Terrain Slicing Guide
Author: Kyle Gillen – Visit www.deepspacelabs.net/terrain_slicing.html to find full documentation
Contact me at kgillen@deepspacelabs.net if you have any questions or concerns

How it Works

The script works by taking a base terrain, and dividing its properties by a certain value, which we'll refer to as size. In the editor window you'll actually choose the dimension of the resulting terrain grid after slicing is completed, which is simply size x size. So for example, if you choose 2x2 as the grid dimensions, the script will take your terrain's width (measured along the x axis), length (measured along the z axis), detail resolution, control texture resolution (also known as the alpha map resolution), heightmap resolution, and base texture resolution, and divide each of these values by 2 (actually for the heightmap, you would subtract 1, then divide by 2, and then add 1 back to get the new value -- or simply divide by two and round down).

The new terrains are created on the fly, and their terrain data is stored in the Asset Database (in a folder of your choosing). Because the terrain data is saved in the asset database, multiple terrains can be added to an empty game object and saved as a prefab, or loaded dynamically later. All trees and detail meshes are also copied to the new terrains (you have control over this copy behavior). You can also have the slicing tool automatically create Prefabs from your slices during the slicing process.

Before Slicing

Before slicing, it's important to make sure the base terrain you're intending to slice is able to do what you want. If you haven't created your base terrain yet, the process is easy. Simply think about the properties you wish the new terrain slices to have, and create the base terrain to make these properties possible; for instance, if you want 4 terrains, each with a size of 200 x 300 and all resolutions at 1024 (with heightmap at 1025), you'll need to calculate the base terrain accordingly. First, determine the size you'll be working with by taking the square root of the number of terrains you want to end up with; in this case, the square root of 4 is 2. Now simply multiply all of your desired values by this size. You should find that you'll need a base terrain with a size of 400 x 600 and all resolutions at 2048 (with heightmap at 2049).

If you're terrain is already created, then don't worry, you shouldn't have much trouble; you simply might be limited in the number of terrains you can create. The reason for this is there's a minimum limit for each resolution (16 for base texture and control texture resolution, 33 for the heightmap, and the detail resolution per patch for the detail resolution if you plan on having detail meshes -- 0 if you don't). Because of these minimum limits, your base terrain resolutions divided by size cannot be smaller than these values. You'll probably be working with a base terrain of resolution 512 or greater, so the only time you'd have to worry about these constraints is if you're aiming for a 16 x 16 or 64 x 64 grid. Still, it's something to keep in mind, especially if your base terrain has smaller resolutions. When slicing, only those dimensions which are possible will be displayed as options.

Terrain Groups

With update 2.0 to the Terrain Slicing & Dynamic Loading Kit, it is now possible to slice a group of terrains. This will most likely be a group created from an earlier slice of a single terrain. This is useful when you decide you want to make your original slices even smaller (for whatever reason).

The Slicing Process

1) To begin the slicing process, select "Terrain -> Terrain Slicing Kit -> Slice Terrain". For now, I will assume you wish to manually configure the settings. You can also make and use a configuration file, which be detailed at the end of this document.

2) Select the "Slice Method" you wish to use. Most likely this will be "Slice Single Terrain." "Slice Terrain Group" can be used to slice a group of terrains, perhaps one that was created from an earlier slicing sessions.

3) If slicing a single terrain, drag the terrain you wish to slice into the "Terrain To Slice" field. When slicing a group, this field will be called "Any Terrain From Group."

4) If slicing a terrain group, enter the range of terrains from the group you wish to slice. This allows you to slice only a subset of the terrains if you desire, though you are free to slice all of them as well.

5) Select the slicing dimensions you wish to end up with. 2 x 2 simply means the base terrain will be divided along the x axis 2 times and z axis 2 times, to create 4 terrain slices. Only dimensions which are valid for the provided terrain are listed, though note that higher slicing dimensions (64 x 64 and above) are untested.

   This field is only displayed when a Terrain has been provided.

6) Choose whether to copy all trees and detail meshes. If you leave these two check boxes unchecked, each terrain slice will retain only those trees/detail meshes which are within its boundaries. If you check “Copy All . . .” every slice will get every tree/detail mesh from the base terrain.

7) Choose whether to blend your alphamaps. The way Unity terrains work, it is highly likely that seems will appear between your terrain slices after slicing. Alphamap blending seeks to correct this issue. You can also adjust the “Blending Width," which determines how much of your terrain inland from the edge will be altered. A value of 1 means only the edge is altered, while larger values alter more of the alphamap. Blending will blur the alphamap, so it’s best to try and keep the blending width as small as possible.

   If you don't wish to use blending, check the "Disable Alphamap Blending" option.

8) Enter the base name you want your created slices to use. For instance, if you want your slices to be named "Slice_1_1", "Slice_1_2", etc., enter "Slice".

9) Enter the base name you want to use for the TerrainData that will be created for each slice.

10) Enter the folder where you want to store the TerrainData for each slice in the field "Slice Data Save Folder". This folder is relative to the Assets folder. For instance, to save directly in the Assets folder, leave the field set to "/", or to save in "Assets/Data", type "/Data".

11) Do you wish to have the slicing tool create prefabs from your slices automatically? If so, enable the "Create Prefabs From Slices" option.

12) If you've enabled prefab creation, enter the folder where you wish the prefabs to in the field "Prefab Save Folder". Again, this is a folder relative to the Assets folder. You can right click any folder and

choose "Dynamic Loading Kit -> Copy Relative Folder Path" to copy the folder easily, than just paste it into the correct field.

13) If creating prefabs, you can choose to remove the slices from the scene once they are created. This is necessary when slicing some high resolution terrains or terrain groups, where the memory used by the slices can cause Unity to crash.

    You can try with this option disabled, and if crashing occurs, re-slice with it enabled.

14) Click the Slice Terrain(s) button. If there is some potential for existing terrain data or prefabs to be overwritten by the slicing operation, you will see a warning/error message. Otherwise, the slice should proceed without issue.

In addition to manually configuring each slice, you can create a Slice Configuration File which can be used to save common slice settings, which makes repeating the same slice (or similar slices) much easier.

The Configuration File can also be used if you wish to keep a record of your slice settings, just in case you need that information in the future.

There are two ways to create a Slice Configuration File.

a) Select a folder and in the top Unity menu bar select Terrain -> Terrain Slicing Kit -> Create Slice Configuration File.
b) Open the Slicing Tool via Terrain -> Terrain Slicing Kit -> Slice Terrain. Choose "Configure using Slice Configuration File" as the Configuration Method. Click the "Create New Configuration File" button that appears, which will create a configuration file asset directly in the Assets folder.

Once you've created the configuration file, you can edit it exactly in the manner described in the steps above, with one major difference.

The field for the terrain will be called "Terrian Prefab to Slice" or "Any Terrain Prefab From Group." As indicated by this name change, this field only accepts terrain prefabs. This is because Terrains that exist solely in the scene will not be serialized properly when exiting/reopening Unity, so any terrains you drag from the scene onto this field would disappear.

Fear not, however! You can still use a configuration file to slice a terrain or terrain group in the scene. With the Slice Terrain tool open and the slice configuration file you just created dragged to the appropriate field, you will notice a new option directly above the "Slice Terrain(s)" button at the bottom of the Editor Window.

Check this option (if no terrain prefab is found on the configuration file, it will be checked by default) and drag the terrain from the scene onto the "Other Terrain" field. Assuming you configured the file already, you are now ready to slice!

Note that you cannot edit the configuration file in the Slice Terrain editor window. If you need to edit the file, simply select it in the project hierarchy and make the edits in the inspector.