

MVN Live Animation plug-in User Manual v2019.0

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Revisions

Revision	Date	By	Changes
H	December 2018	SBU	V2019.0 Changed protocols and added fingers, props and added ability to rotate

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1. Introduction

Xsens MVN Studio, developed by **Xsens**, is the main software tool for interfacing with the MVN inertial motion capture suit. MVN Studio allows the export of motion capture data to third party applications such as Unity, Maya, XSI, 3D Studio Max, MotionBuilder, etc. making the data available to drive rigged characters in animation and more. The data transfer to other applications is primarily file based (export) when using MVN Studio.

However, in many scenarios it is attractive to keep the ease of use of MVN Studio, but still being able to receive and process the motion capture data in real-time in another application, even on a another PC, possibly physically remote from the MVN system.

To this end, MVN Studio can act as a server on a network and stream motion capture data in real-time to a client PC running a client application. This document specifically treats the use of a certain client application able to receive motion capture data in real-time, Unity 2018.

1.1 *MVN Studio stream*

The easiest way for MVN to send the complete full-body motion capture data to another application is to send the 3D positions and 3D rotations of each bone directly. MVN Studio is able to do this in real-time streaming over the network (quaternion and Euler based rotations).

The Quaternion protocol is currently used to stream to Unity.

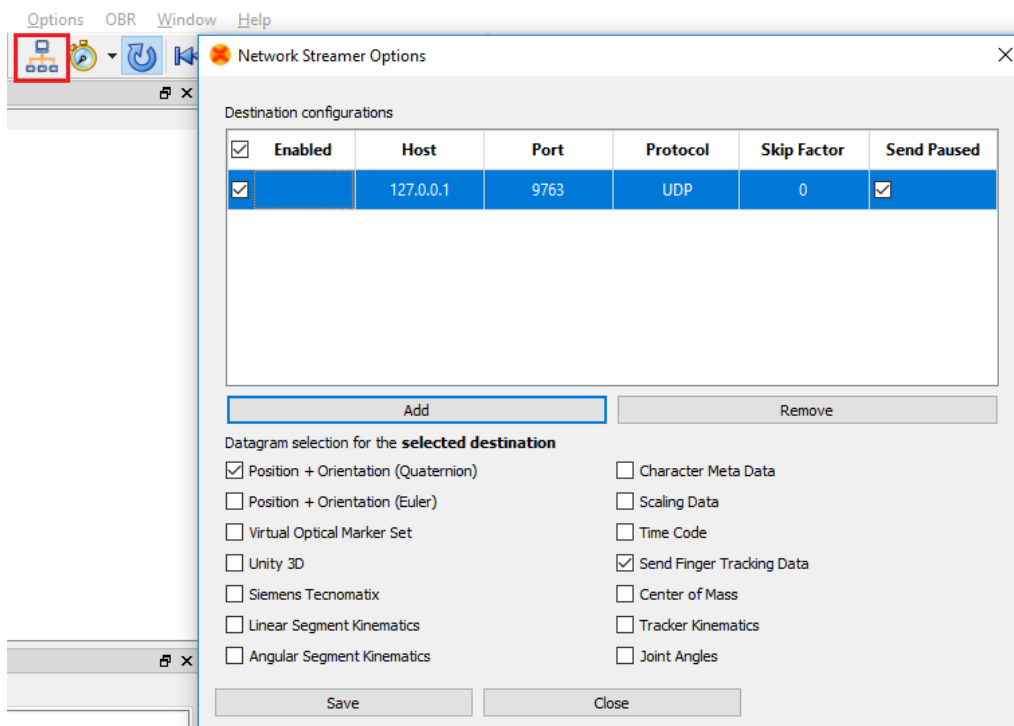
1.2 *Streaming to Unity device*

To get optimal results, the streaming settings from MVN Studio to Unity have to be set correctly. It is recommended to set MVN Studio to stream 30 fps. This can be done by using the 'Down sampling skip factor'. Motion data sent by MVN Studio is sent in real-time to Unity time wise. However both MVN Studio and Unity are operating on a non-real-time operating system, so timing cannot be guaranteed in the Viewer. Additionally depending on system resources Unity is not able to process all incoming data. Timing of the incoming frames is done on the basis of best effort by Unity.

2. Getting Started

2.1 Setting up the MVN device

1. Open MVN Studio
2. Open an MVN file, MVNX file or use the MVN suit in live setup
3. Go to: Options → Network Streamer, or by pressing the Network Streamer button



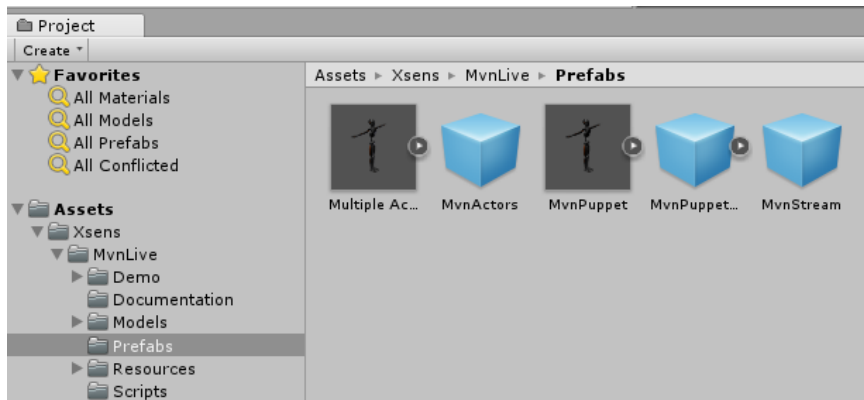
4. Make sure you check 'Enabled' to enable network streaming
5. Set 'Datagram selection for the selected destination' to 'Position + Orientation (Quaternion)'
6. Enable 'Send Finger Tracking Data' if you are also streaming finger data from MVN
7. Input an IP-address of the client PC (the PC where Unity is running). If it is the same PC as where MVN Studio is running, use either 'localhost' or '127.0.0.1'

NOTE: To test if the streaming is set-up properly, you can simply start the 'Demo.unity' file. You can find this in the project tab under the folder 'Assets → Xsens → MvnLive → Demo'. Make sure you have a file running in MVN Studio.

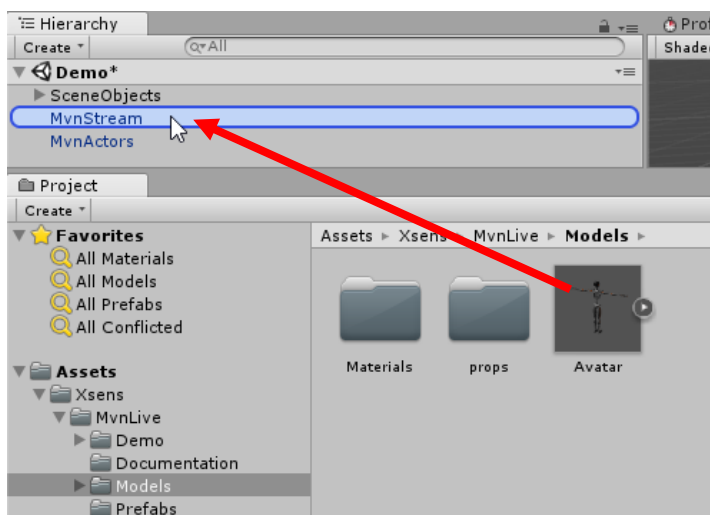
Once you start up the Unity scene, you should see the character move.

2.2 Setting up Unity

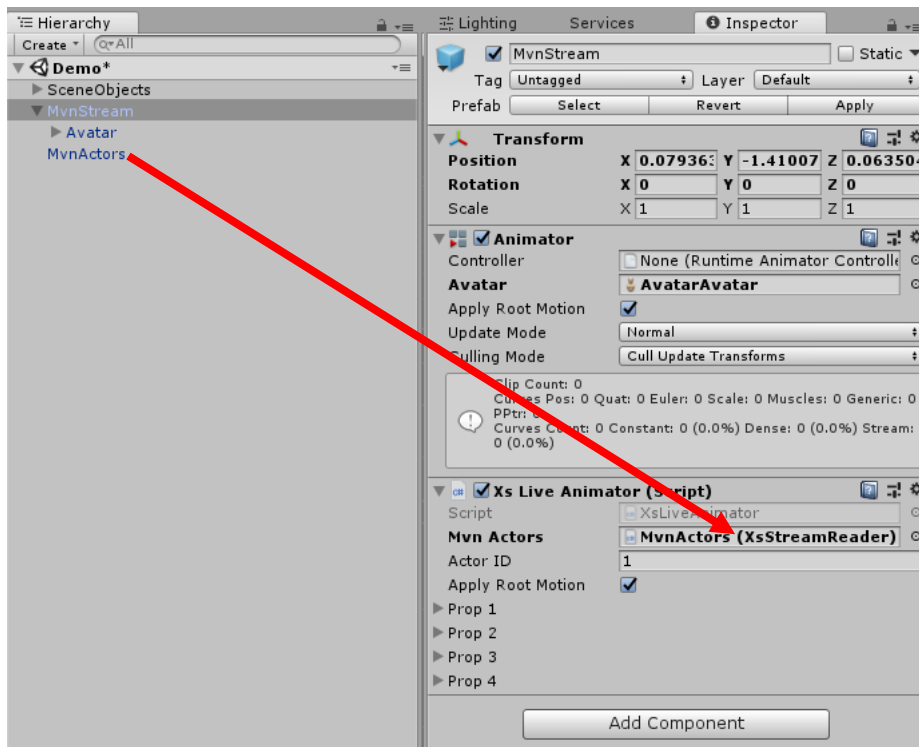
1. Open Unity
2. In the 'Project' tab go to: Assets → Xsens → MVNLive → Prefabs



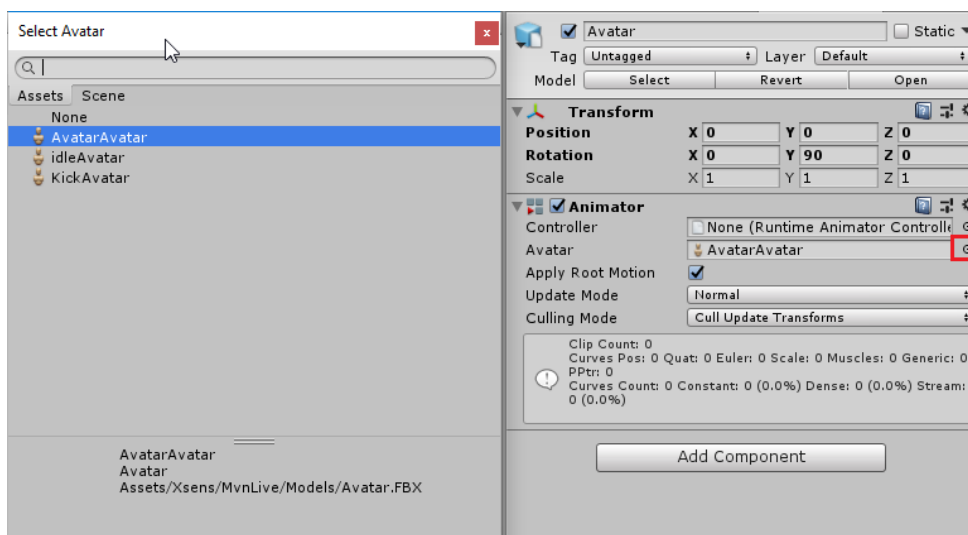
3. Drag the 'MvnStream' prefab into the hierarchy
4. Drag the 'MvnActors' prefab into the hierarchy
5. In the 'Project' tab go to: Assets → Xsens → MVNLive → Models
6. Drag 'Avatar' on top of 'MvnStream' into the hierarchy (Avatar can be your own character)



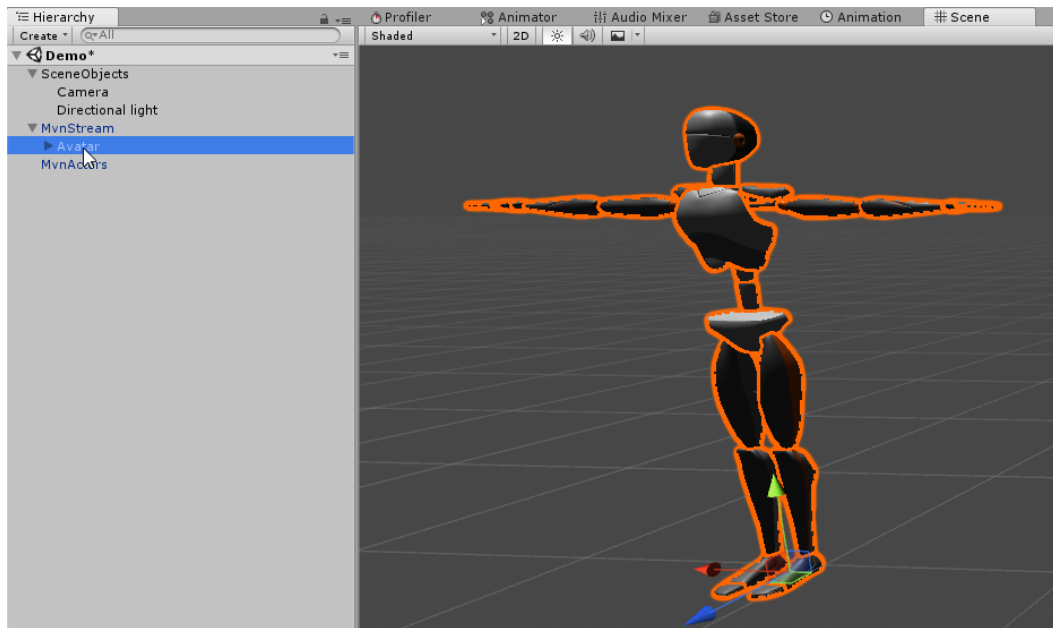
7. Select 'MvnStream' in the hierarchy and keep it selected
8. Drag 'MvnActors' from the Hierarchy into 'Mvn Actors' in the 'Inspector' tab



9. Now click on the circle next to 'Avatar' and select your avatar



10. Select Avatar in the hierarchy and make sure the Avatar is facing the Z Axis and is in a perfect T-Pose, adjust if needed

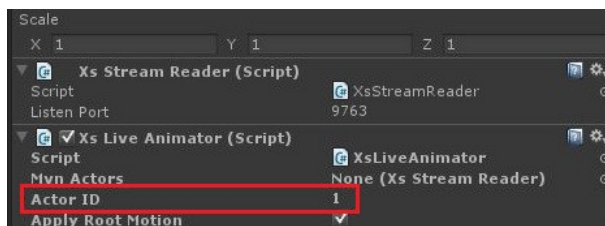


You should now be able to run the game, and stream live into Unity.

The Unity plug-in supports more than one character at the same time.

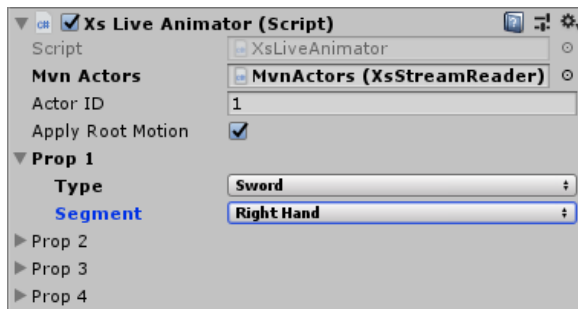
To do this, copy/paste the 'MvnPuppet' in the hierarchy.

You can change the Actor ID for every 'MvnPuppet' to the desired MVN Studio stream ID (1,2,3 or 4)



2.3 Adding props

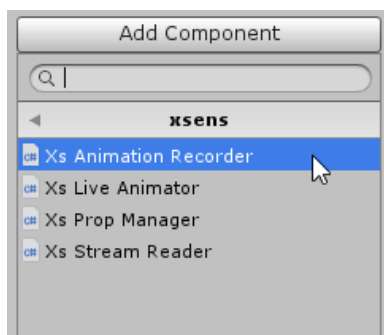
1. To add props, select MvnStream in the hierarchy
2. Now copy the settings you have in MVN for each prop



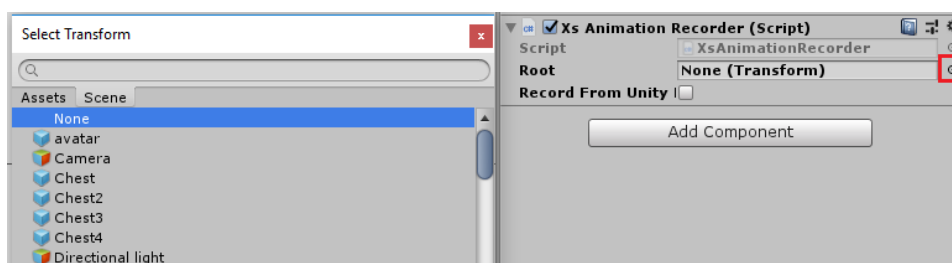
3. Run the game and you should see the prop moving

2.4 Recording in Unity

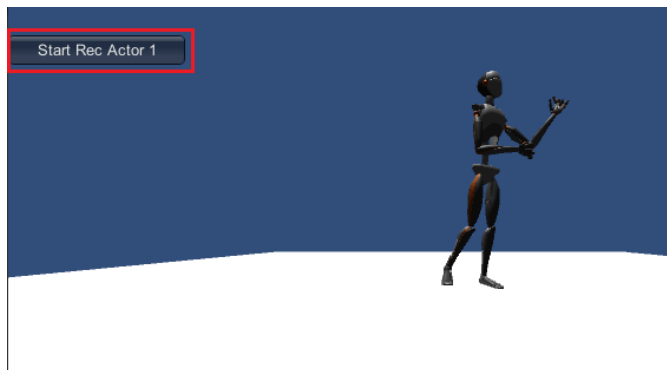
1. With all of the above setup, select 'MvnStream' in the hierarchy
2. Now add the 'Xs Animation Recorder' script



3. Press the circle next to 'Root' and select your character



4. Now run the game and press the record button in the game



5. When stopping the recording it will ask you were to save this file

2.5 Customer Support

Xsens Technologies B.V. is glad to help you with any questions you may have about the MVN Live Animation plug-in for Unity or about the use of the technology for your application. Please contact Xsens Customer Support:

- ➔ by e-mail: www.xsens.com/support
- ➔ telephone: Xsens HQ +31 88 97367 00 / Xsens US office 310-481-1800

To be able to help you, please mention the 8-digit number on the Xsens Sticker, you can find this at the handle of the Suitcase or backpack.