motive in Unreal Engine. In other words, the tracking data will be represented according to where this Client Origin object is positioned and how it is oriented.

Connecting Unreal Engine to Motive

- [Motive] First of all, make sure the Broadcast Frame Data entry is checked in the Data Streaming pane of Motive.
- [UE4] Once the plugin is added and enabled in the project, OptiTrack Client Origin class will be available from the Modes panel.
- [UE4] Drag and drop the OptiTrack Client Origin into the scene.
- [UE4] Place the OptiTrack Client Origin to the desired tracking origin within the scene.
- [UE4] Select the instantiated OptiTrackClientOrigin object from the World Outliner panel.
- [UE4] In the Details panel, make sure its Auto Connect setting is checked. This configures the client origin to automatically search the network and connect to Motive.
- Now that the client origin is set, the client origin will attempt to connect to Motive and start receiving the tracking data whenever the scene is played.