

# zCore Unity Plugin 5.0.0

## - Release Notes

### New Features

- Added support for Unity version 5.4.x and above
  - This includes Unity 2017
- Added support for Unity's new desktop stereo rendering pipeline
  - This includes both Unity's D3D11 (default) and GLCore rendering pipelines
  - The legacy OpenGL 2.1 rendering pipeline is no longer supported
- Added the zSpace Preview Window to enable head-tracked stereo viewing from the Unity Editor
  - This feature is only supported for Unity's default D3D11 rendering pipeline
  - This feature is required due to Unity removing support for quad buffer stereo in the Editor's GameView window
  - For this feature to work properly, [please make sure to enable the following Player setting](#):  
*Edit > Project Settings > Player > Resolution and Presentation > Run In Background*
  - This feature can either be accessed via Unity Editor's zSpace dropdown menu and selecting "Open Preview Window" or by clicking the "Open Preview Window" button in the Debug section of the ZCore inspector
  - The preview window does not forward keyboard and mouse events to the Unity Editor's GameView window. Due to this, we recommend running the Unity Editor on a secondary display in order to allow the GameView window to retain keyboard and mouse focus.
- Updated the ZCore MonoBehaviour script to force its associated current camera to render a mono, head-tracked view from the center eye's perspective to the Unity Editor's GameView window
- Updated the ZCore MonoBehaviour script so that it can now be added to any GameObject in the scene
  - Using the zCore.prefab found in Assets/zSpace/Core/Resources is still supported
  - Note: please ensure that only one instance of the ZCore MonoBehaviour script has been added to the scene



### Environment Changes

- Removed support for the following Editor/Standalone Player command line arguments:
  - -enable-stereoscopic3d

- -force-opengl
- Added support for the following Standalone Player command line arguments:
  - -vrmode stereo (required)
  - -force-glcore (optional if enabling the GLCore rendering pipeline is desired - however, D3D11 is preferred and enabled by default)
- Required Standalone Player settings:
  - Enable “Virtual Reality Supported” located via *Edit > Project Settings > Player > Other Settings > Virtual Reality Supported* and manually add “Stereo Display (non-head mounted)” to the list
- Optional Standalone Player settings:
  - To optionally enable support for Unity’s GLCore rendering pipeline, disable “Auto Graphics API for Windows” located via *Edit > Project Settings > Player > Other Settings > Auto Graphics API for Windows* and manually add “OpenGLCore” to the list



## API Changes

### StereoCamera

- Class removed as a result of migrating to Unity’s official stereo rendering pipeline

### ZCore

- Inspector Fields:
  - Removed EnableStereo
  - Removed CopyCurrentCameraAttributes
  - Removed MinimizeLatency
- Public Methods:
  - Removed SetStereoEnabled()
  - Removed IsStereoEnabled()
  - Removed GetStereoCamera()
  - Added SetViewportWorldTransform()
  - Added ScreenPointToRay()
  - Modified ComputeCameraPosition() to require a third parameter corresponding to viewer scale
  - Modified GetFrustumViewMatrix() to now return a Matrix4x4 in right-handed space due to Unity requiring right-handed matrices when using the new Unity Camera.SetStereoViewMatrix() API

## Inspector Changes

### Debug Section

- Added Open/Close Preview Window button
  - Note: a warning will be displayed if the zSpace Preview Window is not supported for the current enabled rendering pipeline (i.e. GLCore)

### Stereo Rig Section

- Renamed to “Stereo Camera”
- Removed “Update Current Camera Transform” button
  - Modifying the Viewport Center, Viewport Rotation, or Viewer Scale inspector fields will automatically update the current camera’s transform
- Removed “Enable Stereo” checkbox
- Removed “Copy Current Camera Attribute” checkbox
- Removed “Minimize Latency” checkbox

## Known Issues

### Unity 5.4

- Stereo is not supported in the Standalone Player for the GLCore rendering pipeline
  - Workaround: use the default D3D11 rendering pipeline or upgrade to Unity 5.6+

### Unity 5.5

- Stereo is not supported in the Standalone Player for the GLCore rendering pipeline
  - Workaround: use the default D3D11 rendering pipeline or upgrade to Unity 5.6+
- In Unity 5.5, the Unity Sample Project scene Car.scene has shown issues rendering 3D when using OpenGL on an AMD machine.
  - Workaround: Upgrade to a newer version of Unity 5 or Unity 2017.

### Unity 5.6

- The Standalone Player crashes if built from a scene that was created in a previous version of Unity (This includes the sample scenes packaged with the 5.0.0 plugin which are targeted at 5.4 / 5.5 for widest compatibility)
  - Workaround: delete the main camera from the scene and manually recreate it

- Importing zCore Unity Plugin Asset Package into Unity while currently opened scene has a zView object will generate error messages. If these errors appear, they are benign and will be cleared after closing/opening project or pressing play.
  - Workaround: Import the zCore Unity Plugin while an empty scene is currently open in the Unity Editor.

## Unity 2017

- The Standalone Player renders stereo incorrectly if built from a scene that was created in a previous version of Unity (This includes the sample scenes packaged with the 5.0.0 plugin which are targeted at 5.4 / 5.5 for widest compatibility)
  - Workaround: delete the main camera from the scene and manually recreate it
- Importing zCore Unity Plugin Asset Package into Unity while currently opened scene has a zView object will generate error messages. If these errors appear, they are benign and will be cleared after closing/opening project or pressing play.
  - Workaround: Import the zCore Unity Plugin while an empty scene is currently open in the Unity Editor.

## All Unity Versions (5.4+)

- OnGUI only renders to one eye in the Standalone Player when stereo is enabled
  - Workaround: none
- Screen space UI only renders to one eye in the Standalone Player when stereo is enabled
  - Workaround: use “World Space” for the UI Canvas Render Mode
- Stereo rendering issues with the Standalone Player may occur if the current camera’s clear flags are set to “Skybox”
  - Note: Smaller viewer scale values may exacerbate this issue
  - Workaround: Change the camera’s clear flags to “SolidColor”, and instead provide geometry for your skybox.
- zSpace 200 displays
  - Some users on AMD R9 graphics cards may experience problems when using the Preview Window e.g. editor crash or black screen.
    - Workaround: Using a AMD 15 series driver should resolve issues when using the Unity Editor.
  - When using some AMD and Nvidia GPUs the screen may flash white or black, when closing an application using the zCore Plugin.
  - Some AMD and NVIDIA drivers may cause intermittent crashes after getting past the Unity splash screen in Unity versions earlier than Unity 2017.
    - Workaround: Upgrading to Unity 2017 will alleviate crashes when launching either D3D or OpenGL stereo enabled Standalone Players