

Foreword

Thank you for purchasing the Mesh Merge!

I'm an independent developer and your feedback and support really means a lot to me. Please don't ever hesitate to contact me if you have a question, suggestion, or concern.

Tim

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Overview

Rendering 3D objects is a complicated process. For each mesh, Unity needs to package up the textures, gather the mesh data, send everything to the graphics API, set the render state, and finally render the objects. If your scene contains a lot of objects, you'll see your draw calls increase and performance decrease.

Unity will do tricks to help reduce the draw calls including batching objects, but one of the best things you can do is reduce the number of objects that need to be drawn. While it may not be obvious, it's much better to render a small number of large objects than it is to render a large number of small objects.

In the image below, we could render out 150 individual mushroom (with 200 vertices each) or we could render 1 mushroom group with 30,000 vertices (150 x 200). The latter is much faster.



Mesh Merge is a tool that allows you to combine these individual meshes together within the Unity editor.

Mesh Merge

Mesh Merge will combine the scene objects you select into a set of efficient ‘material based’ meshes that can simplify the rendering process.

Since it’s best to render objects with the same material at one time (to avoid having to unload and reload material data), all object meshes with the same material will be merged into a single mesh. In this way, you can select lots of options and Mesh Merge will organize and merge them as needed.

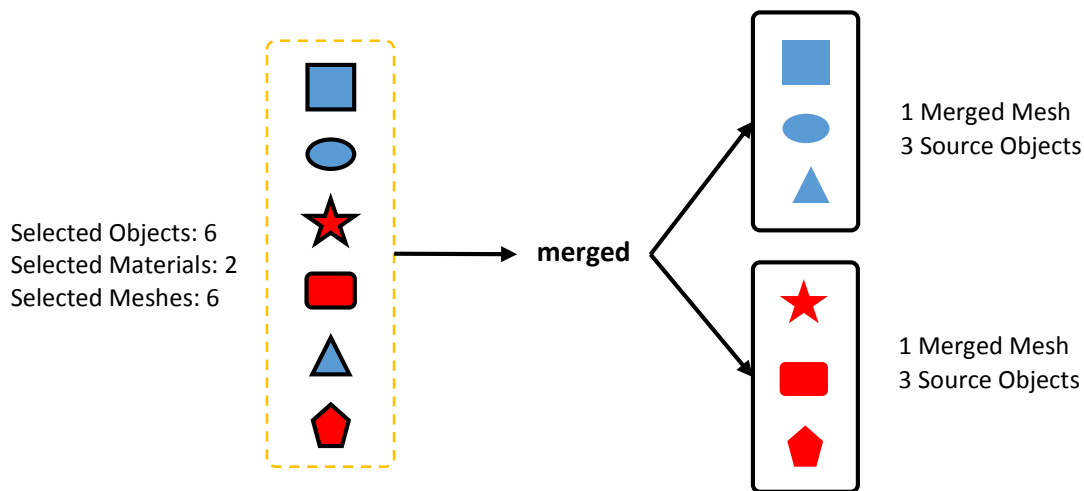
Features

- Merge objects with the same materials
- Supports objects with multiple materials
- Supports objects with sub-meshes
- Creates multiple merged meshes in one selection
- Manage source objects after the merge
- Ability to split objects based on materials

Merging

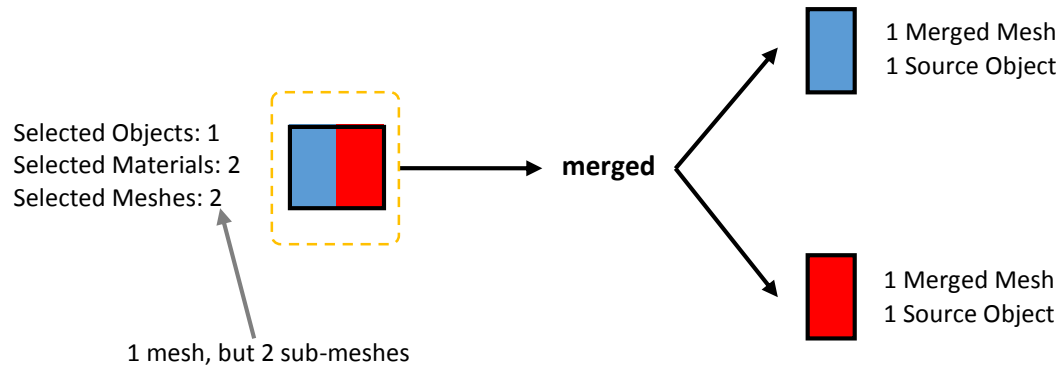
When multiple objects are merged, a separate “Merged Mesh” object will be created for *each material* in the selected group. All the meshes that use that material are merged into a single mesh.

In this way, meshes are assigned to a single material and rendering becomes much more efficient. Below, you can see the effect of selecting 6 objects that use two different materials.



Splicing

One of the cool side effects of Mesh Merge is that you can use it to split a single object into multiple objects based on the materials used. In this way, you can deconstruct complex objects into simpler ones.



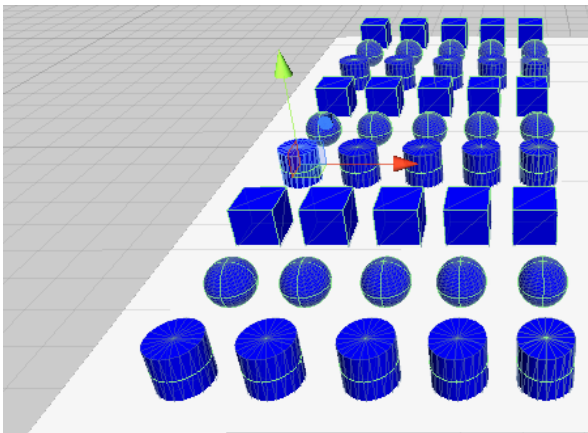
Note

When merging meshes, you typically don't want to merge every object in the scene into a massive mesh of objects. Instead, merge the objects into groups to take advantage of scene occlusion culling.

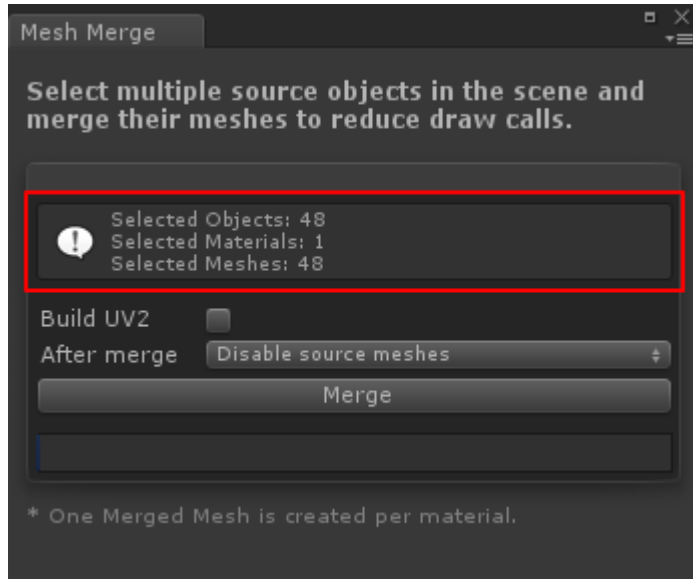
Merging Multiple Objects

To merge multiple object, follow these steps:

1. Open the Mesh Merge Window by pressing 'Window | ootii Tools | Mesh Merge'.
2. Select multiple object you want to merge. Typically these would be objects that share the same material.



3. View the Mesh Merge window for selection details.

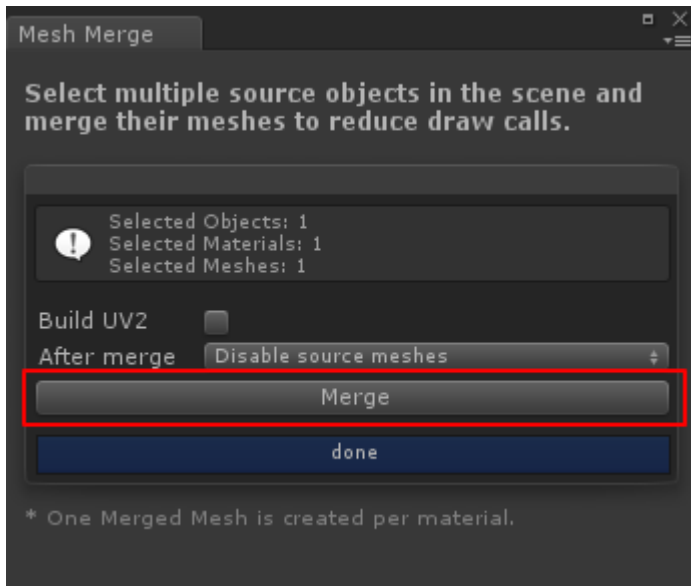


In this example, 48 objects were select. This would represent 48 different draw calls.

Notice that they all use a single material. That's the blue color the objects are rendered with.

Since each object has a single mesh, we see that there are 48 meshes.

4. Press 'Merge'



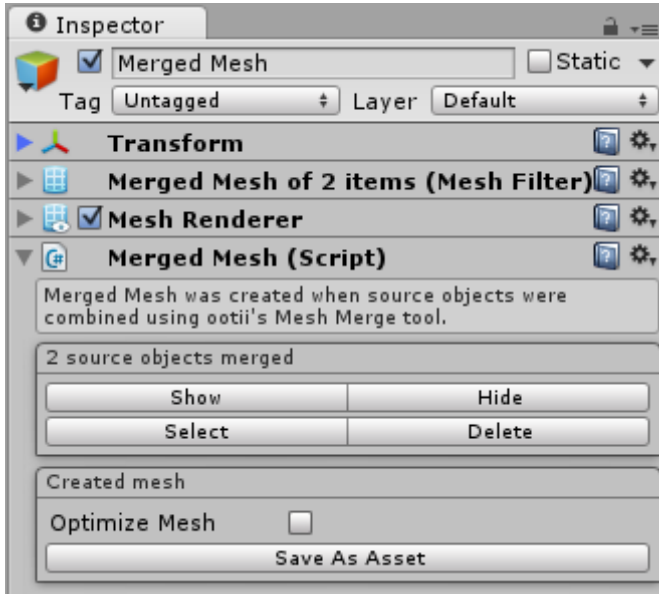
Once pressed, the 48 objects are replaced with a single “Merged Mesh” that is built from their meshes.

In this case, the draw calls has been reduced to 1.

Merged Mesh

Once the objects have been merged, a new object will be placed in the scene. This object will contain a component called 'Merged Mesh'.

This component allows you to access the 'source' objects that were used to create the merged version.



Through this inspector, you can:

- Show the source objects
- Hide the source objects
- Select the source objects
- Delete the source objects

When the source objects are deleted, this component will no longer be needed and can be safely removed.

Saving as Prefab

When the merged mesh is created, the mesh is stored in the scene locally. That means that it is only available inside the scene and cannot be used in other scenes or as a prefab.

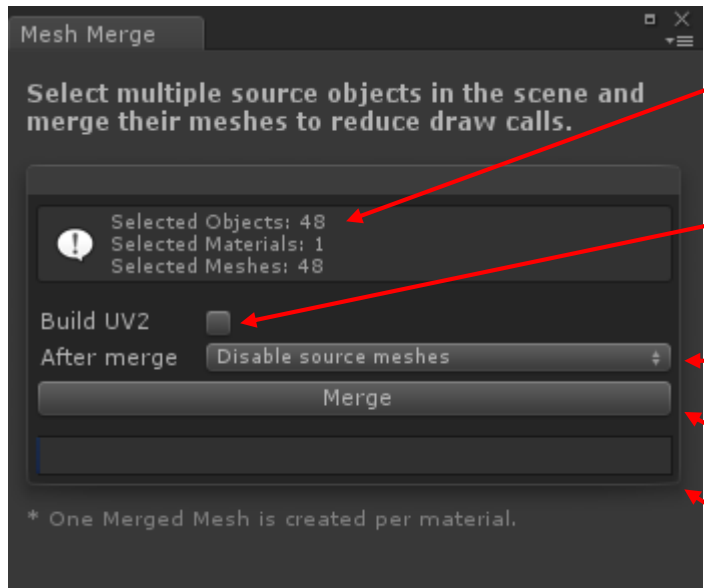
To save the merged mesh so it can be used in other scenes or as a prefab:

1. Press the 'Save as Asset' button.

This will ask you for a path to save the asset. Once saved, the Mesh Renderer will be updated to use this new asset and then you can save the whole asset as a prefab.

2. Simply drag the object from the scene hierarchy into your project like you would when creating any other prefab.

Mesh Merge Window



The screenshot shows the Mesh Merge window with the following elements and callouts:

- Information about the selected objects.** Callout pointing to the status bar at the top of the window.
- Generates a second set of UVs to support light mapping. Takes longer to generate the merged mesh.** Callout pointing to the 'Build UV2' checkbox.
- Determines what happens to the source objects after the merge.** Callout pointing to the 'After merge' dropdown menu.
- Performs the merge.** Callout pointing to the 'Merge' button.
- Status bar.** Callout pointing to the footer text: '* One Merged Mesh is created per material.'

Support

If you have any comments, questions, or issues, please don't hesitate to email me at support@ootii.com. I'll help any way I can.

Thanks!

Tim