XMesh Documentation

Release 1.3.3

Thinkbox Software

June 05, 2015

CONTENTS

XMesh™ is Thinkbox Software's production-proven Geometry Caching system.

XMesh™ is a set of tools for saving animated scene geometry to an external file sequence and for loading this data later for playback and rendering.

CHAPTER

ONE

XMESH NK FOR THE FOUNDRY NUKE

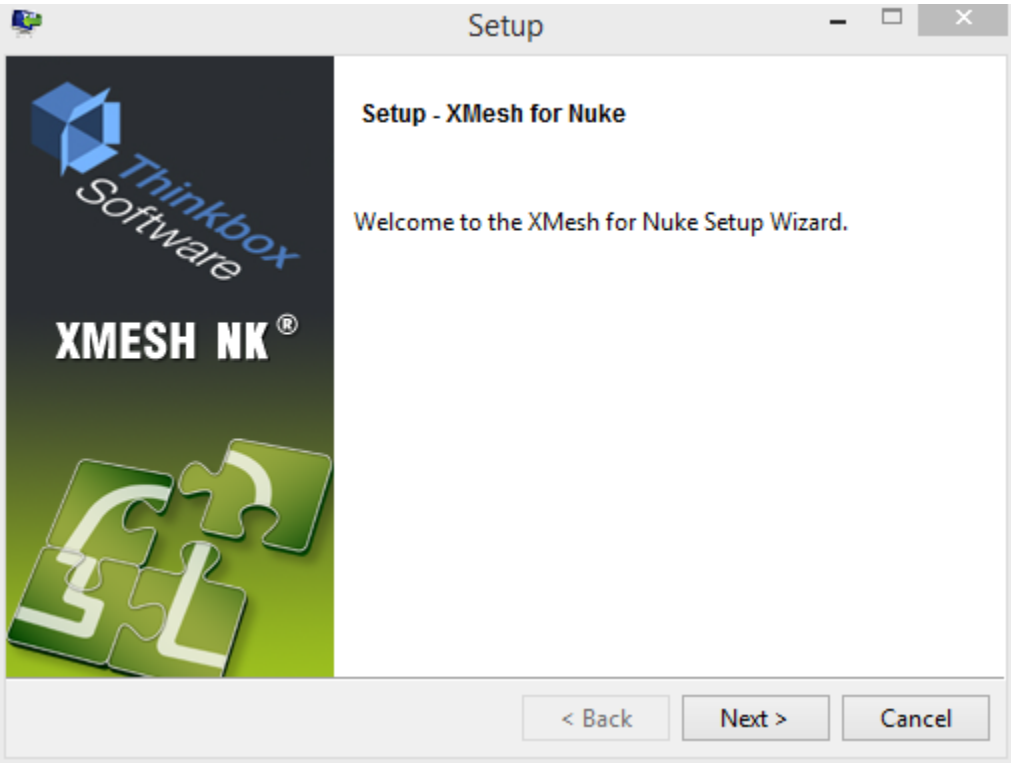
XMesh™ NK is the Nuke implementation of the XMesh toolset.

It consists of a FREE Loader plugin (XMesh Source) which performs the loading.

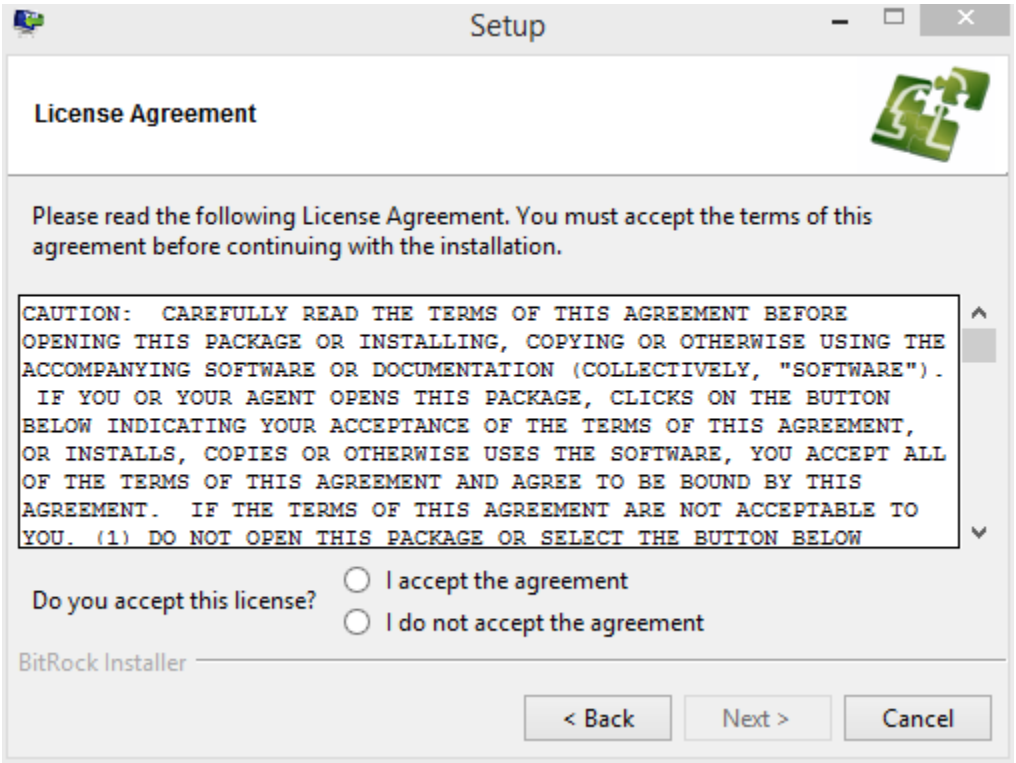
1.1 XMesh Loader NK

1.1.1 Installing XMesh Loader NK

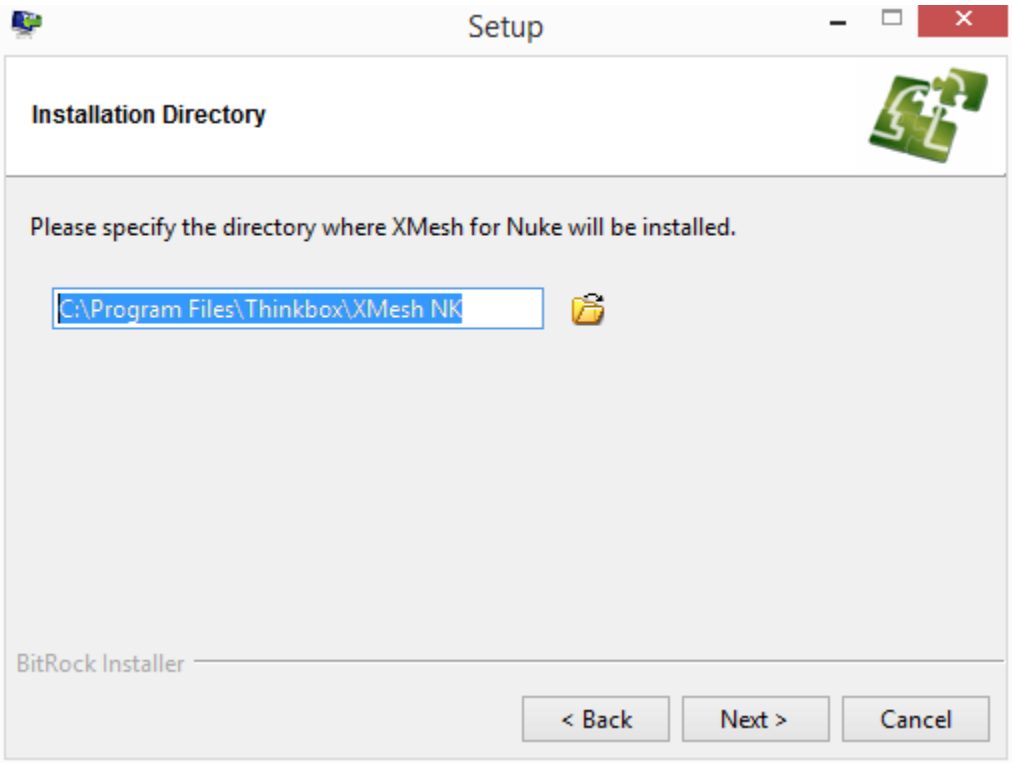
There are three installers for XMesh NK, one for each of the Windows, MacOS, and Linux operating systems. Select the correct installer for your system, unzip it, and launch it. (On Linux, you will want to run the installer as root.) The XMesh NK installer dialog should appear:



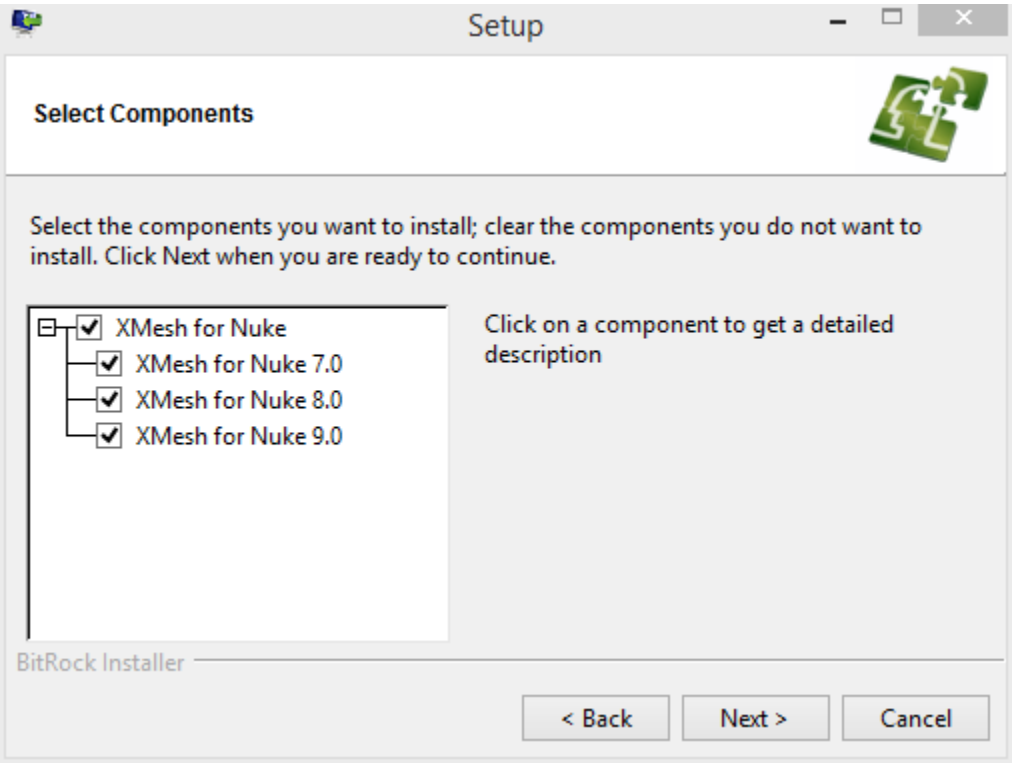
Click **[Next]** to start the installation.



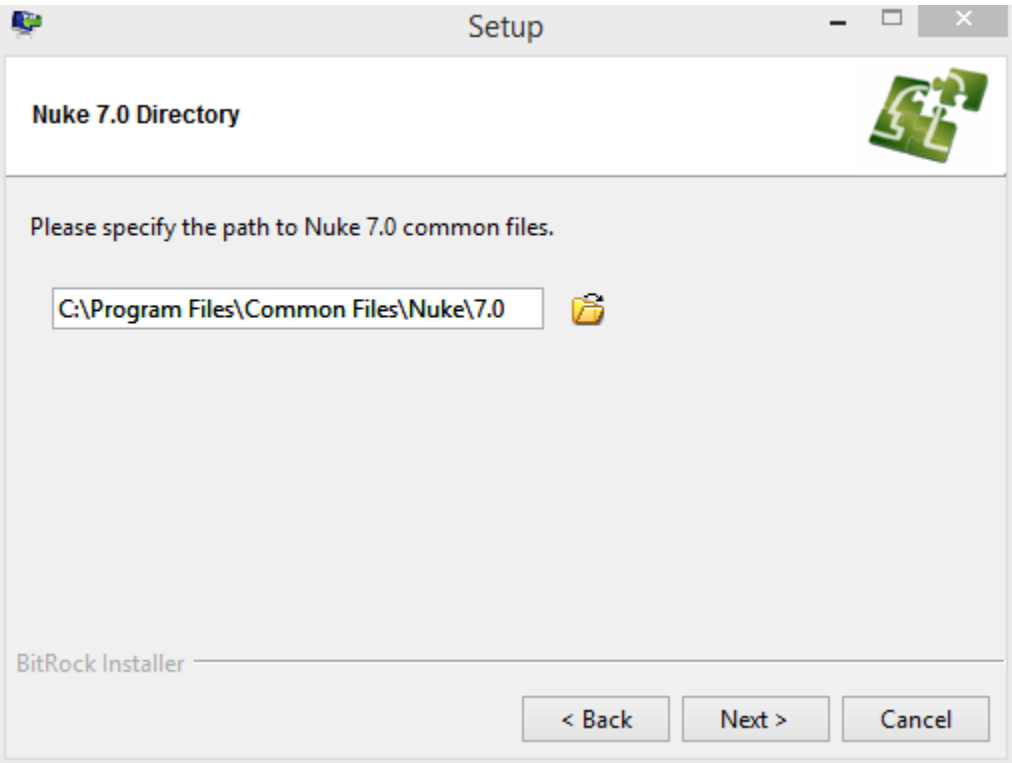
Read the EULA. If you accept the license, check **"I accept the agreement"** and press **[Next]** to continue.



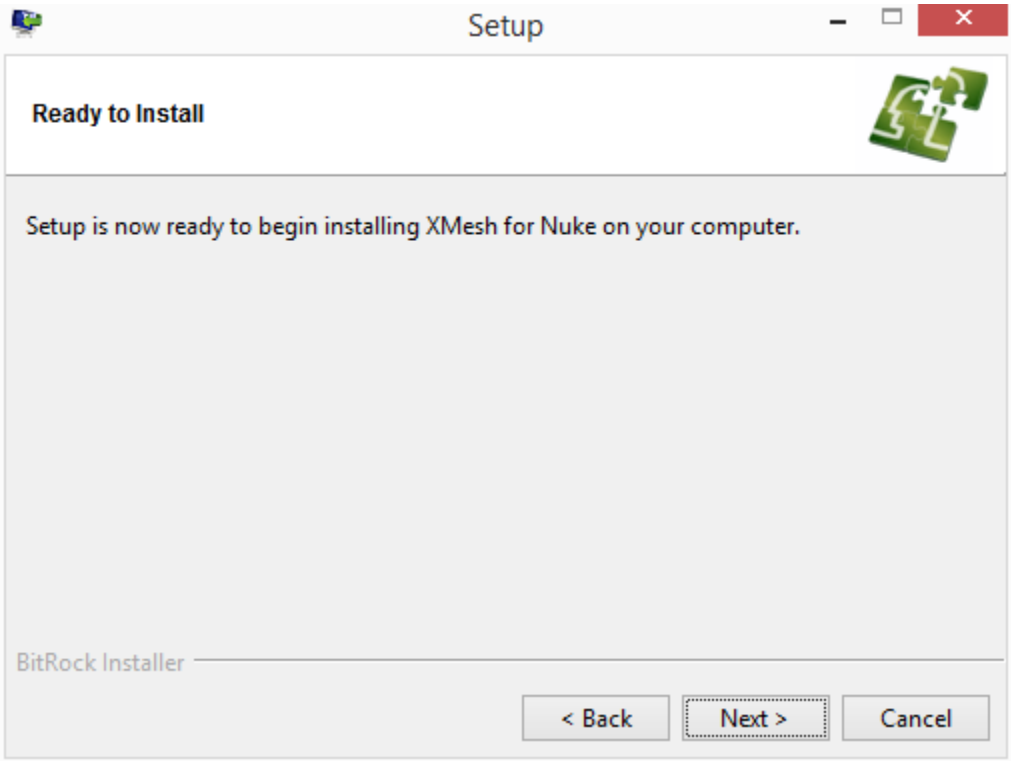
Review the default installation path, change if desired, then press **[Next]** when you are ready to continue.



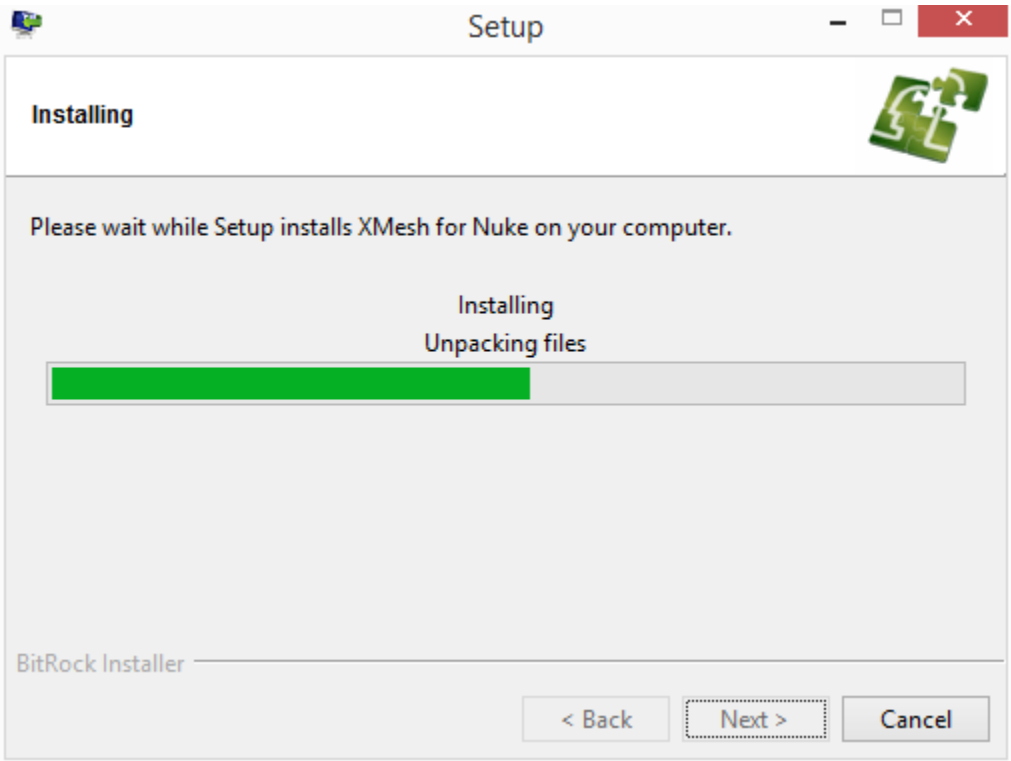
Select the versions of Nuke for which you would like to have XMesh NK installed, then press **[Next]** to continue.



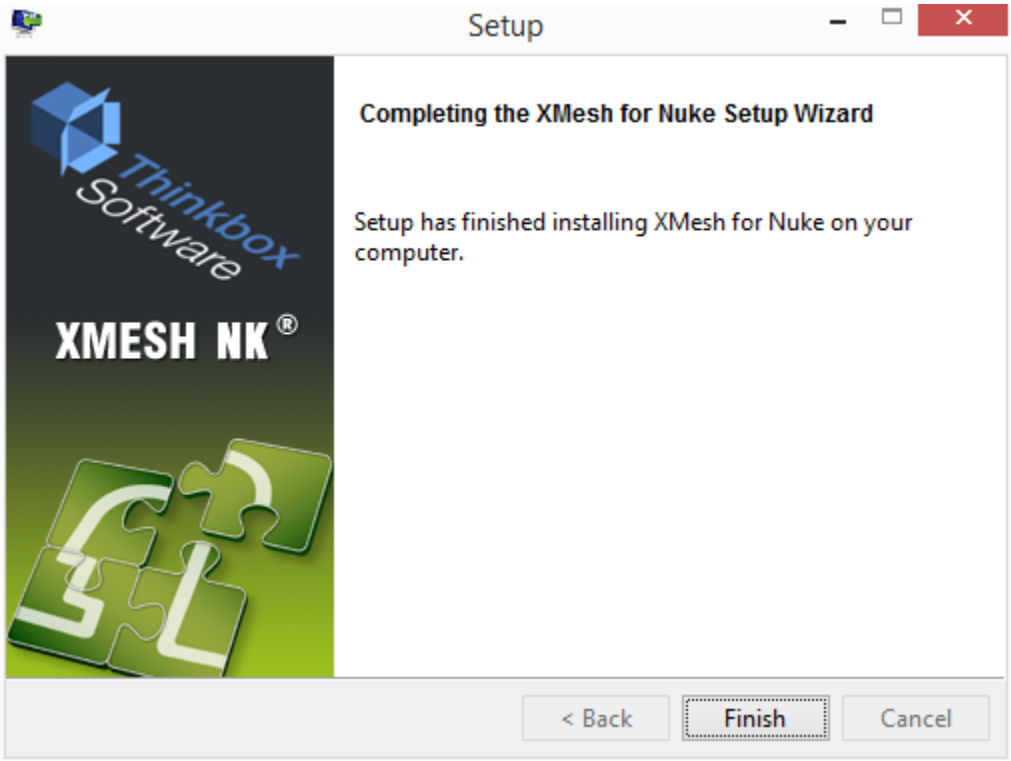
Verify the location of the common files for each version of Nuke, pressing **[Next]** to continue after each version.



Press **[Next]** to begin the installation process.



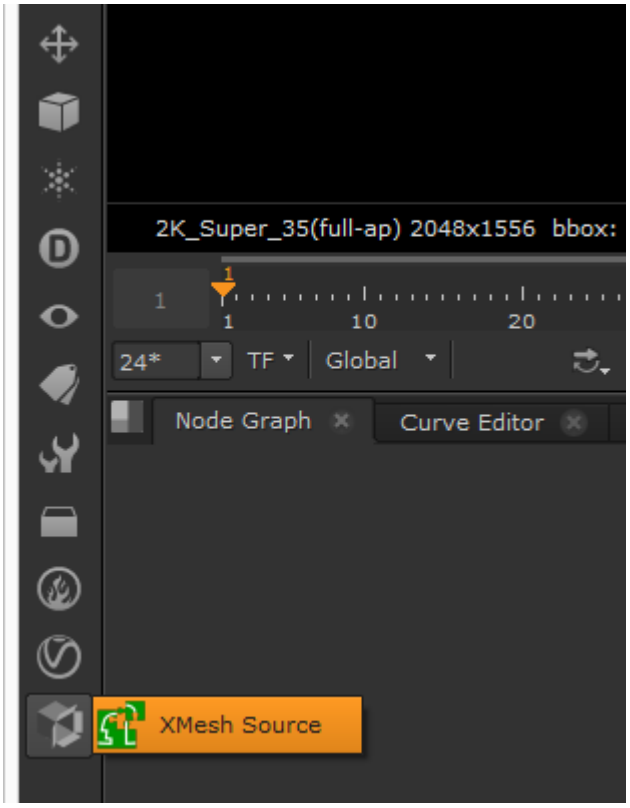
Wait for the installation to copy all files.



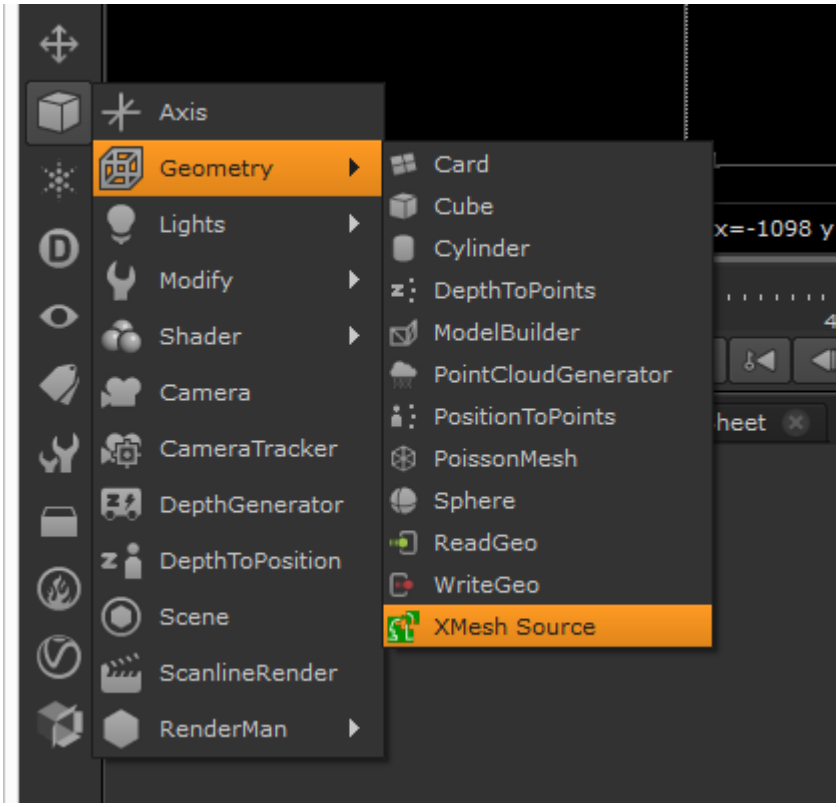
Press **[Finish]** to exit the installer.

1.1.2 Loading A Mesh

1. Create an XMesh Source node, which can be found in the Thinkbox menu,

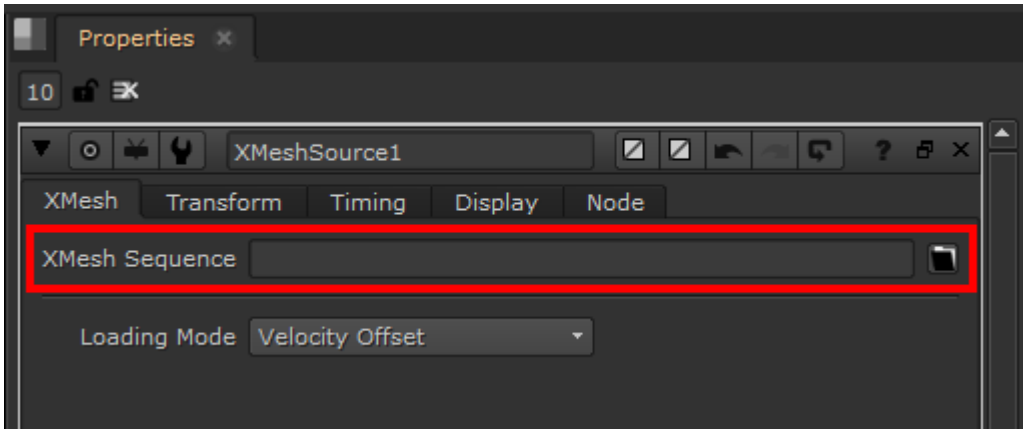


or the 3D → Geometry menu.

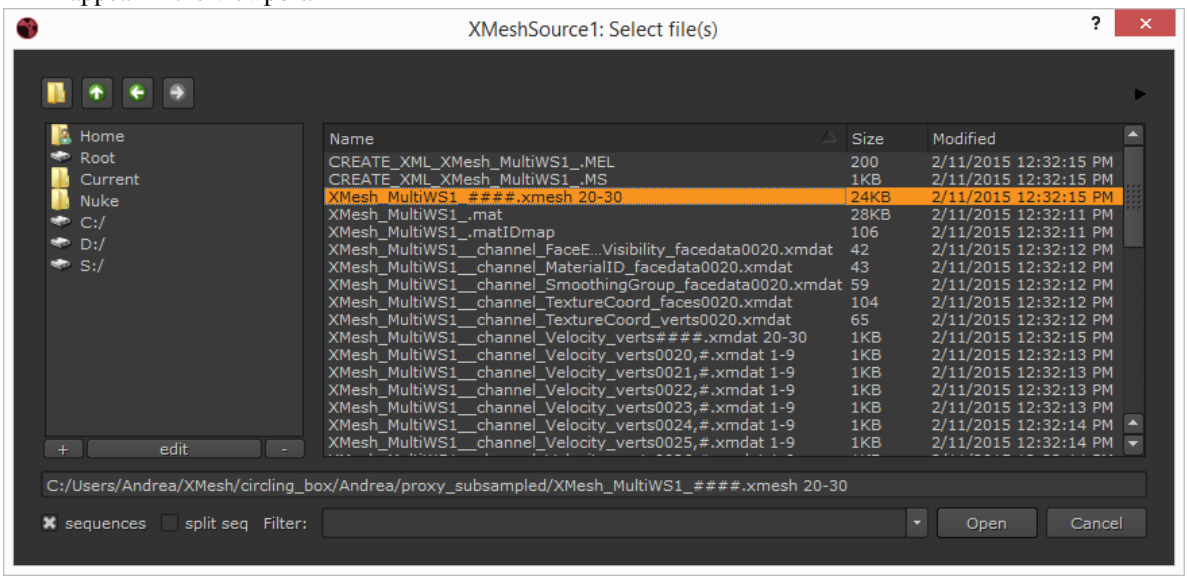


2. In the properties panel for the XMesh Souce node you created, click the  folder icon to the right of XMesh

Sequence on the XMesh tab.



3. In the "Select file(s)" dialog that appears, choose an *.xmesh* sequence that you want to load. The mesh should appear in the viewport.

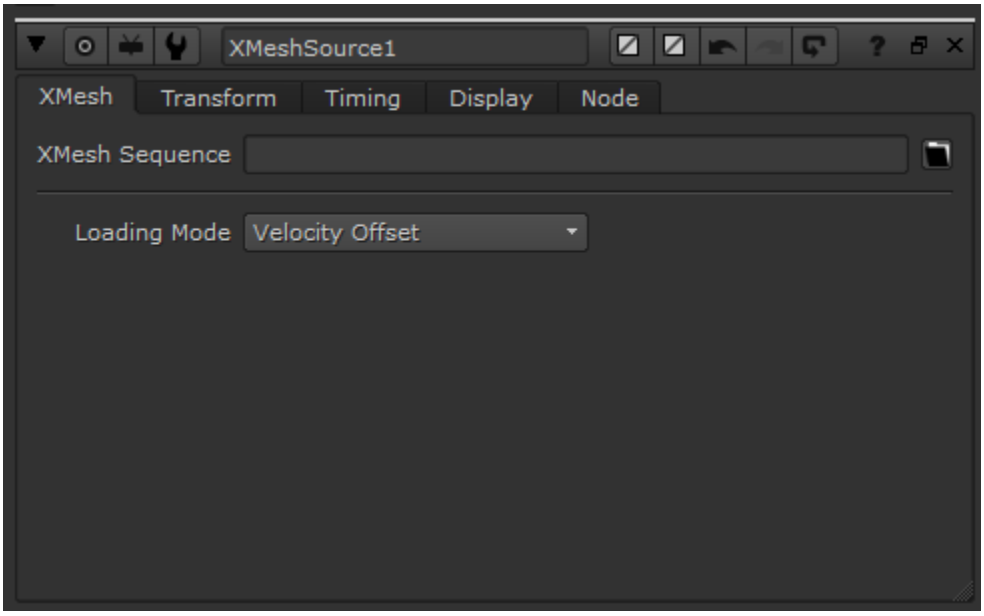


1.2 XMesh Loader NK Reference

1.2.1 XMesh Tab

Overview

The current XMesh NK source node only supports a single sequence that is used for both rendering and display, and does not yet support a lower-res proxy sequence for viewport display.



Controls

XMesh Sequence This sequence is used for both rendering and viewport display.

Loading Mode Specifies how the xmesh is loaded and displayed, and controls the behaviour when sub-frames are requested by the renderer to produce motion blur.

None No mesh is loaded.

Single Frame Only the specified frame is loaded. If the XMesh Sequence field specifies a range of frames, the first frame in the range is loaded.

Velocity Offset Uses the nearest full frame and the corresponding velocity channel (if generated during the saving process). The vertices will be moved along the velocity vector. The result is linear interpolation between a full frame and half a frame later due to the linear nature of the velocity data.

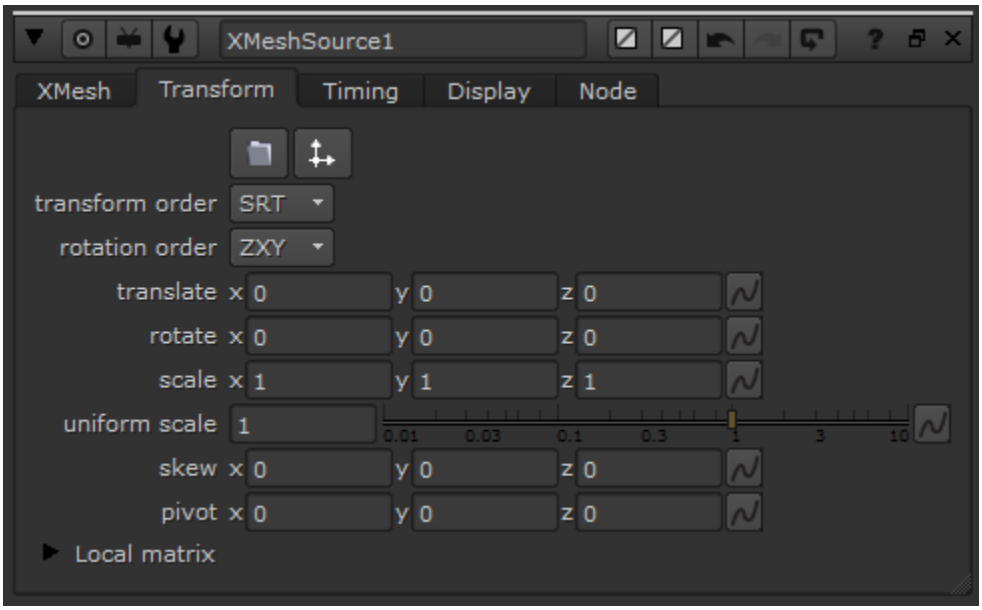
Subframe Velocity Offset Uses the nearest sub-frame file and its velocity channel (if available). If you have saved sub-frames by setting the step value in the saver to a value less than 1.0, the XMesh Loader will take full advantage of the sub-frame data. Switching back to "Frame Velocity Offset" will effectively ignore the sub-frame data on disk. Using sub-frames will allow you to produce more curved vertex motion between two frames thanks to the additional samples stored in the sub-frame files. The higher the number of sub-frames, the closer the vertex interpolation will be to the original motion, at cost of disk space. If only the vertices are changing position (all other channels like face list, material ids, smoothing, texture/mapping coords etc. are the same), a sub-frame will contain just the vertex list and velocity channels, with all other channels reused from a previous frame. Thus, using multiple sub-frames does not necessarily cost too much disk space and is more similar to point caching.

Frame Interpolate Uses the two surrounding full frames and, given consistent topology, produces the sub-frame vertex positions on the fly without the use of the pre-saved velocity channel. If the two frames have mismatching topologies, no sub-frame data will be generated and the closest full frame will be used.

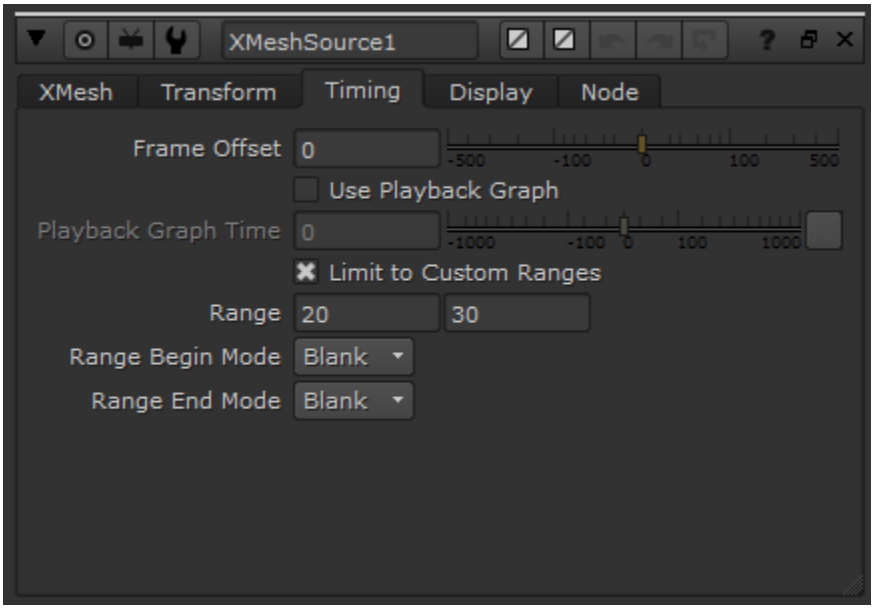
Subframe Interpolate Uses the two surrounding sub-frames, otherwise the same as the previous mode. If no sub-frames were generated at saving time, it behaves identically to "Frame Interpolation". Switching to frame interpolation effectively ignores any sub-frame files on disk.

1.2.2 Transform Tab

The transform tab allows you to translate, scale, and rotate the entire mesh. These transforms can be animated.



1.2.3 Timing Tab



Controls

Frame Offset This offset is added to the scene frame number to calculate the file frame number. For example, if you are on frame 0 in the scene, and the frame offset is 10, then XMesh will load frame number 10 from the file sequence.

Use Playback Graph Enable the Playback Graph Time control, which is described below.

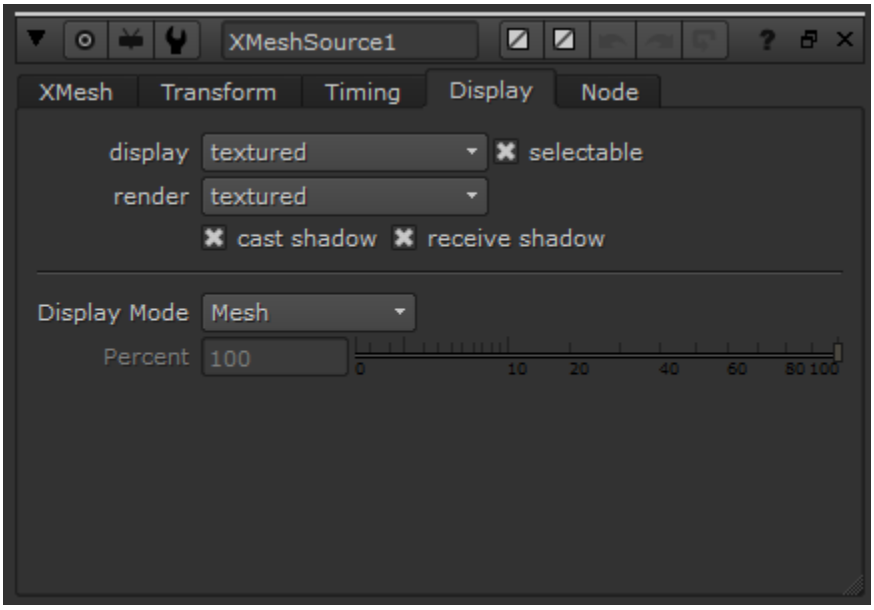
Playback Graph Time This animatable parameter controls which file frame number is loaded for each scene frame.

Limit to Custom Ranges When enabled, the XMesh Loader will only load frame numbers inside the **Range** specified.

Range Begin Mode Control what the XMesh Loader will use for frames before the first frame. *Hold* will use the data from the first frame, while *Blank* will use an empty mesh.

Range End Mode Control what the XMesh Loader will use for frames after the last frame. *Hold* will use the data from the last frame, while *Blank* will use an empty mesh.

1.2.4 Display Tab



Controls

display

off Do not display the XMesh.

wireframe Displays the outlines of the faces.

solid Displays all the geometry with a solid color.

solid+wireframe Display both solid and wireframe.

textured Displays the surface texture applied to the faces.

textured+wireframe Display both texture and wireframe.

selectable Whether or not the XMesh can be selected.

render Same as **display**, but controls how the XMesh will render.

cast shadow Whether or not the XMesh is able to cast shadows on other objects in the scene.

receive shadow Whether or not the XMesh receives shadows from other objects in the scene.

Display Mode

Mesh When set to mesh, the complete content of the XMesh file sequence set for viewport display will be loaded and shown in the viewport

Bounding Box Only the bounding box of the XMesh file (calculated and written to the .XMesh XML file at saving time) will be read and drawn in the viewport.

Vertices Only the vertex .XMdat component file of the frame will be loaded (thus skipping the loading of all other channel files) and the vertices will be shown as dots, with optional percent control to show a fraction of the vertices.

N-Faces When set to n-faces, a user-defined percentage of the XMesh's faces will be shown in the viewport, resulting in faster redraws.

Disabled The XMesh is not displayed.

Percent When displaying vertices or n-faces, the percent to display in the viewport.

1.3 Release Notes

1.3.1 XMesh NK 1.3.3

Initial release.