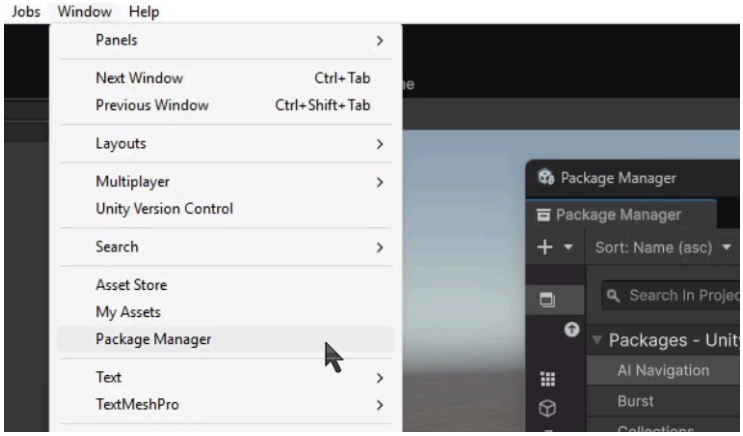
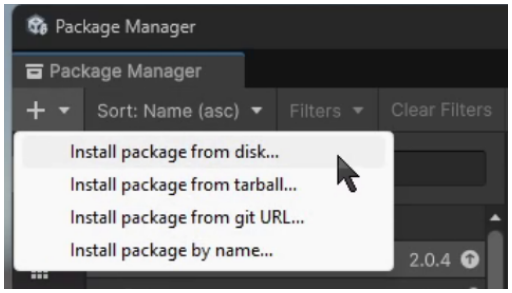
Installation

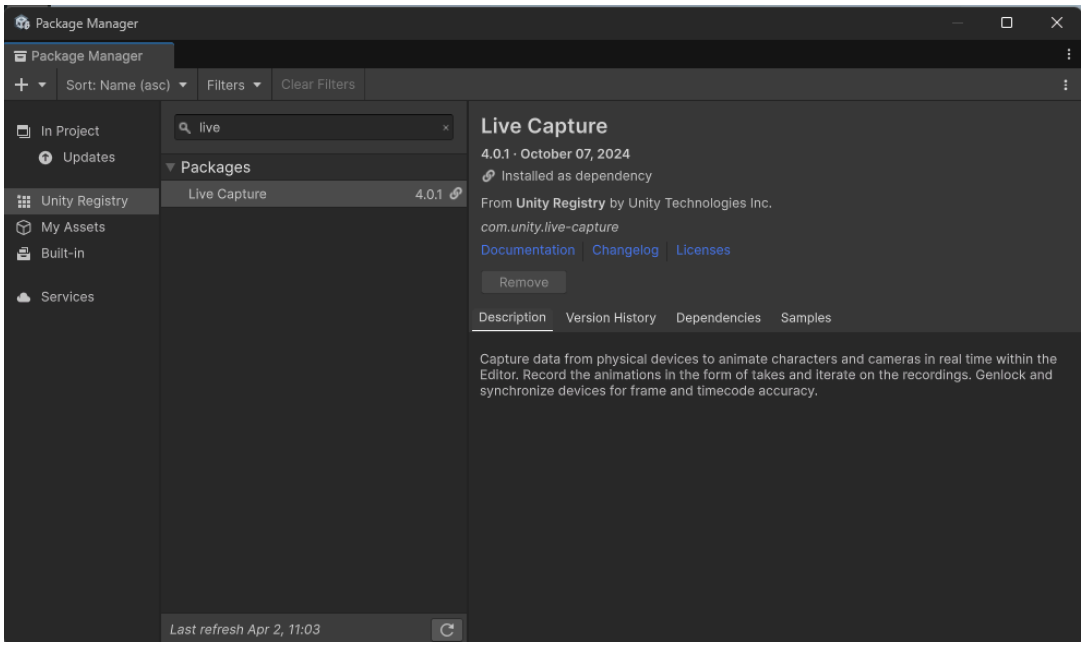
1. Open Unity. Navigate to **Window > Package Manager**.



2. Click the '+' button at the top left and select **Install package from disk…** and then select the **package.json** file inside the plugin folder. This will install the plugin to the project and register the plugin's location on disk.



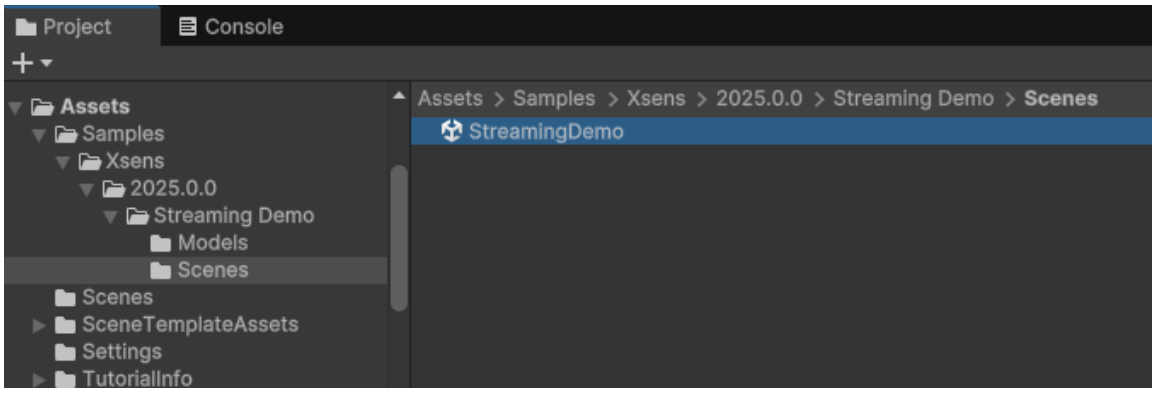
3. The plugin requires Unity's 'Live Capture' plugin. If it's not already installed in the project, you can use the package manager to install it from the Unity Registry.



- **NOTE:** When installing a plugin from disk in Unity, the plugin files will not be copied into a dedicated plugin location as is the case with some other DCC software. This means that if the plugin files are modified or removed It will stop working correctly in Unity. Make sure the plugin is saved to a safe location before installing.

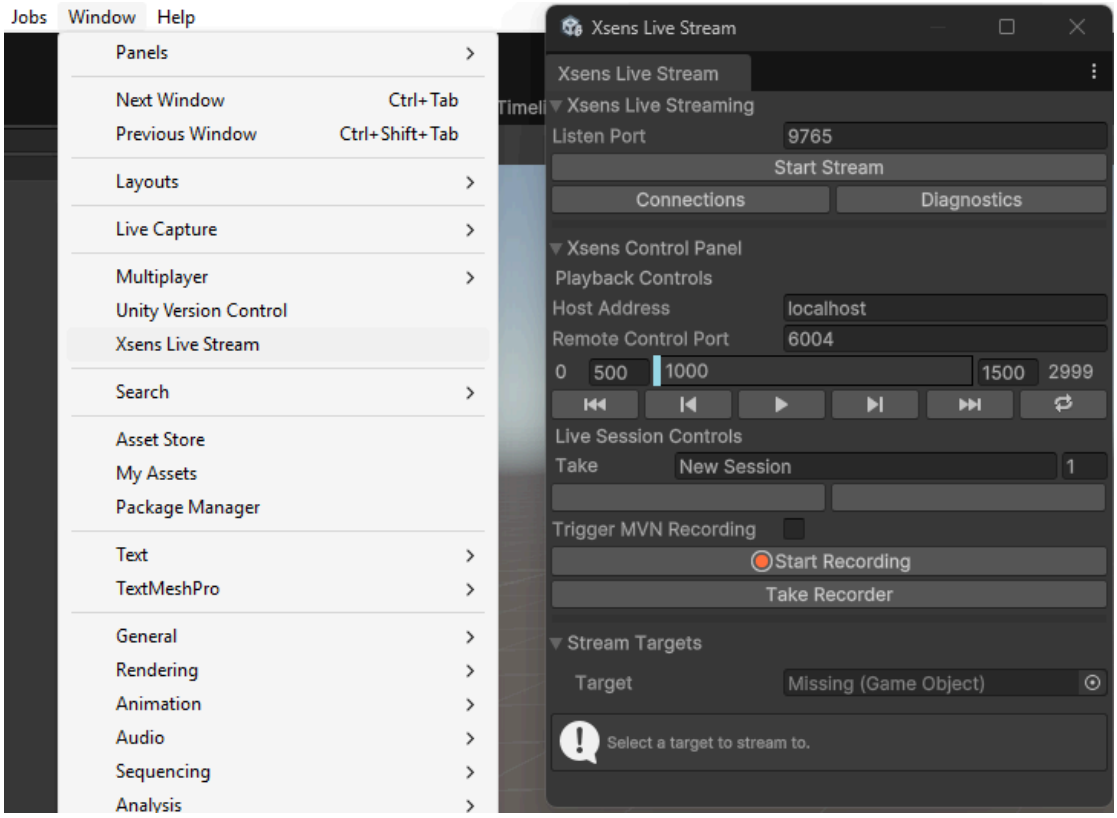
Sample Scene

1. The plugin includes sample assets with a pre-configured scene. To import the sample assets select the plugin in the package manager, open the samples tab and click the import button.
2. The streaming demo scene will be imported to: **<PROJECT_ROOT>/Assets/Samples/Xsens/2025.0.0/Streaming Demo/Scenes**



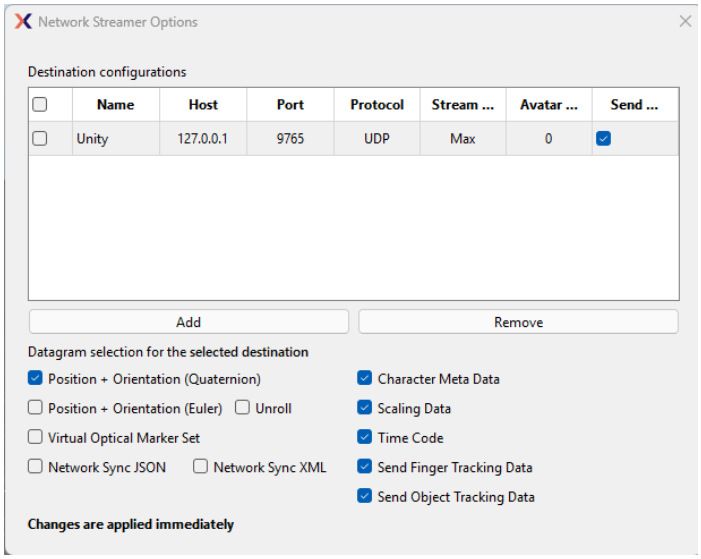
UI

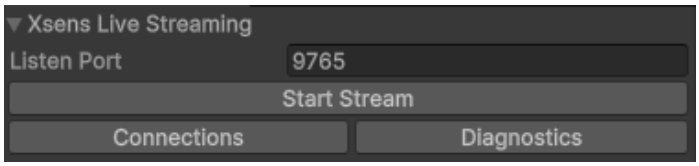
After the plugin is installed, Navigate to **Window > Xsens Live Stream** to open the Xsens streaming panel.



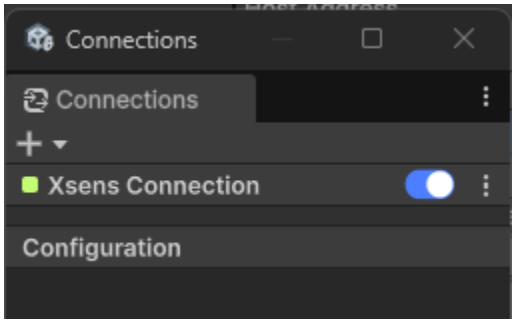
Streaming

1. Make sure MVN is broadcasting to the Unity PC's IP address and the "Listen Port" field in Unity is set to the port number the stream is broadcasting to.
   Required stream options are:
   a. Quaternion
   b. Character Meta Data
   c. Timecode (for recording with Unity take recorder)

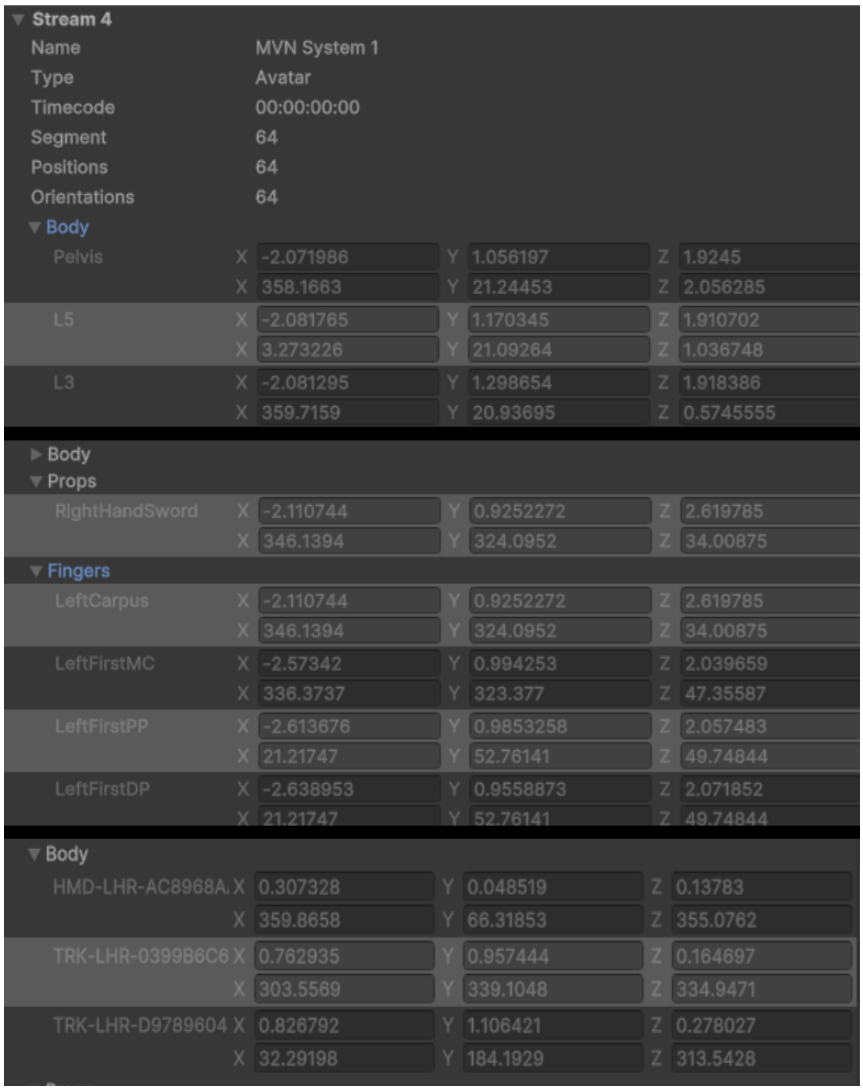




2. Click **Start Stream**.
   To connect the stream to your character refer to the [Retargeting Section].
3. Open the **Connections** window to view the status of all Unity Live Capture devices. The Xsens Connection will be listed here with its status displayed.

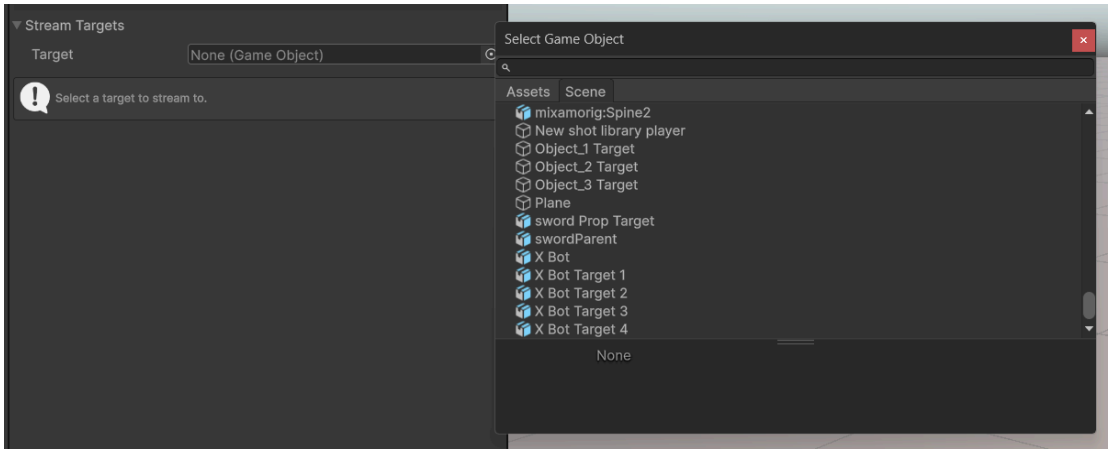


4. Open the **Diagnostics** panel to verify the stream is connected and the plugin is receiving data. Stream entity information can be viewed under its corresponding stream dropdown. Object streams will display each tracker name and transform in the body section

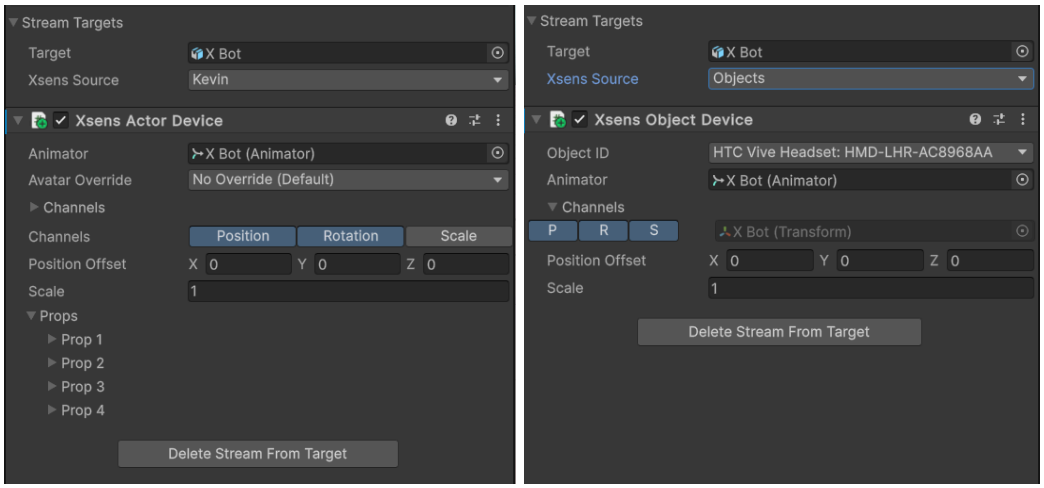


Retargeting (New UI Method)

1. To begin retargeting select a desired rig in the target field, alternatively you can drag and drop from the scene hierarchy into the field. You can at any time switch between target objects in this field. Any object you have set up will remain set up even if you alter this field.

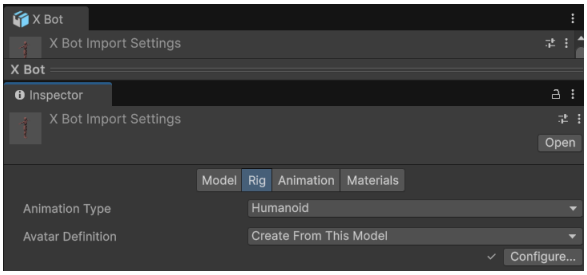


2. Once you have a connected stream from MVN and a target object selected, you will see an Xsens Source dropdown as well as several device options. The Xsens Source dropdown will show all available streams from Xsens. Changing between actors and objects will alter the device that is added to your object and therefore the options that are available to you.

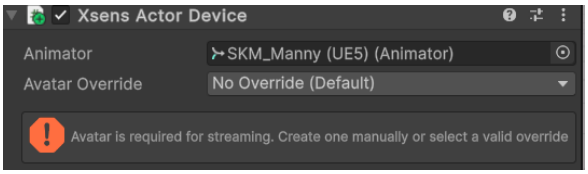


Actor Device Options

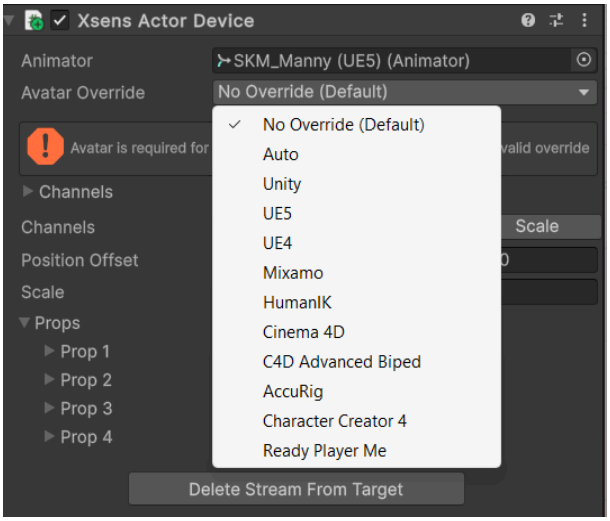
1. **Animator**
   This is a component native to unity that allows for and can affect animation. This should be set automatically by default, but can be further altered if the user desires.
2. **Avatar Override**
   In order to retarget onto a rig, that rig needs a corresponding Avatar asset. This asset contains bone mappings and t-pose values.
   a. This asset can be created manually by the user in the inspector window with the rig selected, and further configured using the configure button. If you want to use your default created avatar, leave Avatar Override set to 'No Override (Default)'.



   b. If there is no default avatar that exists a warning will appear in the ui.

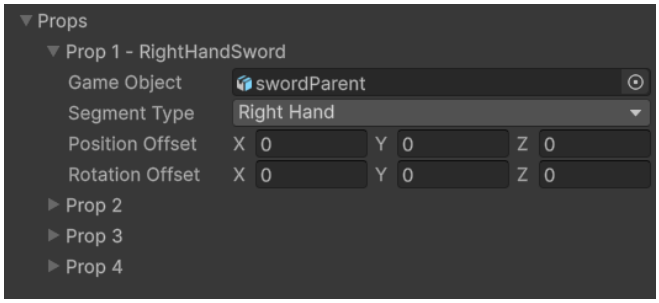


   c. Whether there is a default avatar or not, the Avatar Override can be set to create and apply a new avatar asset to the current rig. This list contains several preset templates to choose from and also an Auto option. The named templates will create the bone mappings and t-pose based on premade templates. The Auto option will assess the selected rig and perform a programmatic t-pose and bone mapping on the spot. (For best results with the auto option the rig should be Z forward and Y up facing upon selecting that option)



3. **Apply Root Motion**
   This is the same property located on the Animator component for the rig object and displayed here for convenience. This allows for toggling of lateral movement from the stream data, similar to the ‘Walk on the Spot’ option in Xsens.
4. **Channels**
   There are two channels option sections. The first is an overall control that will affect every bone and the other is a dropdown that shows each bone individually. Each channel can be toggled to enable or disable the position, rotation, and scale for its corresponding bone(s). In most cases these will be left on the default settings.

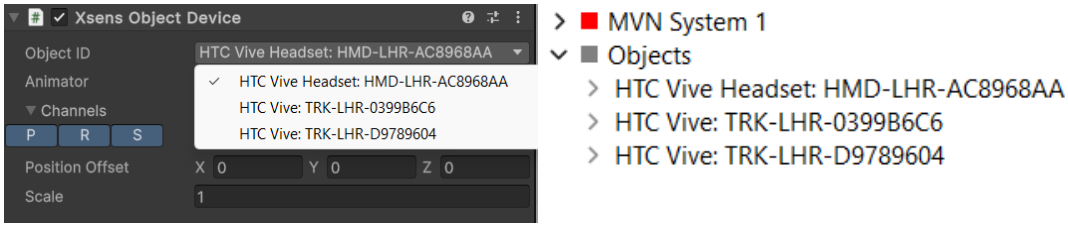
5. **Position Offset / Scale**
   These options affect the data stream as you might expect. The position offset will shift the target’s data stream in the corresponding directions and the scale will scale the data. These are useful for counteracting hip height discrepancies or any other needed offsetting.
6. **Props**
   Xsens streams props as an extra segment on the actors skeleton. If the selected Xsens actor has props streaming, they can be retargeted in this section. If there is prop data you will be able to see the Xsens name for the prop next to the prop id. Expanding the drop down for that prop will give fields for a Game Object, Segment Type, and Offsets. Similar to actor retargeting, Game Object will be the target object you wish to retarget to. Segment type should be the parent segment for the prop, which will tell the plugin which body part on the rig to use for its parent transform. Lastly, offsets allow for additional position and rotation data to be applied to the prop.



7. **Delete Stream From Target**
   This button will remove all streaming data and settings from your current target.

Object Device Options

1. **Object ID**
   This dropdown lets you select the desired corresponding object ID defined in Xsens.

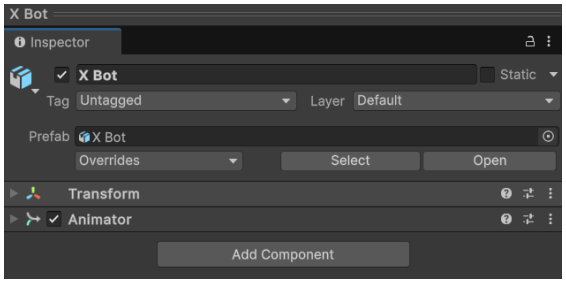


2. **Animator**
   This is a component native to unity that allows for and can affect animation. This should be set automatically by default, but can be further altered if the user desires.
3. **Channels**
   Each channel can be toggled to enable or disable the position, rotation, and scale for its corresponding segment(s).
4. **Position Offset / Scale**
   These options affect the data stream as you might expect. The position offset will shift the target's data stream in the corresponding directions and the scale will scale the data.
5. **Delete Stream From Target**
   This button will remove all streaming data and settings from your current target.

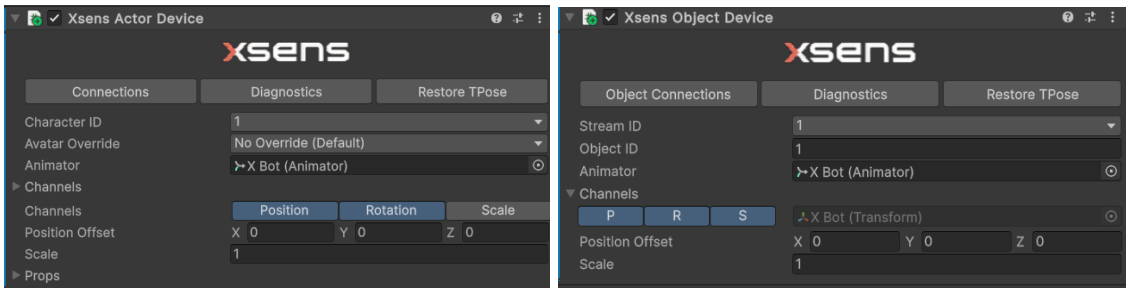
Retargeting (Component Method)

The new UI Method is more user friendly and allows for more options however you can still retarget the old way by setting the components manually.

1. With your rig selected, go to the inspector window and click on the Add Component button.



2. Search for and then add either the Xsens Actor Device or the Xsens Object Device.



3. These devices are mostly unchanged from the previous version of the plugin with largely similar options to the new ui, apart from needing to reference streams by ID rather than name.
4. Any changes you make to the component device will be reflected in the new ui if you're using that as well, and likewise any changes made in the new ui will be reflected in the component device.

Avatar Override Troubleshooting

If the target character is not facing +Z forward in Unity, it will need to be corrected using the root/hips rotation and not the game object itself. In most cases, Unity will fix this automatically, but if not (such as for the Unreal Mannequins) the corrected rotation is instead done on the game object and not the root. This can be done in two different ways:

1. The user can create a humanoid avatar and add the rotation to the root bone in the avatar configuration. Because the streamer starts with a default avatar first (i.e. this manually created humanoid avatar), this root bone fix will apply to the character before any avatar override is chosen.
2. When the character is brought into the scene, the root bone can be corrected for that character before streaming is set up.

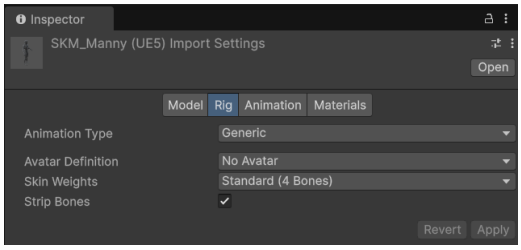
For certain cases (such as Mixamo rigs' thumbs), auto T-posing may not be able to find the correct pose by default. There are two potential workarounds for this:

1. The user can set the override to a template first (if applicable) and then set the override to "Auto".
2. The user can help the solver by manually configuring a humanoid avatar to be close to the necessary T-pose. Then the user will need to set the override to "No Override" first before switching it to "Auto".

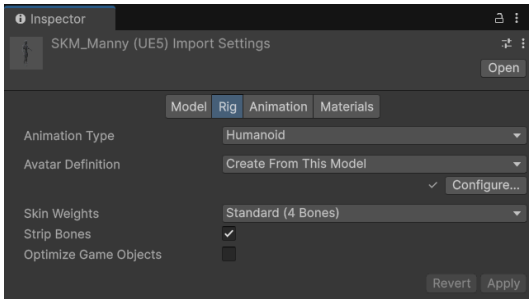
Avatar Creation (Manually)

If for whatever reason the Avatar Override method isn't working as desired or if you want more control over your avatar you can create one manually (This is all functionality native to Unity).

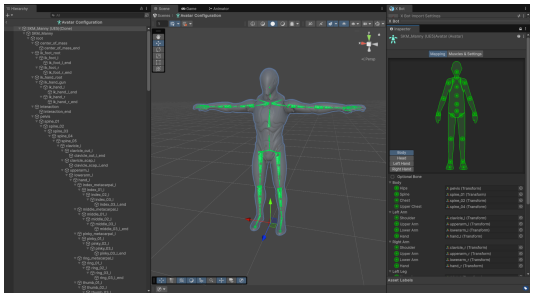
1. Select your rig in the project asset browser.
2. In the inspector window click on the 'Rig' tab.



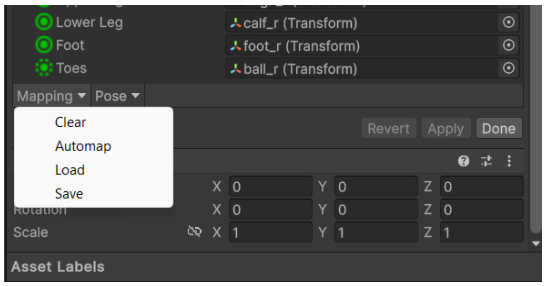
3. Change the animation type drawdown to 'Humanoid'.
4. Set Avatar Definition to 'Create From This Model'.
5. Then click the 'Apply' button.

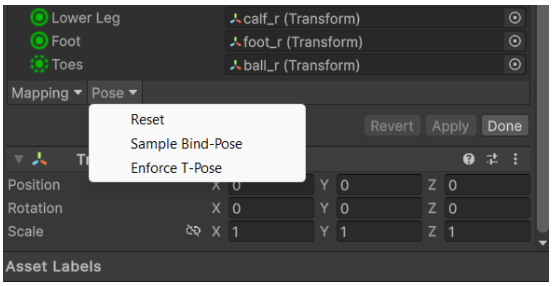


6. You'll now be able to click the 'Configure' button.
7. In the Avatar Configuration window you can adjust the t-pose and all the bone mappings.

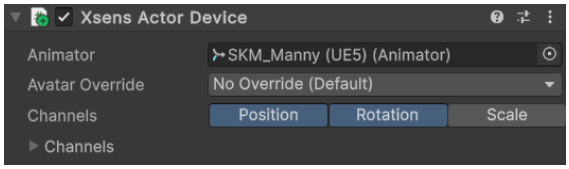


8. At the bottom of the inspector window there are also drop downs for Mapping and Pose with more helpful options.





9. In the Xsens Actor Device settings, set Avatar Override to ‘No Override (Default)’.



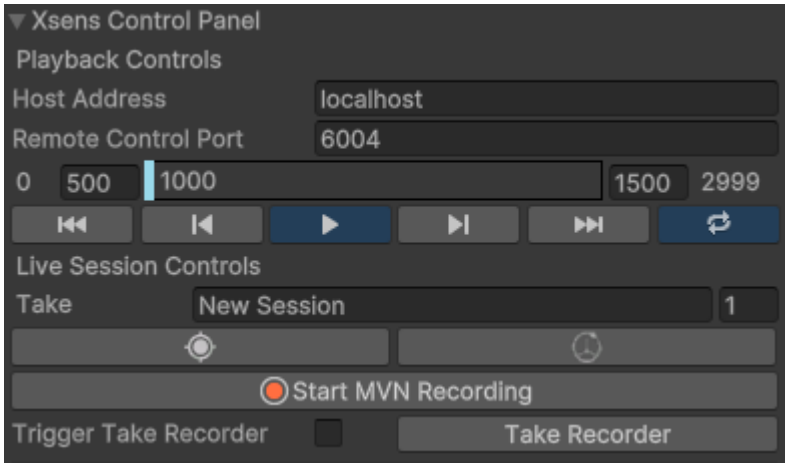
Offline Retargeting

Offline retargeting is done through Unity's native workflow. Both the target and the imported animation need to have Humanoid configurations (MVN T-pose no longer matters, as long as both are configured the same). The imported animation can then be added to an animator controller which is used to drive the target.

https://base.movella.com/s/article/FBX-import-into-Unity?language=en_US

Remote Controls

The Remote Control Panel is split into two sections: playback and live session.
These options provide a convenient way to control MVN sessions without interacting with MVN's GUI. For the controls to work, the user must properly set the **Host Address** (The IP address of the computer running the MVN session) and the **Remote Control Port** (The port number specified in MVN remote control settings).



Playback Controls:
The playback controls section consists of the timeline and the playback buttons. The buttons reflect the playback controls available in MVN. The timeline includes a scrubbable playhead that will synchronize with MVN's playhead when scrubbed or playback is stopped. **Note:** The playhead position will not update in real-time during playback.

The numbers on the far left and right represent the session's start and end frames and will automatically update based on the active window in MVN. The input fields on either side of the timeline allow the user to set a min/max scrub range for the unity playhead. The current frame is displayed to the right of the playhead.

Live Session Controls & Recording:
The top of the live session controls section consists of fields to input the take name and number. Below this there are two buttons, the button on the left will send a 'move character to origin' request to MVN. The button on the right will send an 'axis reset' request. The **Start MVN Recording** button will send a start capture request to MVN and will send along the take name/number which MVN will use to set the output file name. The **Trigger Take Recorder** checkbox will cause the record button to also trigger recording in Unity's take recorder. The **Take Recorder** button will simply open Unity's take recorder panel.
Note: The recording interface is designed to provide a convenient way to control MVN's record state from Unity. While it can trigger Unity's Take Recorder, it is not meant to be used as a replacement for Take Recorder. If the user wants to record the animation stream directly to Unity assets, they should refer to Unity's Take Recorder Documentation.